Brookfield

Brookfield Renewable
41 Victoria Street
Gatineau, Québec J8X 2A1

Tel 819.561.2722
Fax 819.561.7188
www.brookfieldrenewable.com

Brookfield Renewable Comments on "Valuing Fuel Security" in PJM

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Regarding PJM's Valuing Fuel Security initiative and the corresponding stakeholder process, PJM has offered stakeholders an opportunity to provide comments regarding fuel security. As a result, Brookfield Renewable ("Brookfield") would like to take this opportunity to make the following comments.

Brookfield firmly believes that the "fuel diversity" provided by certain resources significantly enhances fuel security in PJM. Furthermore, "fuel diversity" is very important for grid resiliency and reliability. As a result, Brookfield believes that PJM should explicitly value the "fuel diversity" provided by resources like hydro.

PJM already recognizes the reliability, resiliency and flexibility of hydro. In March of 2017, PJM issued a study on the "Evolving Resource Mix and System Reliability" where it discussed the unique attributes of hydro. In this Study, PJM ranked hydro very high in regards to reliability, resiliency and flexibility. As a result, PJM and Brookfield seem to be aligned on the unique value of hydro.

However, it is increasingly clear that "fuel diversity" is not explicity valued in PJM markets. Brookfield believes that resources that add "fuel diversity" should be valued in PJM markets since they provide a critical component for achieving resiliency and reliability.

Brookfield offers the following recommendations for PJM's consideration:

1. PJM should undertake further actions related to improving market rules to better recognize the value of "fuel diversity".
2. PJM should require that "fuel diversity" be recognized as a key element of reliability and resiliency.
3. PJM should require that indigenous generation like hydro be recognized as a key element of reliability.
4. PJM should recognize that hydro with storage/pondage is a specific resource that adds to PJM fuel security.
5. PJM should acknowledge that hydro already undergoes a rigorous analysis with respect to fuel security. This is done annually prior to each BRA when hydro operators such as Brookfield provide to PJM their methodology for determining Capacity Performance quantities. This methodology encompasses a detailed analysis of historical water flows and storage/pondage assumptions with its methodology.

Below is a summary of the significant "fuel diversity" benefits offered by hydro:

1. Hydro is already important for grid resiliency. For example, hydro can help mitigate the impacts of a catastrophic failure of the natural gas pipeline system. Additionally, hydro can provide Black Start Service for system restoration.

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2. Hydro has a highly predictable fuel source and a long operational history.
3. Hydro has storage and pondage capability allowing it to serve as energy storage and provide energy during times of fuel scarcity.
4. Hydro is an indigenous resource. As a result, hydro directly contributes to national and regional fuel independence.
5. With its storage and pondage capability, hydro differs greatly from other renewable resources, like wind and solar. As a result, hydro can play a key role in maintaining system reliability.
6. The fuel diversity that hydro provides is also an effective hedge against volatile natural gas prices and potential future carbon price volatility.
7. Hydro is a capacity resource with significant longevity. Hydro is essentially an irreplaceable capacity resource since there is a finite quantity of dams, which creates significant barriers to entry for new hydro. As a result, most existing hydro will likely be in existence 100 years from today.

In conclusion, Brookfield remains optimistic that future PJM market rules will explicitly recognize the "fuel diversity" and fuel security value that hydro brings to bear. Furthermore, as a fuel diverse and fuel secure resource, hydro has a clear role to play with respect to enhancing PJM resiliency going forward.

Sincerely,

Stephen Kelly
Director, Regulatory Affairs
Brookfield Renewable
301-706-7912