

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

Frequency Regulation Compensation in the            )            Docket Nos. RM11-7-000  
Organized Wholesale Power Markets                )            AD10-11-000

**COMMENTS OF ISO/RTO COUNCIL**

The ISO/RTO Council (“IRC”)<sup>1</sup> submits the following comments in response to the February 17, 2011 Notice of Proposed Rulemaking (“NOPR”) issued by the Federal Energy Regulatory Commission (“Commission”) regarding Frequency Regulation Compensation in Organized Wholesale Power Markets.

**I. BACKGROUND AND SUMMARY OF IRC COMMENTS**

**A. Background on the NOPR**

On February 17, 2011, the Commission issued a NOPR to establish a frequency regulation compensation scheme for the RTO and ISO markets. The intent is to ensure that

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<sup>1</sup> The IRC is comprised of the Alberta Electric System Operator (“AESO”), the California Independent System Operator Corporation (“California ISO”), Electric Reliability Council of Texas (“ERCOT”), the Independent Electricity System Operator of Ontario, Inc., (“IESO”), ISO New England, Inc. (“ISO-NE”), Midwest Independent Transmission System Operator, Inc., (“MISO”), New York Independent System Operator, Inc. (“NYISO”), PJM Interconnection, L.L.C. (“PJM”), Southwest Power Pool, Inc. (“SPP”), and New Brunswick System Operator (“NBSO”). Because they are not subject to the Commission’s jurisdiction, AESO and ERCOT do not join in these comments. Further, these comments do not constitute agreement or acknowledgement by IESO or NBSO that they can be subject to the Commission’s jurisdiction. 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 complements the other, thereby resulting in efficient, robust markets that provide competitive and reliable service to customers.

pricing and compensation of frequency regulation is just and reasonable and not unduly discriminatory or preferential.<sup>2</sup>

To that end, the Commission proposes that regulation resources receive two-part payments – for opportunity costs and performance. The first part of the payment – for opportunity costs – would compensate regulation resource owners for the energy market revenues they forego by providing frequency regulation service. The opportunity cost would be included in the clearing price of the capacity for the regulation service. The second part of the payment – for performance – would compensate regulation resource owners based on their resources’ actual response (in up and down movement in MW) when their resources are called upon. The NOPR also proposes that performance payments take into account a resource’s accuracy in providing Area Control Error (“ACE”) correction.<sup>3</sup> The Commission seeks comments, as well, on the appropriateness of retaining net energy payments to regulation resource owners in light of the proposed two-part payment.<sup>4</sup>

The NOPR reflects, more generally, the Commission’s goal of ensuring that market rules do not create barriers to the participation of all resource types (including those utilizing new technologies) in wholesale ancillary service markets.

## **B. Summary of IRC Comments**

The IRC supports the Commission’s objective of ensuring that market structures and compensation rules encourage the use of a full range of qualified resources to provide high-

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<sup>2</sup> NOPR at P 34.

<sup>3</sup> NOPR at PP 34-41.

<sup>4</sup> NOPR at P 41.

quality system control. The IRC's comments urge the Commission to reflect in its final rule several principles that are consistent with that objective, namely:

- Regulation compensation mechanisms should be designed to provide an incentive to follow ISO/RTO control signals, rather than being based solely on rewarding ACE correction efforts. RTO/ISO control signals are, by their nature, designed to ensure compliance with a host of reliability requirements (such as CPS I and II). A compensation mechanism limited solely to moving ACE to zero is too narrow and, as explained below, could be counterproductive to ensuring overall compliance with relevant reliability standards.
- ISOs/RTOs need to use an integrated set of regulation resources reflecting varying characteristics, including the duration as well as the rapidity of response, and the final rule should permit such recognition in developing compensation mechanisms.
- An ISO/RTO-calculated opportunity cost of the marginal resource should be included in a uniform regulation clearing price, and net-energy billing features of existing compensation rules may not be redundant under the NOPR's proposals.
- More generally, the Final Rule should also afford flexibility to enable ISOs and RTOs to develop cost-effective frequency response solutions that reflect their varying assets, market structures and BAA size, as well as the evolving technologies and capabilities of regulation resources.

The IRC proposes below specific language changes to the proposed rules which, if adopted, would address these concerns.

## II. COMMENTS

### A. **Compensation for Regulation Should Incentivize Compliance with Operational Instructions That Permit ISOs/RTOs to Comply with Reliability Standards, Rather Than Being Focusing Narrowly on ACE Correction Efforts**

The IRC supports performance-based payments for all resources that support frequency regulation. However, frequency regulation compensation mechanisms should be designed to provide an incentive to follow operational instructions that facilitate compliance with the governing, multi-faceted reliability standards, rather than focusing narrowly on rewarding ACE correction efforts.

The proposed definition of frequency regulation in the NOPR is focused solely on ACE, which is only one component of regulation service. Indeed, the purpose of regulation is not to correct system frequency. Rather, it is to manage the deviations incurred by short-term mismatches between supply and demand. This is a larger task and is what is required to comply with NERC control performance standards. To effect this result, regulation markets enable Balancing Authorities (“BAs”) to competitively procure regulation resources to ensure compliance with the North American Electric Reliability Corporation’s (“NERC’s) control performance standards CPS 1 and CPS 2 and the BA Ace Limit (“BAAL”), a more complex objective than managing ACE alone.

Indeed, a metric that is based on each individual BA Area (“BAA”) achieving a zero ACE would be inconsistent with the interconnected nature of the grid, unduly costly and would not serve reliability. The control of the bulk power system has always recognized the dependencies between BAAs. This recognition is demonstrated by the inclusion of the frequency bias setting in the ACE equation. The bias setting is designed to take advantage of inter-area support by allowing energy to flow from one or more areas into another area experiencing supply deficit.

As noted, frequency regulation is designed to manage the short term-mismatches between supply and demand. While the frequency deviations are approximately the same for all BAAs, mismatches between supply and demand are not. However, the short-term variations average out to zero. The key point is that response is driven by system needs, and to effectively meet those needs, rapid response is not as critical as “smart” response. Smart response aligns the response characteristics of all available resources with system needs to provide the most efficient means of managing frequency regulation in each BAA.

To understand the importance of smart response, it is instructive to consider it in the context of the Commission's example described in paragraph 17 of the NOPR. A resource with rapid response capability can provide significant response to the ACE (*i.e.*, following the ACE both up and down). However, a significant part of that response may be unnecessary if the response was strictly utilized for a zero-averaging ACE. Alternatively, the response could provide significant value if it is directed against a non-zero averaging ACE, because in that case it would be utilized against the overall system needs rather than to merely "chase" ACE, which, as only one part of the operational equation, does not produce the most effective operational response. This example demonstrates that regulation services should not be tailored solely to provide rapid response or ACE-chasing.

Finally, it should be noted that there is not a direct correlation between the correction of one BAA's ACE and frequency correction. For example, consider a BAA that is exhibiting a large ACE (*i.e.*, is over-generating) when frequency is low. Correction of that ACE by reducing generation will exacerbate the frequency situation. In order to provide beneficial operational responses, the relationship between frequency and ACE must be recognized (as it is in NERC's Control Performance Standard). It is this relationship that facilitates beneficial operational responses that correct, rather than compromise, frequency.

**B. The Final Rule Should Recognize That ISOs/RTOs Need to Use an Integrated Set of Regulation Resources Reflecting Varying Characteristics, Including the Duration, As Well As the Rapidity, of Response, and Permit Corresponding Flexibility in Developing Compensation Mechanisms**

The final rule should recognize that ISOs/RTOs need to use an integrated set of regulation resources reflecting varying characteristics, including the duration as well as the rapidity of response.

While the IRC observes that rapid response resources can provide value to system operations and ancillary services markets, critical capabilities for frequency response include the ability to follow control signals and to sustain that response. In developing compensation schemes, all of these capabilities, not simply speed of response, must be considered. For example, certain resources with rapid response capabilities, including batteries, have limited capability to sustain their outputs relative to slower response resources that can sustain their responses.

Rapid response resources are potentially valuable tools when used in concert with resources having other characteristics, to provide a complementary arsenal of operating capabilities to address system needs that arise in different regions and during different operating conditions. Just as the rate of response is an important tool in managing regulation requirements, sustainability is also an important consideration in the determination of regulation requirements.

For this reason, it is important that, if the Commission issues a final rule that specifically requires compensation for “frequency regulation,” the final rule not limit compensation to those regulation resources’ “contribution to correcting the relevant area’s Area Control Error (when the resource is accurately following the dispatch signal).” That is, ISOs and RTOs should be allowed to develop frequency regulation compensation rules that are appropriate for each individual region, in light of the mix of regulation resource types that are necessary to achieve reliability standard compliance in that region.

To that end, the IRC recommends the following change (shown in redline) to proposed Section 35.28(g)(3):

Frequency regulation compensation in ancillary services markets.  
Each Commission-approved independent system operator or regional transmission organization that has a tariff that provides for the compensation of frequency regulation must provide such

compensation based on the actual service provided, including a capacity payment that includes the marginal unit's opportunity costs and a payment for performance that reflects ~~a~~ the correlation between a frequency regulating resource's response and the control signals of the pertinent independent system operator or regional transmission organization's contribution to correcting the relevant balancing area's Area Control Error (when the resource is accurately following the dispatch signal) when providing regulation service.

**C. An ISO/RTO-Calculated Opportunity Cost Of The Marginal Resource Should Be Included In A Uniform Regulation Clearing Price, And Net-Energy Billing Features Of Existing Compensation Rules May Not Be Redundant Under The NOPR's Proposals**

The IRC supports the proposal to include the opportunity cost of the marginal resource in a uniform regulation clearing price for regulation service. However, market participants may find it difficult to estimate opportunity costs due to the fact that system conditions and resulting market outcomes are not transparent to individual participants. Because this information is transparent to ISOs and RTOs, they are best positioned to estimate a resource's cross-product opportunity costs. An ISO or RTO is also in the position to recalculate those costs if system conditions and economic dispatch patterns change.

It should be noted, however, that this calculation is not necessary in regions that co-optimize energy and ancillary services. Co-optimization of energy and regulation in real-time markets incorporates opportunity costs, within the context of the economic dispatch function, across products and time periods.

The IRC also observes that existing tariff provisions regarding compensation for energy provided are not redundant under the NOPR's proposals. Existing provisions for net-energy billing allow resources such as demand response providers and storage devices, including electric vehicles, to provide regulation services to the ISO or the RTO at the retail level without having to participate at the wholesale market level, which is a difficult and potentially expensive

undertaking for such resources. Accordingly, it is important that the final rule allow the flexibility to retain net-energy billing in regional tariffs.

**D. The Final Rule Should Afford Flexibility to Enable ISOs and RTOs to Develop Cost-Effective Frequency Response Compensation Solutions That Reflect Their Varying Resources, Market Structures and BAA Size, as Well as the Evolving Technologies and Capabilities of Regulation Resources**

In addition to the specific flexibility requested above, the IRC also asks that the final rule provide an ISO or RTO the flexibility to develop compensation mechanisms that properly account for the diversity and characteristics of resources within its market, varying market rules, and the size of a particular BAA. With respect to the last factor, for example, smaller BAAs may require tighter controls than larger BAAs that have more resources to manage system variations. Flexibility is also justified on the basis that the technologies and capabilities of regulation resources will continue to evolve.

Permitting regional flexibility will ensure that a region's regulation compensation rules account for the diversity of market characteristics in the different market structures in a manner that provides appropriate financial incentives that promote resource behavior consistent with system needs. The imposition of prescriptive and uniform frequency regulation compensation rules may not provide response incentives consistent with operational needs, and could effectively circumscribe the operational tools available to the market operator. Rules that provide concerted, coordinated response of all available capabilities will enable smart responses that produce efficient operations and market outcomes.



### III. CONCLUSION

The IRC respectfully requests the issuance of a final rule that is consistent with these comments.

Respectfully submitted,

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