Item 7c

Staff Recommendation
October 25, 2018

**North Coast Offshore Wind Feasibility Analysis**

Christopher Potter, Program Manager

**RECOMMENDED ACTION:** Authorization to disburse up to $622,895 to Humboldt State University, Schatz Energy Research Center for completing four modules of a seven module Humboldt Bay Region Offshore Wind Feasibility Analysis. Specifically, these four modules are as follows: (1) Likely and Potential Environmental Impact; (2) Coastal Infrastructure Modifications and their Impact on Ocean Environment, Climate Resiliency, and Local Stakeholders; (3) Likely Stakeholder Benefits and Impacts; and (4) Policy Evaluations and Recommendations. Each of the research areas described above will result in an interim report, which will include a summary and conclusions. A final report that integrates the information from all research areas and provides summary conclusions will be produced at the end of the project period.

**LOCATION:** North Coast, Humboldt Bay Region

**STRATEGIC PLAN OBJECTIVE(S):** Existing and emerging ocean uses: Objective 13.1: Anticipate and address, regulatory issues, policy development, and information needs associated with the development of marine renewable energy through coordination activities and other means.

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**EXHIBITS**

Exhibit A: Map of Study Area
Exhibit B: Bureau of Ocean Energy Management's Call for Information and Nominations for Commercial Leasing for Wind Power Development on the OCS Offshore California
Exhibit C: Bureau of Ocean Energy Management's Wind Energy Commercial Leasing Process Fact Sheet
Exhibit D: Letters of Support

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**FINDINGS AND RESOLUTION**

Staff recommends that the Ocean Protection Council (OPC) adopt the following findings:
"Based on the accompanying staff report and attached exhibit(s), the Ocean Protection Council hereby finds that:

1) The proposed projects are consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act.
2) The proposed projects are consistent with the Ocean Protection Council's grant program funding guidelines (Interim Standards and Protocols, August 2013).
3) The proposed projects are not 'legal projects' that trigger the California Environmental Quality Act pursuant to Public Resources Code section 21068 and Title 14 of the California Code of Regulations, sections 15304 and 15306."

Staff further recommends that the OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

"The California Ocean Protection Council hereby approves the disbursement of up to $622,895 to complete four modules of a *North Coast Offshore Wind Feasibility Analysis*. This authorization is subject to the condition that prior to disbursement of funds, Humboldt State University shall submit for the review and approval of the Executive Director of the OPC detailed work plans, schedules, staff requirements, budgets, and the names of any contractors intended to be used to complete the projects, as well as discrete deliverables that can be produced in intervals to ensure the projects are on target for successful completion. All projects will be developed under a shared understanding of process, management and delivery."

**PROJECT SUMMARY**

Humboldt State University's Schatz Energy Research Center will conduct an in-depth study and analysis of the electrical, environmental, coastal infrastructure, stakeholder, and policy issues and needs associated with offshore wind development in the Humboldt Bay region. In addition, they will utilize best scientific and engineering practices and recognized experts to identify issues and propose paths forward to exploit an immense renewable energy resource while protecting the marine and coastal environments. Specifically, the study will consist of the following seven modules/research areas:

1. Offshore Wind Generation and Load Compatibility Assessment;
2. Electricity Grid Constraints, Mitigation Measures, and Associated Costs;
3. Likely and Potential Environmental Impacts;
4. Coastal Infrastructure Modifications and their Impact on Ocean Environment, Climate Resiliency, and Local Stakeholders;
5. Analysis of Stakeholder Benefits and Impacts;
6. Policy Evaluation and Recommendations; and
7. Military Mission Compatibility.

If approved, OPC funds would support modules 3, 4, 5, and 6. Each of the research modules described above will result in an interim report, which will include a summary and conclusions. A final report that integrates the information from all research areas and provides summary conclusions will be produced at the end of the project period. The project team will travel to Sacramento to personally present the final report the OPC Executive Director.

**BACKGROUND**

Offshore wind energy has the potential to play an important role in helping California meet its medium and long-term renewable energy targets and greenhouse gas emission reduction goals. The National Renewable Energy Laboratory estimates the state's offshore winds could produce 2,420 TWh per year, or 14% of the national potential, and offshore wind is by far California's most important wind resource. Specifically, the offshore wind resource near Humboldt Bay is among the best in the nation, classified as outstanding to superb, with wind power density often exceeding 600 $W/m^2$ at a 50-meter height. Furthermore, offshore wind offers a higher capacity factor than other renewable energy sources being developed in the state, and available wind data indicate that the offshore wind resource is considerably less variable on a diurnal basis than other intermittent renewable energy sources such as solar and onshore wind. High capacity factor wind sites like the Humboldt region also have a favorable diurnal wind speed pattern that can complement solar generation by providing more consistent power flow to the grid, which can provide added resiliency through diversification of the state's renewable energy generation portfolio.

Offshore wind energy is common in Europe and at an early stage of commercialization on the east coast of the United States. However, California has not yet seen offshore wind deployment, in part due to deeper near-shore conditions which necessitate emerging technology like floating turbine foundations. Research, development, and demonstration of these technologies will generate scientific data that could inform responsible development, create jobs, and help establish our state as a key player in the offshore renewables market. In addition, special conditions found on the California coast, including steep ocean floor gradients, sensitive ecosystems, seismic activity, and protected coastlines provide unique challenges to developing offshore wind resources.

**Recent Developments in California**

In May of 2016, Governor Jerry Brown sent then-Secretary of the Interior Jewell a letter requesting that she direct BOEM to establish a Federal-California Marine Renewable Energy Task Force. The Governor's request was primarily in response to Trident Winds, LLC's proposal for a 650 MW wind farm off the coast of Morro Bay. BOEM, working with the state, held a kick-off meeting Sacramento in the fall of 2016. At the direction of the Task Force, the state and BOEM have been collaborating on outreach, data gathering, and planning over the past two years. Because of the Trident proposal, the initial focus of these efforts was the Central Coast. BOEM and the state (i.e., Energy Commission, OPC, Department of Fish and Wildlife, and Coastal Commission) met with fishermen, local elected officials, environmental groups, and tribes. The purposes of the outreach were basically to identify issues and concerns, inform stakeholders about the goals and activities of the Task Force, to inform them about offshore wind technology and potential projects, and to involve them in the data gathering effort.

In the spring of this year, the state and BOEM began outreach to stakeholders on the North Coast. This was in response to the Redwood Coast Energy Authority's announcement in April 2018 indicating that it had selected partners for a forthcoming public-private partnership to explore developing a wind farm off the North Coast of California. Also, over the last several months, the state and BOEM have been meeting with the Department of Defense officials, offshore wind developers and agencies to discuss the compatibility of offshore wind development with military operations. An interim report on the outreach can be found here: https://www.boem.gov/California-Outreach-Summary-Report/.

A second Task Force meeting was held last month by BOEM and the state. The major outcome of this meeting was BOEM's announcement of draft "Call Areas" for offshore wind leasing on the Central and North Coasts. Basically, "Call Areas" are a preliminary identification of suitable areas for offshore wind development and do not incorporate formal environmental review. On October 19th, BOEM published in the federal register a formal "Call for Information and Nominations" which includes three "Call Areas" on the California Outer Continental Shelf (Exhibit B). The state and other stakeholder will have until January 28, 2019 to submit their comments to the federal docket. More information on the BOEM leasing process is provided in Exhibit C.

**Site Description**

As discussed above, the offshore wind resource in the Humboldt Bay region is among the best in the nation. In addition, Humboldt Bay is the only deep-water port in the state north of San Francisco with substantial port infrastructure and power interconnection capacity. Moreover, it does not appear to have national security restrictions that are associated with some other California coastal areas. Investments in transmission infrastructure and harbor improvements will be needed to support off-shore wind development at scale. With the right approach and outreach plan, community support is likely to be strong. Pacific Gas and Electric's Humboldt Bay Generating Station is well suited to compliment an off-shore wind development due to modular design, which allows it to respond quickly to changing grid conditions. At the same time, the recently released Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment highlights the importance of considering sea level rise and associated factors when considering new technology deployment. Responsible off-shore wind development that considers such projections could be an important long-term strategy to add resiliency to Humboldt County's electricity supply as sea level rises.

The Schatz Energy Research Center (SERC) was established at Humboldt State University in 1989 to specialize on research and development of renewable energy, energy efficiency, and hydrogen energy systems. SERC's work also involves technology demonstration, project development, energy systems analysis, education and training, feasibility studies, resource assessments, and energy planning studies.

**Project Timeline**

Implementation of the project will begin December 2018 and will take 12 months to complete. Interim reports will be provided over the course of the year culminating with a final report that integrates information from all research areas.

**PROJECT FINANCING**

Staff recommends that the Ocean Protection Council authorize disbursement of up to $622,895 to Humboldt State University, Schatz Energy Research Center (SERC) for completing four modules of a seven module North Coast Offshore Wind Feasibility Analysis.

| Task Module | | Budget | Budget Source | Notes |
|---|---|---|---|---|
| 1 | Off-Shore Wind Generation and Load Compatibility Assessment | $37,510 | BOEM | Proposed budget pending approval |
| 2 | Electricity Grid Constraints, Mitigation Measures, and Associated Costs | $137,490 | BOEM | Proposed budget pending approval |
| | | $125,000 | PG&E | Match commitment |
| 3 | Likely and Potential Environmental Impacts | $159,111 | OPC | |
| 4 | Coastal Infrastructure Modifications and their Impact on Ocean Environment, Climate Resiliency, and Local Stakeholders | $276,362 | OPC | |
| 5 | Likely Stakeholder Benefits and Impacts | $137,734 | OPC | |
| 6 | Policy Evaluation and Recommendations | $49,688 | OPC | |
| 7 | Military Mission Compatibility with Offshore Wind Development | $9,332 | OPR | Proposed |
| | | | | |
| | *Total Requested funds from OPC* | *$622,895* | | |
| | *Total Project Value* | *$932,227* | | |

BOEM – Department of Interior, Bureau of Ocean Energy Management
OPC – Ocean Protection Council
OPR – Governor's Office of Planning
PG&E – Pacific Gas and Electric

The anticipated source of funds will be from the Ocean Protection Council's appropriation of the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84). Proposition 84 authorizes the use of funds for purposes consistent with Section 35650 of the Public Resources Code, establishing the California Ocean Protection Trust Fund (Pub. Res. Code § 75060(g)). Under Section 35650(b), Ocean Protection Trust Fund monies may be expended for projects authorized by the OPC that are identified as appropriate Trust Fund purposes, as specified. The project is consistent with the Trust Fund purposes as discussed in the following section.

**Leverage of OPC funds**

As indicated in the budget, a total match of $309,332 is pending for this project. The federal Bureau of Ocean Energy Management has budgeted $175,000 to fund modules one and two. Pacific Gas and Electric has agreed to provide in-house resources valued at $125,000 in conjunction with completing modules one and two. The Governor's Office of Planning and Research is seeking grant funds in the amount of $9,329 to complete module seven.

**CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:**
The proposed project is consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, because it is consistent with trust-fund allowable projects, defined in Public Resources Code Section 35650(b)(2) as projects which:

1) Eliminate or reduce threats to coastal and ocean ecosystems, habitats, and species.
2) Improve management, conservation, and protection of coastal waters and ocean ecosystems.
3) Protect, conserve, and restore coastal waters and ocean ecosystems.
4) Fund adaptive management, planning, coordination, monitoring, research, and other necessary activities to minimize the adverse impacts of climate change on California's ocean ecosystem.

This project will promote the activities of the California Marine Renewable Energy Work Group (MREWG)[1]. The MREWG is a state-federal collaborative led by the OPC to facilitate a dialogue among state and federal agencies, developers, and stakeholders on siting, planning, and regulatory challenges related to this emerging industry.

**CONSISTENCY WITH THE OPC'S STRATEGIC PLAN**:
This project implements Focal Area E, "Existing and Emerging Ocean Uses", from the OPC's Strategic Plan. The goal of Focal Area E is to ensure that existing and emerging uses of California's coast and ocean are planned and managed in a manner that balances their social and economic benefits with the long-term protection and sustainability of the state's marine and coastal resources. This project will provide an in-depth study and analysis of the environmental, electrical, physical, economic, stakeholder, coastal infrastructure, and policy issues and needs associated with offshore wind development in the Humboldt Bay region of the California North Coast. Researchers at SERC will utilize best scientific and engineering practices and recognized experts to identify and analyze these issues. In addition, this project implements Objective 13.1: "Anticipate and address regulatory issues, policy development, and information needs associated with the development of marine renewable energy through coordination activities and other means" by improving access to information for marine renewable energy siting, planning, and regulatory processes.

**CONSISTENCY WITH PROPOSITION 84 (The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006; Public Resources Code §75060(g)**
The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84) provides funding for the protection of beaches, bays, and coastal waters. This project will provide coastal managers and planners with information necessary to properly and effectively protect the coast consistent with the objectives of Proposition 84.

[1] http://www.opc.ca.gov/2010/05/offshore-wave-energy-development/

**CONSISTENCY WITH THE OPC'S GRANT PROGRAM FUNDING GUIDELINES:**
The proposed project is consistent with the OPC's Grant Program Funding Guidelines for Proposition 84 funds, in the following respects:

Required Criteria

1. Directly relate to the ocean, coast, associated estuaries, or coastal-draining watersheds: This project would benefit coastal communities of Humboldt and Del Norte Counties (Exhibit A).
2. Support of the public: This project is supported by the Humboldt County Board of Supervisors, Pacific Gas and Electric, and the Redwood Coast Energy Authority.
3. Greater-than-local interest is demonstrated by the fact that developers have proposed several commercial-scale offshore wind energy projects to be located on the Outer Continental Shelf off the Central and North Coasts of California. Issues addressed in this project are relatable to other regions of the state.

Additional Criteria

4. Improvements to management approaches or techniques: This project will lead to improvements in siting, planning, and permitting offshore wind energy projects.
5. Resolution of more than one issue: This project will address multiple issues relating to offshore wind energy development including electrical, environmental, coastal infrastructure, stakeholder, and public-policy issues.
6. Leverage: As indicated in the budget, a total match of $309,332 is pending for this project.
7. Timeliness: Timely funding of this project would enable the study to be disseminated before the BOEM leasing process has completed for the Humboldt Call Area.
8. Coordination: The primary outlet for project coordination will be the OPC-led MREWG.

**COMPLIANCE WITH CEQA:**
The proposed project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves only data collection, research and resource evaluation activities that will not result in a serious or major disturbance to an environmental resource. Staff will file a Notice of Exemption upon approval by the OPC.