

**Joint Comments of the Indicated Energy Storage Operators**  
**Item 4 – Regulation Market: Tariff and Manual Changes**  
**PJM Markets and Reliability Committee**  
**April 27, 2017**

The AES Corporation, Intelligent Generation, Invenergy Storage Development LLC, and NextEra Energy Resources, LLC, together with the Energy Storage Association, submit these joint comments regarding a series of amendments to the Tariff, Operating Agreement, and Manuals being presented for endorsement by PJM to implement a package of changes to the Regulation market reflected in a solution package endorsed by the Regulation Market Issues Senior Task Force (“RMISTF”) in February 2017. Each of our companies and organizations worked closely with stakeholders participating in the RMISTF and we appreciate the time and attention given to PJM and the stakeholder community to issues in the Regulation market. For the reasons below, however, we cannot support the Tariff, Operating Agreement and Manual amendments as proposed by PJM.

***“Pegging” of Regulation Resources***

The package of amendments proposed by PJM work together to establish new rules defining the relative value of, and compensation for, traditional (“RegA”) and dynamic (“RegD”) resources participating in the Regulation market. This relative value, however, is a function of the performance expected by PJM from Regulation resources. As discussed in a complaint filed with the Federal Energy Regulatory Commission by the Energy Storage Association (“ESA”) on April 13, 2017,<sup>1</sup> this performance includes sustained periods of dispatch in a single direction, referred to by PJM as the “pegging” of Regulation resources. This “pegging” of the Regulation signal has been occurring on an almost daily basis for up to an hour at a time, predominantly in the down direction. In other words, Regulation resources are routinely being used to remove excess generation from the system for sustained periods of time.

While the ESA complaint is focused on changes already made by PJM to the Regulation market, the “pegging” of Regulation resources is equally relevant to the amendments currently proposed by PJM. The operational characteristics of limited-energy resources following the RegD signal are not compatible with the long periods of sustained dispatch occurring during “pegging” events, just as the ramp limitations of traditional resources following the RegA signal are not compatible with the speed of response demanded of RegD resources. Designing Regulation market requirements that penalize limited-energy resources for their relative inability to be available to PJM during “pegging” events inherently discriminates against those resources. The amendments proposed by PJM do just that by codifying methodological changes that allow PJM to reduce the relative value of RegD resources in the Regulation market.

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<sup>1</sup> Available at <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14559241>.

We appreciate the operational challenges faced by PJM with respect to over-generation resolved by the “pegging” of Regulation resources. However, these operational challenges do not justify unduly discriminating against limited-energy resources through changes to the Regulation market design. To the extent PJM needs resources to be available almost daily to reduce generation on the system for 30 to 50 minutes at a time, then it can and should design a product to procure that service from flexible resources. Alternatively, PJM can procure a larger volume of Regulation resources to ensure that it has adequate response without sustained “pegging” of Regulation resources.

### ***Mileage in Regulation Settlements***

With respect to the specific Tariff and Operating Agreement changes proposed by PJM, the settlements calculation for Regulation performance payments would be amended to replace mileage with the Regulation Marginal Rate of Technical Substitution. This proposal violates FERC’s directives to PJM on compliance with Order No. 755. During that proceeding, PJM proposed using a benefits ratio in the settlements calculation instead of actual movement in response to Regulation signals. FERC rejected that proposal:

First, we find that PJM has failed to provide sufficient evidence that the ratio of control signals [i.e., benefits factor] is an accurate measure of a resource’s later-dispatched mileage or performance. Second, this ratio of control signals is signal-type specific. Therefore, the Regulation Market Performance Clearing Price is affected by only *the estimated mileage of the marginal resource, and any deviation by the resource in real-time would require a true-up*, absent in PJM’s proposal. Finally, we find that the regulatory text adopted by Order No. 755 is clear: ‘Each Commission-approved independent system operator or regional transmission organization that has a tariff that provides for the compensation for frequency regulation service must provide such compensation based on the *actual service provided*, including ... a payment for performance that reflects the *quantity of frequency regulation service provided* by a resource when the resource is accurately following the dispatch signal.’ By failing to include actual mileage in the settlement equation, PJM appears to be inconsistent with Order No. 755.<sup>2</sup>

PJM’s proposed revisions to the Tariff and Operating Agreement violate this directive. The Regulation Marginal Rate of Technical Substitution represents PJM’s *estimation* of a resource’s relative contribution to the Regulation requirement based on *historical* performance. As with the proposal rejected by FERC in 2012, PJM fails to provide any adjustment in the settlements calculation for *actual* performance by a resource in real-time.

Compounding this problem, PJM’s published Regulation Rate of Technical Substitution (“RTS”) curves base the estimated value of storage resources on a hypothetical modeled unit.

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<sup>2</sup> *PJM Interconnection, L.L.C.*, 141 FERC § 61,134, at P 46 (2012) (internal citations omitted; emphasis added).

To the extent a particular resource has characteristics that deviate from the hypothetical unit, such as shorter or longer output capabilities, those actual characteristics are ignored in the market clearing engine. This can result in RegD resources that are capable of maintaining full output for the entire scheduled hour being valued less, sometimes much less, than a RegA resource. How PJM arrives at this result is not described in the Tariff or Manuals. We cannot support a Tariff filing that provides storage resources with lower pay for providing equivalent or superior services, much less one that fails to provide for transparency in how PJM defines the relative value of participating resources.

### ***Inadequacy of Tariff Language***

Finally, the amendments proposed to the Tariff and Operating Agreement are inadequate to meet the filing requirements of the Federal Power Act. PJM is required to set forth in its tariffs all practices that significantly affect the rates, terms and conditions of service that are realistically susceptible of specification. While PJM proposes tariff language reflecting several new definitions and references to the RegA and RegD signals, this language merely refers to the Manuals for details as to how PJM will calculate the RTS curve and develop the Regulation Signals. As discussed at length in the ESA complaint, these aspects of the Regulation market design define the requirements and compensation for participating resources. The methodology by which PJM calculates the RTS curve and the parameters governing the design of the Regulation Signals therefore must be set forth in the Tariff and/or Operating Agreement.