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**AWEA-CA Comments on Research Concept for Offshore Wind**

*Additional submitted attachment is included below.*

November 16, 2020

California Energy Commission  
1516 9<sup>th</sup> Street  
Sacramento, CA 95814-5512



Docket # 19-ERDD-01

**RE: Draft Research Concept on Advanced to Next-Generation Offshore Wind Energy Technology**

Dear California Energy Commission,

The American Wind Energy Association of California (AWEA-California) appreciates the opportunity to comment on the “Draft Research Concept on Advanced to Next-Generation Offshore Wind Energy Technology.”

We support the Energy Commission’s efforts to facilitate innovation and support research to advance floating offshore wind in California. The SB 100 Joint Agency Study Draft results confirmed that California needs at least 10 GW of offshore wind over the next two decades. Large-scale offshore wind will also drive investment in local manufacturing and port upgrades – leading to reduced capital costs and tens of thousands of jobs over time. However, a large-scale industry will not materialize without state leadership and action. Furthermore, slow, incremental development of offshore wind at a scale of a few turbines at a time is a failing approach. The fact there are no offshore wind turbines online in California today despite the massive need and value of this resource is cause for aggressive and comprehensive planning, not small, timid steps. It is within this context that we offer comments on the proposed research concept.

AWEA-CA recommends against funding research for standalone floating offshore wind pilot projects consisting of only a few turbines. Instead, research funding should be directed toward projects that will help the industry reach scale as soon as possible. This could include investment in a first phase of a potentially much larger commercial-scale project, but should not include isolated pilot projects intended for research or demonstration purposes alone. Isolated pilot projects have the potential to slow-down rather than advance the industry in California. The planning and development required to achieve an offshore wind industry at scale is urgent and substantial. The state must send a signal to offshore wind investors that it is committed to achieving an industry at scale. We cannot afford to wait to plan, permit, construct and then learn from a pilot project before taking the bigger necessary steps to advance the industry: sea-space identification, port investments, permitting, transmission planning and work force development.

In addition, AWEA-CA rejects the premise that pilot projects are a necessary step for the commercialization of floating offshore wind. While there are 84 MW of floating offshore wind projects installed globally, an additional 292 MW are set to come online by the end of 2022 and a large-scale commercial project in Asia will be operational in 2024.<sup>1</sup> There are already opportunities to learn from

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<sup>1</sup> <https://www.nrel.gov/docs/fy21osti/77384.pdf>

existing and soon-to-be-available floating offshore wind installations in Scotland, Portugal, and Maine. More importantly, the most valuable lessons of offshore wind in California will come from the development of real-world commercial projects. Deployment of 10 GW or more of floating offshore wind will naturally occur in phases, and California should take advantage of opportunities for data gathering, monitoring, and technology and process improvements as commercial projects mature and expand.

For the reasons stated above, and due to the size and timing of the proposed research concept funding opportunity, we recommend that the Energy Commission avoid directing research funds to support pilot projects.

In addition, the Commission should refrain from focusing funds on floating platform technologies. This work is already underway in the private sector by individual companies. We also recommend avoiding investing in research and development that would duplicate research already underway in Europe.

Finally, we caution against under-sizing investments in research. To join the floating offshore wind global development process, the CEC would need to increase the budget for each project significantly (to >\$25 Million), or alternatively, it should direct the R&D grant opportunities towards topics that are specific to the Californian market.

Therefore, we recommend directing research funds as follows:

### **1. Invest in environmental research and monitoring**

AWEA recommends continued investment into research on potential environmental impacts. This should include research on not only monitoring and validation of potential mitigation technologies and strategies, but also on pre-permitting/pre-development surveys that will facilitate project siting and permitting in the future.

We recommend engaging with the Pacific Offshore Wind Energy Research (POWER) collaboration of environmental NGOs and wind developers to help identify priority research topics and questions. We also advise that environmental research should be conducted in federal waters at a distance 15-25 miles from shore, as this is where commercial projects will ultimately be developed.

### **2. Invest in port research**

Offshore wind will require port facilities with the laydown space, quayside areas, water depth, distance to installations and clearance height out to sea to accommodate the fabrication, assembly, installation, and maintenance of offshore wind turbines. No port in California is currently equipped to serve the offshore wind industry. The Port of Humboldt provides one of the best opportunities for assembly of floating offshore wind platforms and is eager to become a new offshore wind hub, but it will require substantial upgrades and renovations. Research from the Schatz Energy Center has begun to answer

some of the first questions about the best way to prepare the Port of Humboldt for offshore wind, but study authors have identified several additional areas for investigation, including maneuvering analysis, full bridge simulations, throughput, costal engineering, logistics, navigation, resiliency, geotechnical studies, and O&M facility siting.<sup>2</sup>

Given that the distance between an assembly port and floating offshore wind installation site is a critical driver of capital costs, as demonstrated in NREL's recent analysis of offshore wind costs for California<sup>3</sup>, the state should also direct research toward planning for a port facility to serve central coast offshore wind installations. The state should invest research to develop a plan to prepare port infrastructure and enable coordinated project phasing and investment. A useful model for this type of planning was performed by the Massachusetts Clean Energy Center<sup>4</sup> and the City of New Bedford.<sup>5</sup>

### **3. Invest in research on complimentary technologies**

AWEA-CA also supports research into complimentary technologies that would support the integration and delivery of offshore wind to the California grid. These technologies include long-duration energy storage as well as ocean-based hydrogen production.

We note that the pressure resulting from the water column is well suited for the development of environmentally benign, long-term storage that could lead to offshore wind becoming a baseload energy source. While basic technical components of such storage are readily available, we recommend research and demonstration of the overall system integrated with an offshore wind project. We recommend CEC consideration of cross-cutting research funding to demonstrating the potential for offshore wind-storage solutions.

### **4. Invest in testing and validation of monitoring systems to reduce installation and O&M costs and increase commercial readiness**

An example of this type of research is the EPIC program's award for development of an offshore wind "digital twin" earlier this year.

### **5. Invest in research to develop and test mooring systems and dynamic inter-array and export cables.**

Research on mooring systems and cabling should build off global research to determine the best approaches and systems for the California offshore wind environment.

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<sup>2</sup> <https://www.youtube.com/watch?v=yldrrDxUBxM&feature=youtu.be&t=289>, Min 1:18:32

<sup>3</sup> Philipp Beiter, Walt Musial, Patrick Duffy, Aubryn Cooperman, Matt Shields, Donna Heimiller, and Mike Optis "The Cost of Floating Off "The Cost of Floating Offshore Wind Energy in California Between 2019 and 2032" Technical Report, NREL/TP-5000-77384, October 2020. <https://www.nrel.gov/docs/fy21osti/77384.pdf>

<sup>4</sup>Massachusetts Clean Energy Center, [Port and Infrastructure Analysis for Offshore Wind Energy Development](http://www.nbedc.org/wp/wp-content/uploads/2014/02/MA-Port-Study-Final-Report_4-20-10.pdf), February 2010 [http://www.nbedc.org/wp/wp-content/uploads/2014/02/MA-Port-Study-Final-Report\\_4-20-10.pdf](http://www.nbedc.org/wp/wp-content/uploads/2014/02/MA-Port-Study-Final-Report_4-20-10.pdf)

<sup>5</sup> City of New Bedford, [Ready for Offshore Wind](#)

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Offshore Wind Energy Technology  
11/16/20

**Conclusion**

AWEA appreciates the CEC and the EPIC program's continued efforts to advance offshore wind in California.

Sincerely,

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