Questions for the Record
Responses
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1. **What will be the impact of new offshore wind farms on the cost of electricity for ratepayers?**

The following presents three states' conclusions regarding the ratepayer impact of the offshore wind power project being built in each state.

Maryland: In 2017, the Maryland Public Service Commission (PSC) approved two offshore wind farms. According to the Commission, its "… independent consultant, Levitan & Associates, Inc., [determined] the net ratepayer bill impacts associated with the Commission's approval are projected to be less than $1.40 per month for residential customers and less than a 1.4 percent impact on the annual bills of commercial and industrial (C&I) customers – both less than the ratepayer impacts authorized by the enabling legislation, the *Maryland Offshore Wind Energy Act of 2013*."[1]

Massachusetts: In 2018, Massachusetts Electric Distribution Companies (EDCs) contracted with Vineyard Wind to procure 800 megawatts (MW) of offshore wind power. The Massachusetts Department of Energy Resources (DOER) evaluated the contract between Vineyard Wind and the EDCs', determining that "… at a total levelized price of 6.5 cents/kilowatt hour ("cents/kWh")(2017 Dollars) for energy and RECs, the Vineyard Wind offshore wind generation long-term contracts provide a highly cost-effective source of clean energy generation for Massachusetts customers. As shown in the EDCs' filings, on average, these contracts are expected to reduce customer's monthly bills, all else being equal, approximately 0.1% to 1.5%. The DOER additionally determined that "over the life of the contract, the 800 MW Vineyard Wind Project is projected to provide an average 1.4 cents/KWh of directs savings to ratepayers."[2]

New Jersey: Just last week, the New Jersey Board of Public Utilities (BPU) selected Ørsted Energy's 1,100 MW Ocean Wind project to be the first offshore wind farm to be built off that state's coast. In the BPU Order approving the project and its Annual OREC Price Schedule, the BPU addressed the project's ratepayer impacts, writing "…Expressed in 2019 dollars, ratepayer impacts as estimated … on a monthly bill are $1.46 for residential customers; $13.05 for commercial customers; and $110.10 for industrial customers."

[1] https://www.psc.state.md.us/wp-content/uploads/PSC-Awards-ORECs-to-US-Wind-Skipjack.pdf
[2] https://macleanenergy.files.wordpress.com/2018/08/doer-83c-filing-letter-dpu-18-76-18-77-18-78august-1-2018.pdf

2. Are there steps we can take to drive down the costs even further?

The cost of generating offshore wind power has fallen steeply and rapidly in recent years.[3] It has been estimated that between 2012 and 2017, the price paid for electricity from European offshore wind farms dropped by more than 50%.[4] And according to Bloomberg New Energy Finance New Energy Outlook 2017, the levelized cost of offshore wind power is expected to decline 71% by 2040, helped by development experience, competition and reduced risk, and economies of scale resulting from larger projects and bigger turbines.[5]

Even with these trends, there is more that can be done, and that is being done, to continue to reduce the cost of offshore wind power. Regarding the cost of the technology, according to the National Renewable Energy Lab (NREL), "major turbine OEMs continue to pursue larger offshore wind turbines; the most prominent example available today is GE's recently announced 12-MW Haliade-X turbine, but Siemens/Gamesa and Senvion have each announced 10-MW+ turbine ambitions while MHI Vestas has increased the nameplate capacity of its V164 platform to 9.5 MW. Turbine sizes in the 12–15 MW range are anticipated to be a key enabler of cost reductions that are driving the recent record-low auction results observed over the past 12–18 months."[6]

Beyond technological advances that will reduce cost, smart state policy can also reduce cost.[7] The Special Initiative on Offshore Wind (SIOW) and the New York State Energy Research and Development Authority (NYSERDA) together evaluated the impact of state policies and actions on the cost of offshore wind power. We found that costs can be significantly reduced by state policies and actions that 1) create a market of sufficient size and duration; and 2) reduce project risks. Policies such as offshore wind carve-outs and binding commitments to use offshore wind power in a state for a period of time (e.g., New Jersey's commitment to procure 3.5 gigawatts (GW) of offshore wind by 2030) create market certainty that generates competition all along the value chain and spurs investment in offshore wind supply chain facilities. Both competition and a local offshore wind supply chain dramatically decrease the cost of offshore wind power. Policies that reduce project risks – from long-term contracting and revenue mechanisms that reduce revenue risk to the seabed/wind/wave characterization of offshore wind sites – reduce financing costs and reduce hefty contingencies that drive costs up. Each of the states with major, active offshore wind programs (Massachusetts, Connecticut, New York, New Jersey, and Maryland) has implemented many of these types of policies. The result has been that

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[3] https://www.energy.gov/sites/prod/files/2018/09/f55/71709_V4.pdf
[4] https://www.windpowerengineering.com/business-news-projects/prediction-offshore-wind-costs-dropped-50-5-years
[5] https://www.res4med.org/wp-content/uploads/2017/06/BNEF_NEO2017_ExecutiveSummary.pdf
[6] https://www.energy.gov/sites/prod/files/2018/09/f55/71709_V4.pdf
[7] https://www.ceoe.udel.edu/File%20Library/About/SIOW/071516-New-York-Offshore-Wind-Cost-Reduction-Study-ff8.pdf

offshore wind costs are far lower than projects proposed in the U.S. only a decade ago. Continued smart, state policy will be an important determinant of cost reduction.

3. **Why is it important that the federal government provide funding for offshore wind workforce development? Why isn't this something that private companies can fund on their own?**

Seven states on the Atlantic Seaboard have collectively committed to procuring close to 20 GW of clean, cost-effective offshore wind power by 2030. SIOW recently quantified what this means for the businesses in the U.S. offshore wind power supply chain.[8] We found that manufacturing and installation of 20 GW of offshore wind presents a nearly $70 billion capital expediture revenue opportunity over the next decade to businesses supply turbines, cables, foundations, and substations. Indeed, to build 20 GW of offshore wind power:

- More than 1,700 offshore wind turbine generators, towers and blades will need to be manufactured and then installed in U.S. coastal waters;
- More than 5,000 miles of cable will be manufactured and installed to connect offshore wind farms and bring the power they generate to major U.S. population centers;
- More than 60 onshore and offshore substations will be manufactured and installed; and
- 1,750 subsea foundations on which turbines and offshore substations are mounted will be manufactured and installed.

U.S. worker training is essential to ensure that American workers participate in the manufacturing and installation of these components. Private companies are training workers in the states in which they have contracts to sell offshore wind power. For example, Vineyard Wind, the 800 MW offshore wind farm being built off the coast of Massachusetts, has announced that they are partnering with regional colleges to help train a new offshore wind workforce on Cape Cod, Nantucket and Martha's Vineyard. Vineyard Wind's multimillion commitment is in addition to the educational seed funding provided by the Baker-Polito administration in Massachusetts. Ørsted Energy has announced a partnership with Rowan College in New Jersey to build a trained workforce for New Jersey's emerging offshore wind industry and, along with Eversource, has committed $10 million to create a National Workforce Training Center (NWTC) in New York designed to offer curriculum and support services that will prepare the workforce to fill next-generation jobs in offshore wind and green energy as the industry continues to expand in New York.[9] Virginia, with no specific offshore wind policies and no near-term, large-scale offshore wind energy in development, is unlikely to see these types of private industry

[8] https://www.ceoe.udel.edu/File%20Library/About/SIOW/SIOW-White-Paper---Supply-Chain-Contracting-Forecast-for-US-Offshore-Wind-Power-FINAL.pdf

[9] Contingent upon selection of Ørsted Energy's proposed Sunrise Wind Farm, as the winner of New York State's first offshore wind solicitation.

workforce development investments in this initial 20 GW build-out, from now through 2030.

The federal government's funding of offshore wind job training provides the opportunity for American workers, like those in Virginia, to participate in this emerging industry. As a federal program, it is the surest path to ensure that worker training is not limited to the "first mover" states, where the first large-scale offshore wind farms are being built and that workers already familiar with working on the open ocean, such as in Norfolk and Hampton Roads, receive the (re)training they may need to work in this billion dollar industry.