TRANSMISSION PLANNING FOR MASSACHUSETTS POLICY MAKERS

Transmission that Lowers Ratepayer Impact and Advances Offshore Wind

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OPPORTUNITY

We commend Governor Baker, Massachusetts legislators, and other policy makers for their support of offshore wind energy in the state. This brief white paper is focused on the opportunity to lower offshore wind costs to ratepayers through smart planning, construction and operation of offshore wind transmission interconnection facilities. It reflects the consensus of the offshore wind transmission working group formed in connection with a collaboration between the Business Network for Offshore Wind, the leading US offshore wind industry group, and the Friends of the Supergrid, a European organization working to promote smart, next-generation transmission networks that support a clean energy future. Our working group concluded that a holistic approach to transmission will deliver offshore wind at a lower cost and benefit ratepayers with synergies that will make the grid stronger and more resilient. We develop these ideas briefly below and look forward to the opportunity to discuss them with you in more detail.

DISCUSSION

Legal Framework. Massachusetts law establishes a framework for the staged procurement of up to 1,600 MW of offshore wind through 2027. Under the law, offshore transmission costs will be included in the cost of offshore wind, but "the department of public utilities may authorize or require the contracting parties to seek recovery of such transmission costs" through a separate FERC-approved tariff, "to the extent the department finds such recovery is in the public interest."[1] There is a strong public interest case for treating transmission separately.

Goals. An offshore wind transmission design should: **1.** Minimize ratepayer costs. **2.** Connect a large variable generating resource to load while preserving reliability. **3.** Capture synergies that advance grid reliability and efficiency. 4. Minimize curtailment of offshore wind farms during regular operation and in the event of cable failures. A piecemeal approach to connecting offshore wind to the grid is not optimal or the lowest cost solution.

Benefits of Holistic Transmission System Design. An offshore transmission plan would evaluate the need to connect individual offshore wind projects at low cost, while also considering the long-term interest of ratepayers and grid reliability. For example, the ideal place to connect offshore wind could be an old substation and circuit near the coast that is at the end of its operational life and in need of refurbishment. By planning for the need to rebuild this facility together with the need to connect offshore wind, the ratepayer could obtain a new, flood-resistant substation and a re-built, higher-capacity circuit for a lower total cost than solving each of these transmission challenges (or "drivers") independently. An integrated, holistic design also would consider the future need to interconnect several wind farms and provide a low-cost way to accommodate future substation expansion and circuit upgrades as the wind projects are built, without overbuilding in anticipation of demand.

An offshore transmission plan would seek to maximize the standardization of offshore transmission equipment, such as voltages, transformers and offshore platform design. This would maximize US job opportunities as well as the use of standardized, manufactured and serially produced components help to lower costs. The transmission design should be developed in collaboration with wind farm developers to determine the parameters for these optimized components.
Today, U.S. submarine cable production is very limited. Standardizing cable voltages, transformers and other equipment would increase product volumes and begin to create the level of demand that will justify U.S. production and the corresponding employment opportunities.

Offshore transmission planning also would improve transmission systems operations and maintenance. Within the European market the lesson has been learned that submarine cable failures are a common occurrence and because they can take a long time to repair they cause significant wind farm down-time (i.e., loss of energy production) and financial loss. As has been seen in the German, Danish, Belgian and UK markets comprehensive transmission planning results in more reliable, lower cost submarine cable systems that are installed right the first time and receive appropriate preventative maintenance.

[1] HB 4568, Section 83C(d).

A marine transmission effort with focused responsibility for design, construction and operation of offshore transmission in one entity would have the expertise, personnel and equipment to maintain and repair offshore transmission cables. This capability would reduce the number of submarine cable failures and the duration of outages and their financial cost. As risks are reduced ratepayers will experience savings.

As a variable resource, wind energy has typically been credited with low capacity value. Holistic transmission planning would recognize the differences between offshore wind energy production profiles and other variable clean energy resources like terrestrial wind and solar. When coupled together and matched with demand response and/or storage, these resources do have the ability to provide reliable capacity. When ratepayers get more capacity value out of variable renewable energy resources they require less capacity from traditional fossil resources and save money. Planning from multiple perspectives and with a view to achieving multiple objectives will result in the best outcome. A piecemeal transmission approach cannot achieve these goals.

CONCLUSION

The long-term success of offshore wind in Massachusetts and the United States requires our industry to demonstrate steadily declining costs for the clean, reliable energy that consumers need. Planning and building the transmission interconnections for the state's new wind farms can contribute to the needed cost reduction, can deliver high quality jobs throughout the system life and cannot be an afterthought. There are many opportunities to reduce costs, create jobs, improve reliability and deliver greater value for consumers when transmission is done right.