

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

<b>Utilization in the Organized Markets of Electric Storage</b>	)	<b>Docket No. AD16-25-000</b>
<b>Resources as Transmission Assets Compensated</b>	)	
<b>Through Transmission Rates, for Grid Support Services</b>	)	
<b>Compensated in Other Ways, and for Multiple Services</b>	)	
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**COMMENTS OF NATIONAL HYDROPOWER ASSOCIATION ON THE  
NOVEMBER 9, 2016 TECHNICAL CONFERENCE**

The National Hydropower Association (NHA) appreciates this opportunity to provide input to the Federal Energy Regulatory Commission (FERC or Commission) in response to the energy storage discussion held during the November 9, 2017 technical conference.

NHA is the hydropower industry’s national association and is dedicated to advancing the interests of conventional hydropower, pumped storage, conduit power and marine energy technologies. NHA’s 220+ members include utilities, independent power producers, project developers, equipment manufacturers and service providers.

Our comments include specific input from NHA’s Pumped Storage Development Council, which works to address the regulatory, market, and business needs for new pumped storage development.

**I. NHA’s Interest in the Technical Conference**

NHA believes that existing pumped storage projects and proposed new developments are not properly valued and compensated adequately or uniformly for the grid benefits and services they can and do provide in the various markets across the country.

Despite this, the hydropower industry is embarking on a re-investment in the existing pumped storage fleet; and developers are investigating dozens of new projects opportunities. Indeed, the future for pumped storage is one of sustained and potentially significant growth.

In its recently released Hydropower Vision Report (Report), the Department of Energy (DOE) documents that pumped storage hydropower is not properly valued, which is ultimately stifling project deployment. This affirmation is important and noteworthy as the DOE Report also investigated a range of growth scenarios, finding that pumped storage can increase in both the near term (to 2030), by 16.2 GW, and in the longer term (to 2050), by an additional 19.3 GW,

for a total of 35.5 GW deployed by 2050.<sup>1</sup> Put simply, the resources are there and the valuation question is critical to unlocking this potential.

Equally important, the DOE determined that pumped storage this growth potential is correlated to, and facilitates growth driven primarily by modeled growth in other variable renewable generation sources, such as wind and solar, and by the inherent flexibility of pumped storage is highly valuable in and its ability to provide needed operating reserves and other essential grid reliability services.

Other key market drivers for large grid-scale pumped storage include: governmental focus on initiatives to reduce carbon emissions; the need for grid infrastructure modernization; and the need to improve the resilience of the electrical grid to unforeseen interruptions<sup>2</sup>; as well as the shutdown of large nuclear and coal plants that provide significant system inertia and grid balancing.

However, the Report highlights that while pumped storage growth potential is available, energy policy, regulatory and market reforms are needed in order to fully realize the potential. Citing the Report, the DOE stated:

While the hydropower industry is mature in terms of established facilities and technologies, many actions and efforts remain critical to further advancement of U.S. domestic hydropower as a key future energy source. Continued technology development is needed to increase efficiency, improve sustainability, and reduce costs. **Improvement in the way markets value grid reliability services, air quality and reduced GHG emissions, and long asset lifetimes can increase revenues.**<sup>3</sup> (emphasis added)

The Report goes on to state:

**Inherent market and regulatory challenges must be overcome to realize hydropower's potential to improve grid flexibility and facilitate integration of variable generation resources.** The full valuation, optimization, and compensation for hydropower generation and ancillary services in power markets is difficult, and not all benefits and services provided by hydropower facilities are readily quantifiable or financially compensated in today's market framework. In traditional and restructured markets, as well as in emerging environmental markets, many hydropower services and contributions are not explicitly monetized. In some cases, market rules undervalue operational flexibility, which is important to maintaining grid reliability and is a prime attribute of hydropower.<sup>45</sup>

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<sup>1</sup> Hydropower Vision: A New Chapter for America's 1<sup>st</sup> Renewable Electricity Source; Executive Summary P.4; United States Department of Energy; 2016 (<http://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source>)

<sup>2</sup> Vision Report Executive Summary P.12

<sup>3</sup> Vision Report Executive Summary P.4

<sup>4</sup> Vision Report Executive Summary P. 4

The hydropower industry suffers from competitive disadvantages in this marketplace versus other energy storage technologies. These disadvantages range from preference state tax benefits to market procurement policies that specifically limit or exclude pumped storage. This inequity does not serve the industry, project developers, customers, or those responsible for maintaining the electric power grid.

As such, NHA believes FERC is the appropriate agency to proactively address and adopt market policies on energy storage and ancillary services provided by pumped storage (as well as conventional hydropower projects). We look forward to working with the Commission on any follow-up from this technical conference and on other opportunities that arise.

## **II. Specific Comments in Response to the Technical Conference and Discussion**

To begin, NHA applauds the Commission and staff for holding the technical conference to examine the utilization of energy storage and issues surrounding compensation for energy storage providers. NHA and industry members recognize there was a significant effort made in the preparation for the technical conference, as evidenced by the detailed background comments provided and proposed questions provided ahead of time in the agenda.

However, throughout the meeting, more opportunities for panelists to have open-ended discussions and to provide real world examples of variable energy integration, grid reliability issues and, in particular, how existing grid-scale storage is being used to provide essential reliability services today – often without compensation – would have been useful. NHA believes more emphasis on these issues would have benefitted the Commission and staff as they continue to work on this initiative.

More interactive dialogue between the Commission staff and the panelists, and among the panelists themselves, would have also allowed a deeper analysis of, and put into greater focus, some of the issues and the complexities. For example, the discussions centering on the needs and opinions of the ISO/RTO community appeared to imply that overall the markets are working appropriately and that enhanced or modified market tariffs are not necessary. However, in conversations between NHA, its members, and various representatives of RTOs and ISOs responsible for the day-to-day system operations, the association has heard differently.

As a result, further investigation of the concept of a reverse demand response tariff as discussed in NHA's comments in response to the Commission's request for comments issued earlier this year in Docket Number AD16-20-000, did not seem to be warranted, as the markets are presumed to be negative and storage providers will be paid for absorbing energy.

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<sup>5</sup> NHA also directs the Commission and staff to Chapter 2, Subchapter 2 of the Hydropower Vision Report titled "The Role of Hydropower in the Grid" for more information on the benefits and services both conventional hydropower and pumped storage projects provide. P.98

All storage technologies have appropriate applications on the grid, and evolving market rules and structures should create a level playing field across the technologies. However, as the discussions progressed during the technical conference the broad range of energy storage technology capabilities became blurred.

For example, many questions and discussions focused on the distributed storage (e.g. batteries) community and the fast reacting, but limited duration capabilities, of these types of energy storage. Not all of the issues and concerns that apply to distributed storage technologies apply or impact existing or proposed grid-scale pumped storage projects. NHA is concerned that there could be the misconception that existing market structures satisfactorily compensate existing and new pumped storage projects, with the unintended consequence that any Commission action on market rules or tariffs will focus solely on distributed storage technologies to the exclusion of pumped storage projects.

### **III. Conclusion**

NHA thanks the Commission for the opportunity to comment on the technical conference and commends FERC for holding the event. Properly addressing these issues is a high priority for NHA, its members, and the hydropower industry at large. We believe that as the true technical capabilities of pumped storage are fully understood, the case for market changes and more appropriate compensation is clearly evident.

In addition to these comments, NHA will be filing further, and more detailed, comments on the NOPR on Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators in Docket Numbers: RM16-23-000; AD16-20-000.

Respectfully submitted,



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