

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

<b>Mandatory Reliability Standards for the Bulk Power System</b>	)	<b>Docket Nos. RM06-16-010 RM06-16-011</b>
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**COMMENTS OF THE ISO/RTO COUNCIL**

The ISO/RTO Council (“IRC”)<sup>1</sup> respectfully submits these joint comments in response to the September 24, 2010 Notice Allowing Post-Technical Conference Comments of the Federal Energy Regulatory Commission (“Commission”) with respect to the September 23, 2010 Technical Conference concerning Frequency Response in the Wholesale Electric Grid.

**I. COMMENTS**

**A. Introduction**

The IRC submits that Frequency Response must be addressed in a comprehensive manner that includes the following issues: (1) Interconnection impacts, (2) defining the roles and responsibilities of Balancing Authorities (“BAs”), *i.e.*, control, and (3) the supply resources that actually have the frequency response capability and provide the response.

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<sup>1</sup> The IRC is comprised of the Alberta Electric System Operator (“AESO”), the California Independent System Operator (“CAISO”), Electric Reliability Council of Texas, Inc. (“ERCOT”), the Independent Electricity System Operator of Ontario, Inc., (“IESO”), ISO New England Inc. (“ISONE”), Midwest Independent Transmission System Operator, Inc. (“Midwest ISO”), New York Independent System Operator, Inc. (“NYISO”), PJM Interconnection, L.L.C. (“PJM”), Southwest Power Pool, Inc. (“SPP”), and New Brunswick System Operator (“NBSO”). The IESO, AESO and NBSO are not subject to the Commission’s jurisdiction, and these comments do not constitute agreement or acknowledgment that such entities can be subject to the Commission’s jurisdiction. AESO and NBSO have not joined in these comments. The IRC’s mission is to work collaboratively, to develop effective processes, tools and standard methods for improving the competitive electricity markets across North America. In fulfilling this mission, it is the IRC’s goal to provide a perspective that balances reliability standards with market practices so that each complement the other, thereby resulting in efficient, robust markets that provide competitive and reliable service to customers. Additionally, individual IRC members may file separate comments in this proceeding. Accordingly, the absence of the IRC’s comments on specific proposals in these comments should not be deemed acquiescence on the part of the IRC members to such proposals.

The standard for Frequency Response that existed prior to today's mandatory Reliability Standards framework was predicated on vertically integrated control areas that controlled and, in most cases, owned the supply assets. That standard was based on individual control area requirements related to controlling Area Control Error, not on the Interconnection's frequency response needs.

The bulk power system has changed significantly since then. While some regions of the U.S still operate under vertically integrated utility constructs, a large percentage operate under organized markets. Even in the areas with vertically integrated utilities, there is competition for supply. Added to this, there is a mandatory reliability standards construct that applies universally. Under the current NERC construct, control areas have been effectively restructured into a variety of Functional Entities that serve different roles and have different obligations.

The Commission must examine frequency response issues in this new context and consider the three primary issues related to frequency response identified above. Given the fundamental changes in the industry, the IRC supports the concept of developing an Interconnection Frequency Response ("IFR") to address frequency response. This obligation, however, should not be based on measured response, but rather on predefined Interconnection primary control needs. Those needs could be defined either in terms of a predefined real time frequency response, or in terms of a predefined amount of governor response capacity. No longer can one assume that control areas will/can build the necessary response characteristics for the assets within their footprint. From an operational perspective an IFR could take into account the reliability needs of each individual Interconnection, thereby ensuring a given margin of reliability. From an operational and market perspective, such an approach would allow

Vertically-Integrated Utilities (“VIUs”), BAs and organized market operators to design frequency response related services to take into account the specific needs and circumstances of both the Interconnection and the operating area. This could increase the aggregate Interconnection response while reducing individual BA obligations (just as power pools were able to increase operating reserves for the pool while reducing the individual utilities need to carry reserves). Whether or not a Reliability Standard must be written to assign that obligation to the ERO is a matter for the Commission to decide. The IRC proposes that such an Interconnection obligation be developed through an ERO-coordinated technical team.

The IRC agrees with the Commission’s direction of having unambiguous measurable objectives and definitions for standards and believes that the approach it proposes in these comments is consistent with this goal. The IRC supports identifying a clear IFR objective be it a frequency-based objective or a contingency magnitude based objective. By defining a clear objective both the Commission and the ERO can objectively assess the adequacy of existing levels of frequency response, and this information will facilitate the goal of ensuring that frequency response promotes system reliability, because it will provide for ongoing expected levels of response. This approach will also ensure that technical parameters and underlying issues relevant to frequency response are considered, which will in turn, support the maintenance of future frequency response at levels equal to or greater than existing levels.

**B. The Commission And NERC Must Re-Think The Concept Of Obligating BAs to Provide Frequency Response**

An important issue that needs to be re-visited is the issue of who should be obligated to provide frequency response. The IRC believes that once an objective IFR obligation is defined by the ERO, then that objective should be allocated to the providers of that response.

Traditionally, the providers were the control areas (now known as BAs) because the control areas had power over the resources under their jurisdiction. In today's environment however BAs do not have that control. The IRC believes that in the current environment, where a growing number of supply resources do not have governor controls and many others are restricted from providing primary response, the Industry must not casually accept the concept of obligating BAs to provide frequency response. The IRC offers the extreme case where no units have any governors. Obligating the BAs would have no impact on the provision of frequency response. The BAs neither design the units, nor do they themselves create such a response. In the less extreme but more probable case where suppliers do not maintain their governors, the BAs are similarly impaired from complying with a frequency response obligation. The IRC points out that the role of the BA is not to create frequency response. Rather the role of the BA is to ensure that the frequency response that is provided by the primary control action of its supply resources is adequate to arrest frequency decline and stabilize the system following a disturbance or to react to changes in Interconnection frequency during normal operation. This BA role requires coordinating (a) the primary response production with (b) the BA's own control obligation with (c) the needs of sharing in both short-term (primary control) frequency needs and with (d) longer term (secondary control) frequency needs. This coordination has been and continues to be done through the frequency bias setting used in the BAs Area Control Error ("ACE") calculation. The BAs must, of course, include a frequency bias setting in their ACE equations. The bias setting ensures that the primary response provided by the governors is not counteracted by secondary (regulation) controls. Requirements in the current BAL-003 would still be useful.

Moreover, today thermal units (and hydro resources in some regions) provide most of the frequency response. However, as the thermal units are decommissioned and replaced by renewable assets, the power system will have an equivalent amount of supply capacity but may have less primary response unless these new resources install the necessary facilities and have the capability to actively supply their share of the IFR. While thermal (and hydro) generators have historically been the primary source of Frequency Response, the focus of the allocation of IFR should not be limited to generators, but should recognize demand-side resources, as well as storage batteries and flywheels. To the extent these demand-side and storage service providers can and do provide primary response to changes in frequency, those providers should be properly accounted for in any frequency response objective. A global generator-centric standard, as suggested by the Commission, would be one such idea, but the IRC must raise the concern that such an approach is counter to many of the state-mandated renewable portfolio mandates that require installation of resources that do not necessarily have governors.. The key point is that it is not reasonable to place the BAs in the middle of the obligation. Any primary control standard must be based on the capabilities of the Functional Entities that the standard applies to.

### **C. The Issue Of Establishing An Appropriate Frequency Bias Setting Should Be Addressed**

Further, it is worth highlighting that a major objective of a one percent of peak load as a minimum Frequency Bias Setting was to ensure that “secondary response” could be produced whenever there was a call for “primary response” and was not meant as a one percent primary response<sup>2</sup>. The Industry recognized that any shortfall in primary response (*i.e.*, between what the setting calls for and what the resources provide) will show up as a change in ACE and thus be

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<sup>2</sup> BAL-003-0.1b Requirement 5 obligates a Balancing Authority to set its Frequency Bias Setting to at least 1% of its estimated yearly peak demand to ensure that the Automatic Generation Control does not withdraw generation following the governor response of generating units.

handled by the secondary controls (*e.g.*, automatic generation control (“AGC”)). Ensuring that a setting is greater than the response ensures that additional energy will be forthcoming from AGC to further support the Interconnection frequency. The idea that the frequency bias setting would equal the natural frequency response at all times is an idealized state, and to make the setting close to the expected response would risk backing off resources in those instances when the response is greater than the bias setting. The IRC supports the current standard concept of overbiasing the system, but questions whether the one percent level is the proper amount or whether it is even the only way to address the concern.

**D. A Frequency Response Standard Based On A Capacity Obligation Appears Preferable To One Based On An Energy Obligation**

Likewise, there is a need to examine whether a true frequency response standard should be a capacity obligation or an energy obligation. Capacity obligations are easier to enforce than energy obligations. It is easier and clearer to check that a resource has a governor and can respond automatically and proportionally to frequency changes outside a set bandwidth than it is to determine if the device is used. It is more difficult to properly evaluate the energy produced for any given event, given that the resource may be in a mechanical transition phase (valves opening or closing) or responding to AGC (thus moving as fast as possible and not distinguishable between primary and secondary responses). Pre-operational qualifications and tests can work as a surrogate energy measure, recognizing that the system needs to rely on average responses, not individual responses.

**E. A Number Of Factors Should Be Taken Into Consideration In Connection With Any Primary Control Response Obligation**

One last complication is the fact that a provider’s frequency response as measured for a given event is not a linear function. Provider response changes as a function of demand and

system conditions. Fully loaded generators provide less response than partially loaded generators. Ramping generators provide no measureable response. The Interconnection needs also vary by season and time of day. The IFR during minimum load conditions is significantly different than the IFR during maximum load conditions. All of these factors must be considered in connection with establishing a primary control response obligation.

In light of the above, the IRC respectfully suggests the following Implementation Plan:

1. The Commission order that the BAL-003 as it relates to the frequency bias setting requirements be revised to focus on the minimum frequency bias setting and to eliminate the current explanatory text note included in BAL-003. Because this fundamental technical content will not change, the new BAL-003 can be updated quickly.
2. The Commission indicate its preference for a frequency-based or a contingency based Interconnection objective, and assign the ERO to use the data that it currently has to create the basis for an IRF SAR. The IRC suggests that this research work initially be done independent of the Standards Development Process but that a SAR be proposed by no later than the third quarter of 2011.

## **II. CONCLUSION**

In summary, the IRC reiterates the following important points for the Commission to take into account the following in making any decisions in this proceeding:

- The Interconnections have sufficient Frequency Response at this time.
- The focus of BAL-003 should be to properly define the roles and obligations for:
  - Interconnection Frequency objective
  - BA setting in ACE
  - Construction of Primary Control Service providers
  - Response obligations of those Primary Control Service providers

- Similar to the Control Performance Standard (BAL-001-0.1a R1), BAL-003 should be “tunable” such that the Interconnection target response can be adjusted as the industry evolves.
- The BAL-003 standard should lay the groundwork for informed decisions and be “tunable” such that performance targets change as risk changes.

WHEREFORE, the IRC respectfully requests the Commission to take into consideration the above comments.

Respectfully submitted,

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## **CERTIFICATE OF SERVICE**

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for 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 14<sup>th</sup> day of October, 2010.

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