January 28, 2019

United States Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs
45600 Woodland Road
Sterling, VA 20166-9216

Submitted electronically via www.regulations.gov
Docket ID: BOEM–2018–0045

RE: AWEA Comments on Commercial Leasing for Wind Power Development on the Outer Continental Shelf Offshore California – Call for Information and Nomination

The American Wind Energy Association (AWEA)\(^1\) submits these comments on behalf of its members in response to the Bureau of Ocean Energy Management’s (BOEM) October 29, 2018 Commercial Leasing for Wind Power Development on the Outer Continental Shelf (OCS) Offshore California – Call for Information and Nomination (Notice). AWEA appreciates the opportunity to submit comments and information about site conditions, resources, and multiple uses in close proximity to, or within, the Call Areas that are relevant to BOEM’s review of submitted nominations or BOEM’s possible subsequent decision to offer all or part of the Call Areas for commercial wind leasing.

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\(^1\) AWEA is a national trade association representing a broad range of entities with a common interest in encouraging the expansion and facilitation of wind energy resources in the United States. AWEA members include wind turbine manufacturers, component suppliers, project developers, project owners and operators, financiers, researchers, renewable energy supporters, utilities, marketers, customers, and their advocates.
I. BACKGROUND

Harnessing America’s offshore wind resources will create tens of thousands of highly-skilled U.S. jobs, revitalize ports and coastal communities, improve national security, and deliver vast amounts of reliable energy to America’s biggest population centers. Land-based wind supports over 100,000 American jobs already and scaling up offshore wind development holds similar promise for U.S. job growth. In addition to creating new jobs for the American worker in this burgeoning industry, we can also call on the experience of the skilled workers in existing U.S. companies who have decades of experience developing ocean energy infrastructure for the oil and gas industry. 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.2

To date, BOEM has held eight competitive lease sales, which have generated over $473 million USD for close to approximately 1.8 million acres in federal waters from Massachusetts to North Carolina. In total, BOEM has issued 16 commercial leases on the Atlantic coast. Most recently, BOEM held a record-breaking auction for three lease areas offshore Massachusetts yielding $405 million in winning bids.

In addition, interest in financial investments in the domestic offshore wind market have grown increasingly more prominent over the past several years and political support has continued to expand across the nation. The cost of development and implementation of offshore wind continues to decline. Some of the new investments in the United States, including the New Bedford

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Marine Commerce Terminal\textsuperscript{3} in Massachusetts and a $35 million MHI Vestas turbine gearbox testing facility at Clemson University.\textsuperscript{4}

California has ambitious initiatives to fight climate change and advance renewable energy and carbon-free resources. In 2018, California passed legislation (Senate Bill 100) advancing the state’s Renewable Portfolio Standard (RPS), requiring 50 percent of the state’s electricity come from renewable energy resources by 2025 and 60 percent by 2030. SB 100 also requires that California obtain 100 percent of its energy supply from carbon-free sources by December 31, 2045.\textsuperscript{5} In addition, Governor Brown issued Executive Order B-55-19 in September 2018, requiring that the state achieve carbon neutrality by 2045.\textsuperscript{6} California is only the second state to adopt such a goal, after Hawaii. As reported by California Public Utilities Commission in the 2018 Annual RPS Report, “[i]creasing the level of renewables in the state’s energy mix provides a range of benefits to Californians, such as reducing greenhouse gas emission and air pollution, stabilizing electricity rates, and contributing to the reliable operation of the electrical grid.”\textsuperscript{7}

II. COMMENTS

In general, at this stage, AWEA supports a robust stakeholder process that collects information from all stakeholders, especially the local communities and fishermen. However, we caution BOEM from excluding areas for offshore wind development at this stage based on the various factors and potentially conflicting uses outlined in the Notice. The proposed wind areas


\textsuperscript{4} \textit{Clemson to test world’s most powerful wind turbine}, The Newsstand, 

\textsuperscript{5} Chapter 312, Statutes of 2018 (SB 100, De Leon).

\textsuperscript{6} Id.

only accommodate a fraction of California’s commercial developable offshore wind capacity. As such, BOEM and California must work together to optimize these areas and allow room to develop them fully.

AWEA continues to support a flexible and adaptive offshore wind energy program. BOEM should keep planning documents evergreen and adaptive to considerations of advancing technologies and multiple future uses, including future areas for shipping, military activities, and environmentally sensitive areas.

Below, AWEA takes each of the Notice’s relevant “Requested Information” in turn.

A. Other uses, including navigation (in particular, commercial and recreational vessel use), recreation, and fisheries (commercial and recreational).

Offshore wind energy, commercial and recreational vessel use, and recreational and commercial fishing can and will coexist harmoniously in offshore areas. BOEM should establish a process for consistently evaluating coexisting uses for all offshore wind development. While AWEA believes that multiple uses are able to coexist, it is important that BOEM establish a clear process for evaluating and resolving any issues of competing uses.

AWEA cautions BOEM against precluding wind energy development because of conflicting uses at an early stage. While AWEA understands that more consideration may be necessary at a later stage in development (i.e., prior to construction) in specific areas due to their multiple use potential, at this time, all areas should still be available for full consideration. In addition, without a firm project plan in place, which is not feasibly developed until a much later stage in the leasing process, it is impossible to know the definite impacts or conflicts that wind energy development might have with other types of development or other uses of the ocean and ocean floor, and whether they can be mitigated. To ensure cooperation and minimize conflicting
uses to the extent practicable, BOEM should continue to have extensive engagement with stakeholders throughout the various stages of the leasing process, especially the fishing industry.

With regards to vessel traffic routes, AWEA strongly discourages BOEM from generically excluding offshore wind development from vessel traffic routes because the projects can be planned and sited to be generally harmonious with marine navigation. In the United States, public policy has promoted multiple uses often overlapping activities, in offshore waters, while still recognizing that the need to ensure navigation safety must be preserved. For instance, in enacting the Ports and Waterways Safety Act (PWSA), Congress explicitly contemplated that navigation areas may be subject to multiple reasonable uses. Specifically, the PWSA requires the Coast Guard to: “reconcile the need for safe access routes with the needs of all other reasonable uses of the area[.]” 8

The offshore wind industry supports the use of effective mitigation measures to alleviate any navigational safety concerns that offshore wind might pose. Offshore wind farms have several characteristics that already reduce the risk to marine navigation: they are constructed in a regular, grid-like pattern; and, spaced far apart, more than half nautical mile from one another generally, to minimize the wake effect of wind turbines on one another. These characteristics collectively contribute to an overall low collision risk. Moreover, BOEM’s Programmatic Environmental Impact Statement (PEIS) contemplated additional mitigation measures that can be further considered during the NEPA analyses for each project to reduce risk to navigation. For example, BOEM’s PEIS provides that “[t]o mitigate any navigational impacts, such as vessels colliding with

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8 33 U.S.C. § 1223(c).
wind generation support structures, each supporting platform on the water surface would require appropriate signage and/or lighting as a warning to passing vessels.\textsuperscript{9}

Without having project specifics, it is hard to know if wind energy development in a certain area will have any impact on marine navigation. As such, wind energy development should not be precluded by vessel traffic routes. Instead, potential maritime navigation conflicts and mitigation measures should continue to be analyzed during site-specific NEPA reviews.

Each potential offshore wind facility is subject to two separate NEPA reviews. The first review is an environmental assessment that is conducted with respect to the SAP, which the lessee must submit to BOEM no later than 12 months after receipt of the lease.\textsuperscript{10} The lessee must also submit a COP to BOEM at least 6 months prior to the completion of the site assessment term, which requires an environmental impact statement. Site assessment considerations during these reviews specifically include coastal and marine uses, including vessel traffic. These reviews are crucial elements of the siting process because they are site- and project-specific and therefore provide the best basis for evaluating a particular project’s impacts on the overall environment, including navigation safety. Moreover, during the site assessment, specific traffic patterns and particular mitigation measures that would be most effective at avoiding navigational safety issues can be analyzed with respect to each project.

B. Information relating to visual resources and aesthetics, the potential impacts of wind turbines to those resources, and potential strategies to help mitigate or minimize any visual effects.


\textsuperscript{10} 30 C.F.R. § 585.
At this stage in the process, BOEM should not set a “hard-and-fast” rule regarding the visual footprint of wind turbines. How far offshore turbines should be placed and strategies to reduce visual footprint \((i.e.,\) color, arrangement of turbine array, etc.) are better left addressed at the design review stage of development and are not appropriate to consider now. In addition, different regions and coastlines have varying opinions about how turbine visualization should be managed for their local community. At the design review stage of development, AWEA encourages BOEM to perform extensive stakeholder outreach in affected communities.

It is important that BOEM remain flexible and adaptive to turbine design because offshore wind technology is rapidly improving; the U.S. Department of Energy estimates turbine capacity will increase by 67% and prices will plummet by 50% between 2015 and 2030.\(^\text{11}\) The offshore wind industry expects these trends to continue. Technological advancement matters because larger turbines reduce costs and use a smaller footprint to generate the same amount of electricity. Turbine power output has doubled from 3.7 MW to 8 MW over the course of six years, and the industry expects 10 MW prototype turbines to be deployed by 2020.\(^\text{12}\) A 100 MW project using 16 6.2 MW turbines would have a different footprint and different potential environmental and visual impact from a 100 MW project using ten of the new 10 MW turbines.\(^\text{13}\) These rapid developments in turbine technology have the potential to reduce the visual footprint of the wind facility, reduce the number of foundation installations needed, allow for more flexible site spacing and placement, cut construction costs and timeframes, and require operators to make less frequent maintenance trips.\(^\text{14}\)

\(^{12}\) Id. at 27 (highlighting recent turbine capacity trends).
Technological advancement also matters because developers do not want to be locked into using technology that could be outdated, and relatively inefficient, by the time they complete several years of site assessment plan (SAP) and COP development. For example, while developers in U.S. waters currently are expected to use three- or four-legged jacket structures in the relatively deeper waters on the OCS, gravity or suction foundations are expected to be used for newer European projects, which could be an option for future U.S. projects in shallower waters. In addition, advances with floating foundation prototypes (which merely need to be tethered to the seafloor) could shift development in some areas further offshore where the visual impact is less, competing uses are fewer, and wind speeds are higher. Each of these foundation technologies presents certain advantages and benefits, as well as unique potential impacts that should be analyzed at the COP stage, as provided for by BOEM’s regulatory program.

With regards to lighting, the U.S. Federal Aviation Administration (FAA) has an Obstruction Lighting and Marking Advisory Circular (AC 70/7460-IL) that is generally applicable to structures 200 feet above ground level and higher. Chapter 13 of this advisory circular is specific to wind turbines. The FAA makes specific recommendations related to the color, intensity, number, and location of lights, including offering different recommendations depending on turbine layout, such as whether turbines are in a line, clustered, or in a geographic shape. In 2016, the FAA added additional recommendations related to the lighting of taller wind turbines, with additional lighting recommendation for turbines 499 feet and above and an additional set of recommendations with additional lighting for turbines 699 feet and above. The FAA regulations

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15 Id. at 27, 31.
16 Id. at 28.
have been revised periodically and are well tested and well understood by industry. AWEA recommends the FAA lighting requirements for wind turbines be the basis for those considered by BOEM.

AWEA is aware of technologies that can keep the lights off on a wind turbine until an aircraft is approaching. The FAA has approved a few of these systems for use on wind turbines in the land-based context. AWEA is also aware of technologies that can dim the lights on wind turbines until an aircraft is approaching. The FAA has not yet approved such a technology for use on wind turbines.

AWEA urges that BOEM not require the use of such light mitigation technologies on wind turbines. The determination on whether to use such a technology should be left up to project specific reviews. This would provide important flexibility to developers and BOEM to consider the needs for a particular project, as well as ensure that any technological innovations that may occur be incorporated rather than being overly prescriptive now.

C. Other Relevant Socioeconomic, Biological, and Environmental Information.

Offshore wind energy provides a vast number of benefits both to the surrounding area as well as to the broader community, including: (1) reduction of emissions typically associated with traditional sources of electricity generation; (2) a carbon-neutral energy that is necessary for states to meet renewable energy portfolios; (3) the creation of high paying jobs; (4) the construction of new infrastructure in the area and around the nation to support this growing industry; and (5) a more diverse and robust electricity grid for both the local region and the nation.

Wind energy provides a vast amount of environmental benefits, both on land and at sea. As a carbon-neutral energy source, wind power has some of the lowest environmental impacts of any source of electricity generation. Unlike conventional fossil fuel energy sources, wind power significantly reduces carbon emissions, saves billions of gallons of water a year, and cuts pollution
that creates smog and triggers asthma attacks. Wind farms also leave the overwhelming majority of land they’re built on undisturbed.

Today, California remains a national leader in the onshore wind industry, ranking fourth in the U.S. for wind power installation. In 2017 alone, its onshore wind farms avoided 7.5 million metric tons of state carbon dioxide emissions and saved 3.2 billion gallons of water consumption.\(^\text{18}\) Offshore wind developed off the coast of California would greatly increase these environmental benefits.

As discussed above, California has very ambitious goals to combat climate change and advance renewable energy. Meeting the ambitious renewable energy and carbon reduction goals will require significant incremental deployment of carbon-free generating technologies. Assuming annual load growth of 0.13% (EIA) and accounting for renewable projects already in development, California will require approximately 140 terrawatt-hours of incremental clean energy generation to meet its goals. On wind megawatt-equivalent (MWe) basis, this translates to over 45 gigawatts (GW) of additional clean-energy capacity. Renewable deployment on this scale will require consideration of all available resource types and necessitate a diverse resource mix.

In addition to land-based wind and solar resources, offshore wind has a significant role to play in California’s energy transition. According to the National Renewable Energy Laboratory, California possess at least 112 GW of technical offshore wind potential.\(^\text{19}\) Harnessing a fraction of this potential can deliver California significant amounts of clean-energy. A recent report from BOEM concludes that 16 GW of installed offshore wind is capable of significantly contributing to


California’s carbon reduction and clean-energy goals. Based on the state’s coastal wind resources, this deployed capacity would deliver 35.3 TWh of annual generation, or 24% of the incremental requirement under Senate Bill 100.

As previously discussed above, offshore wind development will create a tremendous number of jobs both in the region where the wind farms are sited and across the country. As renewable energy utilization has grown across the nation, the number of jobs necessary for this development continue to grow. Wind turbine technician is the second-fastest growing occupation in the country. As of April 2016, the National Renewable Energy Laboratory, in developing scenarios for California wind developed, concluded that an economically feasible build-out of 16 GW would create steadily increasing employment totaling an annual average of 13,620 full-time jobs in construction, installation, and manufacturing by 2040-2050, and 4,330 full-time, long-term jobs in operations and maintenance, plus thousands more of service-sector jobs in the broader economy.

Furthermore, American security is best served by a diverse mix of energy resources being utilized across the country. A balanced energy mix improves the reliability and resiliency of the energy grid and helps to ensure affordability for customers. To ensure that the best interest of the nation is served in the development of energy resources, offshore wind should be a vital part of that resource mix. A fuel mix that integrates clean and renewable energy sources with smarter

21 Id.
energy infrastructure ensures that customer needs are met at all times at the best price possible.\textsuperscript{24} This provides one more avenue for the creation of electricity and provides the added benefit of being a zero-emitting resource.

To fully capitalize on all of these advantages, it is imperative that BOEM stay on track to establish a foothold in California for offshore wind and optimize the current call areas and allow room to develop them fully. While offshore wind energy areas are a regional resource, it is critical that new wind energy areas, such as the proposed California Call Areas, be established and leased as soon as possible to ensure an adequate and competitive supply of areas available to meet California’s demand at the lowest possible cost.

\textbf{D. Any other relevant information BOEM should consider during its planning and decision-making process for the purpose of issuing leases in the Call Area.}

BOEM, California, and the wind industry have a great opportunity here to establish a foothold in California for offshore wind development. As this may be the only opportunity to development offshore wind in California in the foreseeable future, it is imperative that BOEM, California, and all stakeholders work together to make this effort an overwhelming success. With thousands of miles of coastline, California and the wind industry cannot afford to have a failed project ruin the statewide reputation for offshore wind energy. With this in mind, we encourage BOEM to work closely with California state agencies and affected stakeholders alike as the agency works to lease the first areas for commercial development.

It important that any offshore wind project in California be sized appropriately in order to be cost-competitive with other sources of renewable energy available in California’s electricity market, including solar plus storage. Unlike markets on the East Coast, where states set prices

and issue procurement contracts, an independent power producer that sells energy in California must do so either directly into the grid at the market price or find its own energy buyer; there is no carve-out for offshore wind procurement. These initial offshore wind projects will be creating the new supply chain and incurring higher costs. If BOEM were to sell an insufficiently-sized area for a lease that does not make economic sense for developers, the project may fail before it could even be completed.

Furthermore, multiple small projects will typically come at a significantly higher cost than larger projects because the activities required for permitting, development, procurement, construction and operation will be paid for on a multiple basis, eroding the economies of scale enjoyed by a larger project. We, therefore, encourage lease area sizes be no smaller than 200 square miles to be viable in California’s merchant energy market.

Lastly, we encourage BOEM to optimize the size of the call areas, without regards to transmission constraints in the local areas, such as in Humboldt. Without firm project plans in place, which is not feasibly developed until a much later stage in the leasing process, it is impossible to know the amount of energy the wind development in this call areas will feed into the grid.

**III. CONCLUSION**

AWEA appreciates the opportunity to provide these comments on BOEM’s October 29, 2018 Commercial Leasing for Wind Power Development on the Outer Continental Shelf Offshore California – Call for Information and Nomination. AWEA and its members look forward to continuing to engage with BOEM on issues related to offshore wind development.
Sincerely,

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