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Chairman Lowenthal, Representative Van Drew, and the members of the House Energy and Mineral Resources Subcommittee, I appreciate the opportunity to testify on the benefits of offshore wind. My testimony today is on behalf Ørsted U.S. Offshore Wind, the world's leading developer and operator of offshore windfarms. We pioneered the technology, constructing the first offshore wind project, the 5 MW Vindeby project, off the coast of Denmark in 1991; and have established offshore wind here in the U.S. with our Block Island Wind Farm in 2016. To give you a sense of how far the industry has come in the relatively short history of offshore wind, we are nearing completion of the world's largest wind farm – the 1,200 MW Hornsea project – in the UK. All told, Ørsted currently has 25 projects under management worldwide comprising over 5,000 MW, with another 5,000 MW under construction. In the U.S., we have an attractive and geographically diverse set of offshore lease interests with the potential for 8,000-10,000 MW.

Ørsted is one of the three holders of federal offshore Renewable Energy Leases on the Outer Continental Shelf proximate to New Jersey. From this area, which lies 10 miles due east of Atlantic City, Ørsted plans to build the 1,100 MW Ocean Wind Project. The project was recently selected by the New Jersey Board of Public Utilities in connection with its first offshore wind solicitation. When completed in 2024, the project will provide enough

generation to serve over half a million New Jersey households and create more than 3,000 direct jobs annually during the development and construction phases. In addition to New Jersey, the states of Rhode Island, Connecticut, New York, Maryland and Virginia have all entrusted Ørsted to build their first offshore wind projects and bring the energy, economic, and environmental benefits of offshore wind to their states.

There is a tremendous, untapped potential for offshore wind as a homegrown, renewable and carbon-free source of energy, particularly along the Eastern Seaboard, where natural conditions for offshore wind could not be more ideal. First, the strong and steady winds that blow along the Eastern U.S. translates into more kilowatt-hours of production per dollar of invested capital. These world class wind conditions enable offshore wind to be price competitive with other forms of renewable and fossil-fired sources of generation. Second, the Outer Continental Shelf along the Eastern U.S. is characterized by shallow water depths amenable to more conventional fixed-bottom foundation solutions such as steel monopiles. Thousands of such systems have been deployed throughout European wind farms and can be safely, responsibly and cost-effectively utilized here. The third defining feature of offshore wind is that it can be built proximate to the major metropolitan areas located along the entire Northeast Corridor, tapping directly into these dense, populous and energy-intensive load centers.

The federal government's *Wind Vision*, a joint study by the U.S. Department of Energy and Department of Interior, found over 86 GW and 72,000 TWh of technical resource potential for offshore wind; to put it another way, this is nearly *double* the amount of electricity used by the entire U.S. And developing just 1% of the nation's technical resource potential for offshore wind could power more than 6.5 million homes.[1]

[1] U.S. Department of Interior and U.S. Department of Energy, *National Offshore Wind Strategy Report* (2016), available for download at < https://www.boem.gov/National-Offshore-Wind-Strategy/ >.
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Individually and collectively, state policymakers are making significant and long-term commitments to the development of a U.S.-based offshore wind market. Taken together, the U.S. now represents a 20 GW market through 2035, based strictly on the procurement commitments that are already enshrined in law. Indeed, several of the states that have led the offshore wind revolution in the U.S. are doubling-down – either having recently augmented their original goals (as in the case of New Jersey, New York, Maryland and Massachusetts) and/or are front-loading their targets towards near-term deployment (e.g., New York, Massachusetts).

In the remainder of my testimony, I will describe the economic, environmental and energy-related motivations behind this push.

Economic Benefits of Offshore Wind

One of the primary drivers behind the states' sustained and large-scale commitment to offshore wind is the potential to create, over time, an entirely new and significant U.S.-based heavy industry consisting of the following major elements.

First, offshore wind procurements including local content requirements will spur significant investment in a domestic U.S. supply chain. A prominent example of this is Ørsted's recently announced partnership with EEW, one of the world's leading steel producers, to establish the first U.S.-based offshore wind-related manufacturing facility. This plant, to be located in South Jersey, will be dedicated to the fabrication of monopile foundations for the U.S. and global offshore market.

A recent study by the Special Initiative for Offshore Wind estimates that the nearly 20 GW of state-sponsored offshore wind procurements through 2030 will require close to $70 billion in capital investment.[2] If the UK market is any indication, as U.S-based and foreign suppliers

[2] McClellan, Stephanie, *Supply Chain Contracting Forecast for U.S. Offshore Wind Power* (2019).

become convinced of the durability and scalability of the U.S. OSW market, they will make the necessary investment in local factories, people, and inventory to support a robust, homegrown supply chain rather than incur the high shipping costs, logistical issues and trade risks associated with sourcing good overseas.

Second, offshore wind development is expected to spur the creation of high quality, high wage jobs. These comprise skilled jobs in the construction trades as well as more permanent jobs for the operation and maintenance of the wind farm over its 35+ year expected life. A study by the Workforce Development Institute found that 74 different occupations, including electricians, ironworkers, and welders are needed during the various stages of planning, development and operations of offshore wind farms.[3] Ørsted is committed to supporting skills development and safety training to stand up a U.S. OSW workforce. For example, as part of our bid to New York State, Ørsted has pledged to provide $10 million in seed funding for the establishment of a National OSW Labor Training Center in conjunction with several unions and the Suffolk County Community College in Long Island, New York. The Center will be a new model of partnership between industry, labor, and academia to improve workforce capability for this high-growth industry in the United States.

Third, the efficient build-out of the U.S. offshore wind potential will require a massive investment in new and revitalized ports and harbors infrastructure. Ørsted has already identified several ports along the East Coast to serve as centers for the pre-assembly and load-out of major equipment to the wind farm; as well as for the servicing of the wind farms over the operating lives. Ørsted has had a tremendous impact on the revitalization of coastal communities in Europe through our presence, turning once underutilized ports and their

[3] New York and the Jobs of the Offshore Wind Industry (Spring 2017) at 3, available at: https://wdiny.org/Portals/0/New%20York%20State%20and%20The%20Jobs%20Of%20Offshore%20Wind%20Energy_%20WDI2017.pdf?ver=2017-05-03-150746-023

surrounding communities into booming economies. The Port of Esbjerg in Denmark, the Port of Belfast in Northern Ireland, and the Port of Grimsby in England are all examples of ports that were revitalized by the OSW industry, and where Ørsted was or is an anchor tenant. In Belfast, Ørsted helped design the 50-acre logistics and assembly site on the heavy-duty quay. Belfast represented the first dedicated port facility for the offshore wind industry in the UK, and Belfast harbor remains today the renewable energy hub of the UK west coast.

Our already announced redevelopment of such ports as New London, Connecticut; Tradepoint in Baltimore, Maryland; ProvPort, Rhode Island and Atlantic County, New Jersey into state-of-the-art offshore wind support facilities presents a significant opportunity for these regions to play a leading role in the northeastern United States' emerging offshore wind industry.

Environmental Benefits of Offshore Wind

If the development of the U.S.'s offshore wind potential is good for the economy, it is most decidedly good for the environment. In dealing with the existential threat of climate change, states are leading the charge. A number of states, spanning the political spectrum, have committed to ambitious targets to reduce (or effectively eliminate) carbon emissions. Renewable energy, and more particularly offshore wind, is central to the achievement of these goals. By way of example, New Jersey's landmark OSW target of 3,500 MW by 2030, when fully achieved will represent over 20 percent of all electricity serving this state's electric load with non-emitting and renewable generation. To provide another benchmark, the energy produced by the 1,100 MW Ocean Wind Project will result in 78 million tons of avoided CO2 over the 35-year life span of the project. This is the equivalent of removing 16.6 million cars driven for one year.

Energy System Benefits of Offshore Wind

Finally, OSW directly addresses the challenges many states face in the imminent retirement of aging fossil- and nuclear-fired generation. The New England Independent System Operator (ISO-NE) reports that between 2013 and 2022, nearly 5,000 MW of conventional fossil and nuclear generation will have retired; and another 5,000 MW of aging coal- and oil-fired generation is at risk.[4] Similarly, the New York Independent System Operator reports that "By 2028, more than 8,300 MW of gas-turbine and steam-turbine based capacity in New York will reach an age beyond which 95% of these types of capacity have deactivated."[5] By that time, nearly 5,000 MW of steam turbine capacity will be 62.5 years or older; and over 3,000 MW of gas turbines will be 46 years or older.[6]

Offshore wind is ideally suited to replace these conventional resources as they retire. OSW project capacity has steadily increased over time, and today is the only renewable energy resource that can be deployed at a scale comparable to nuclear generation. Fundamentally, OSW is an intermittent resource dependent upon daily and seasonal changes in wind speed. Nonetheless, OSW is approaching the level of predictability of output and yield efficiency typical of baseload generation. Large-scale wind farms are today approaching a 50% capacity factor, and next generation projects will surpass this threshold. Planning, procurement and deployment of offshore wind will ensure that electricity reliability is maintained throughout these regional systems.

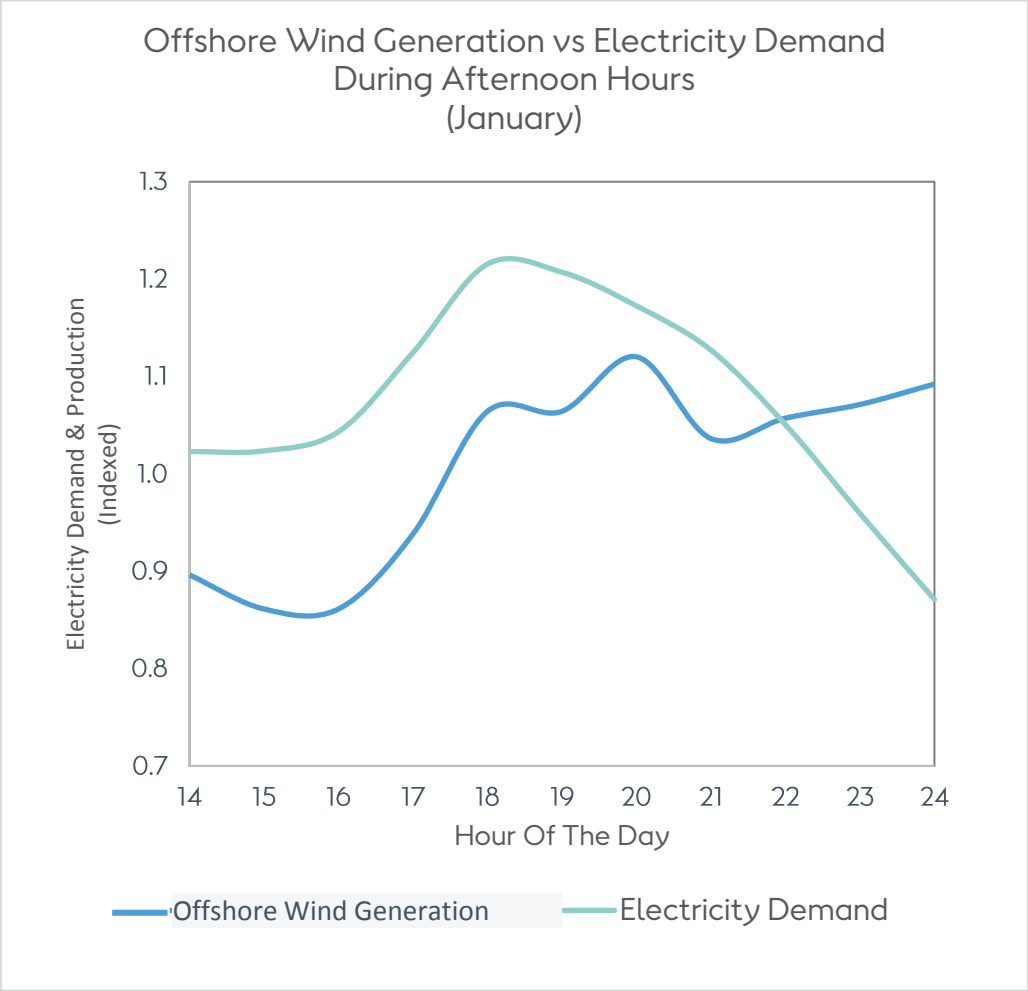
Furthermore, deployment of offshore wind can help reduce regional dependence on fossil fuels and mitigate seasonal price spikes caused by shortages. During the Polar Vortex of the Winter of 2017/18, the ISO-NE estimated that consumers paid in excess of $700 million in

[4] https://www.iso-ne.com/about/what-we-do/in-depth/power-plant-retirements

[5] 2018 Power Trends Report, New York Independent System Operator, available for download at < https://www.nyiso.com/documents/20142/2223020/2018-Power-Trends.pdf/4cd3a2a6-838a-bb54-f631-8982a7bdfa7a>.

[6] Id. At 16.

wholesale power costs as a result of price spikes caused by a disruption in the supply of traditional fuels.



As shown in Figure 1, offshore wind production is strongly coincident with demand for electricity in the winter months and can help avoid these dramatic run-ups in consumer costs.

Protecting other Ocean Users

Notwithstanding these significant and diverse benefits, Ørsted recognizes that offshore wind must co-exist with other uses of the ocean environment. Ørsted U.S. Offshore Wind is committed to maintaining a strong working relationship with all commercial and recreational fishermen who may be affected by a wind farm or wind farm activities in and around a lease

area. We believe that good communication is essential to creating an understanding between those who provide food for our tables and those who provide electricity for our homes. While not all conflicts can be resolved through communication alone, open and honest interaction helps to manage conflicts when they arise and identify ways to avoid or mitigate impacts that may occur.

Our goal is to keep fishermen fishing. We know that offshore wind and all ocean users can coexist – we see that happening every day at the Block Island Wind Farm. We want to be good neighbors out there. We understand that there will be conflicts between offshore wind activities and individual fishermen. We are committed to working with commercial and recreation fishing interests and ironing out our differences fairly and quickly.

We conduct an active and honest dialogue with fishermen to understand their concerns about wind energy development and attempt to address those concerns. We share information about offshore wind energy and the proposed activities that could affect the fishing industry. This includes general information about offshore wind energy, project details and potential impacts on fishing and the environment. We work with the fishing industry to find ways to develop the wind energy potential in the lease area while minimizing any impacts on fishing. For this to be successful, we listen to representatives of the many different types of fishing that takes place in the lease area, and in return we provide information that is clear, relevant and timely.

We seek to cooperate with the fishing industry to design and conduct project specific and regional collaborative research aimed at understanding any potential impacts of offshore wind development on fishing and the marine environment. We also collaborate on practical solutions to optimize access and fishing in and around our offshore wind farms. We share research and information that Ørsted U.S. Offshore Wind has gathered in its studies that

might be of help to further understand the living marine resources of the lease area and their habitats.

As the first developer to endorse the Responsible Offshore Development Alliance (RODA), we strongly support collaborative, regional science. We will conduct surveys and monitor fisheries before and during construction and during operations for all of our projects. We are working with RODA and ROSA (Responsible Offshore Science Alliance) to advance this regionally and build on our successful experience with the Block Island Wind Farm.

Ørsted was the first developer to create a procedure for potential gear loss. The procedure was developed in close coordination with the commercial fishing industry and is based off extensive feedback from fishermen in ports up and down the Atlantic coast. The procedure's key focus is on providing frequent updates on offshore activities to fishermen, via fisheries liaisons and a team of fisheries representatives based in regional ports, as well as through online updates for mariners and twice-daily updates on VHF channels.

Ørsted U.S. Offshore Wind has put together an extensive fisheries outreach network that currently consists of a corporate fisheries liaison as well as several regional fisheries liaisons that cover the areas where we have projects. In those regions there are multiple fisheries representatives that represent the ports and communities within those regions. This network enables us to communicate with the fishing industry effectively across all our projects.

We welcome the opportunity to develop business opportunities whenever and wherever possible. We hired local fishermen to work on our Block Island Wind Farm, and plan to do so with all our projects. Opportunities exist for fisheries representatives to serve as the voice for the local fishing community, vessel representatives to monitor for fishing vessels and gear from our survey vessels, as well as commercial fishermen to work with scientists to monitor fisheries.

Ørsted U.S. Offshore Wind is committed to safety. Former United States Coast Guard (USCG) Officer Ed LeBlanc recently joined our Marine Affairs team. Mr. LeBlanc, who most recently served as the Chief of Waterways Management Division for Southeastern New England, will help coordinate safety operations with the USCG and accelerate implementation of industry wide safety procedures and standards. This past summer, the USCG held the first ever helicopter search and rescue training exercises to assess operations near and from offshore wind turbines at the Block Island Wind Farm. And just last week, Ørsted Marine Affairs joined representatives from RODA, the US Coast Guard, Maritime Coastal Agency, and other key stakeholders at a conference in Grimsby, UK where Ørsted has a major hub for our wind farms off the east coast of the UK. The purpose of this conference was to increase US regulators' and other key US stakeholders' understanding of project design, maintenance, and navigational safety.

Lastly, Ørsted is committed to ensuring that the development of its offshore wind resources does not compromise our paramount interest in national defense. We are working primarily through the Department of Defense Clearinghouse to raise awareness of our project status and specifications across the various branches of the armed services, and to ensure that our project is compatible with military operations and readiness.

Conclusion

Offshore wind represents a largely untapped domestic energy resource that has great potential for generating significant economic, environmental and energy-related benefits. While the U.S. is currently behind European markets in exploiting this resource, this lag in development allows the U.S. to take advantage of the scale economies and cost reductions achieved during the industry's formative period overseas. Development of these cost-effective renewable energy resources can and should be compatible with the needs of the fishing community and other ocean users.

This concludes my testimony. I would be happy to answer any questions the committee may have.

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