UNSOLICITED APPLICATION FOR AN OUTER CONTINENTAL SHELF RENEWABLE ENERGY COMMERCIAL LEASE UNDER 30 CFR 585.230

Redwood Coast Offshore Wind Project

Submitted to:
U.S. Department of the Interior
Bureau of Ocean Energy Management (BOEM)
Pacific Region
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EXECUTIVE SUMMARY

Redwood Coast Energy Authority (RCEA) is submitting this unsolicited request for a United States Outer Continental Shelf (OCS) commercial lease in conjunction with the unrivalled capabilities and commitment of EDPR Offshore North America LLC ("EDPR Offshore"), Principle Power, Inc. (PPI), and Aker Solutions Inc. ("ASI"), collectively the "Project Partners." Following a competitive community-driven process[1], RCEA selected the Project Partners to enter into a public-private partnership to pursue the development of the Redwood Coast Offshore Wind Project ("Redwood Coast Project").

Since 2003, RCEA has been an integral part of the Humboldt County community. RCEA is a local government Joint Powers Agency founded in 2003 whose members include the County of Humboldt, the Cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, and Trinidad, and the Humboldt Bay Municipal Water District. RCEA's Board is made up of representatives of each of its members; an organization that is a true reflection of the community's character. RCEA has worked with members of the project partnership and members of the community since 2017 to explore and develop the offshore wind potential of Humboldt County. RCEA and Project Partners are thoroughly familiar with the community resources, values, and conditions in, around, and offshore of Humboldt County. RCEA and partners have done extensive community outreach – informing the public and commercial interests, gathering feedback, and listening to and incorporating the concerns and desires of the entire region – to form the basis for the Redwood Coast Project lease application submitted to BOEM. Overall, RCEA and Project Partners' advanced work with the Humboldt community, state and federal agencies, and the Department of Defense, has generated an overwhelmingly positive response to the proposed project, and sets the framework for successfully delivering clean energy to local ratepayers at an acceptable cost.

RCEA and the Project Partners propose a commercial wind farm for deployment offshore of Humboldt County, California. The approximately 100-150 megawatt (MW) project is expected to consist of approximately 8 to 16 WindFloat foundations outfitted with large scale commercial offshore wind turbines not smaller than 8.0MW. The floating wind farm would be sited in 600-1,000 meters of water approximately 21 to 29 nautical miles from shore (about 24 to 33 miles; 38 to 53 kilometers [km]). An offshore grid and subsea cable would be used to export produced electricity to facilities at the Humboldt substation. Infrastructure planning in conjunction with the Port of Humboldt Bay is already underway.

The Redwood Coast Project will bring unprecedented economic development to the region. The Project Partners plan for facilities at the Port of Humboldt Bay to potentially serve as the final assembly, hull load-out, turbine installation, and future maintenance base for WindFloat units. As a result, the Redwood Coast Project would require investment and revitalization of local infrastructure at the Port of Humboldt Bay and other nearby onshore facilities. To the greatest extent possible, the Redwood Coast Project will maximize the use of existing facilities and collaborate with local stakeholders to identify and address local infrastructure improvements. These investments will require skilled labor from the immediate and surrounding area and will create jobs and training to fulfill these commitments, thus advantageously positioning Humboldt County for future offshore development up and down the West Coast. RCEA and Project

[1] A Request for Qualifications (RFQ) was released by RCEA in February 2018. The RFQ document is attached in the appendices

Partners believe this project will kick off the offshore wind industry and increase the interest and success of future BOEM leases.

RCEA and its Project Partners have engaged in a systematic and comprehensive process to determine the best location for the Humboldt offshore site that mitigates impacts to the environment and community. Based on preliminary discussions with the local community, including fisheries' representatives, the proposed site location 21 to 29 nautical miles from shore avoids or minimizes impacts on marine navigation corridors, major commercial fishing areas, environmental resources such as wildlife migratory corridors, sensitive habitats, and threatened or endangered species. Most importantly, this site location is de-conflicted from groundfish commercial fishing activities as much as possible. RCEA and Project Partners will continue proactive community and stakeholder outreach, including further dialogue with the commercial fishing community and recreational fishers, as the project progresses to understand and address potential concerns.

RCEA's mission is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region. The proposed site taps into the highest average annual wind speed offshore Humboldt Bay to maximize the capacity factor and power produced by the project. Wind speed averages annually between 9 m/s and 10 m/s in the proposed lease area, among the best in California. The site has also been sized appropriately for this small project, about 194 sq. km or 75 sq. miles to start and likely to shrink as micro-siting occurs. The size allows some buffer as flexibility to consider seabed conditions unknown at this stage of the project, and importantly, allows ample space outside the proposed lease area for the additional leasing of other sites in the future, with the guidance of BOEM and the support of the community.

RCEA and Project Partners possess an unparalleled ability to develop, finance, operate projects and build an offshore supply chain. The complementary capabilities of PPI, EDPR Offshore and ASI coupled with strong balance sheets bring the long-term commitment over the whole project life cycle needed for a successful project. With more than 5GW located in the US, EDPR is ranked fourth in the world in wind energy based on net installed capacity. EDPR NA operates 228MW in California where it already has negotiated and holds offtake agreements with utilities and community choice aggregators. PPI's WindFloat is the leading technology in its class with the most promising current and projected levelized cost of energy (LCOE). The WindFloat technology has been proven in multiple scenarios ranging from a full-scale single prototype unit, to planned deployments of multi-unit demonstration projects (25-50 MW), and the ongoing development of a full scale commercial wind farm (400MW+). Due to its shallow draft and deployment flexibility, the WindFloat is perfectly suited for Humboldt County. Its construction and installation philosophy is designed to leverage the natural advantages and existing onshore infrastructure and assets that Humboldt County currently features.

PPI and EDPR's track record of developing together multiple floating offshore wind projects will enhance the development process and the ability of the project to reach bankability that will endorse its stand-alone commercial viability. In addition, ASI is part of the Aker Solutions group of companies, a 14,000 employee global energy services company with a proven track record in designing and delivering over 160 floating facilities, and will participate in the development and financing of the project, while building supply chain interests locally and throughout the region. The team also includes experts in federal, state and local permitting; and local avian ecology and behavior; vertebrate community ecology; marine mammal presence, habitat use, and

migration; and marine bathymetry, current patterns, physical oceanography, and coastal processes between the Eel Canyon and Trinidad Canyon.

RCEA and Project Partners are committed to deliver the Redwood Coast Project on or prior to 2024. We believe we can leverage the world-class wind resource, the natural enabling infrastructure and strong ecosystem of relevant stakeholders to make the Redwood Coast Project the first project to unlock the extraordinary value of offshore wind energy for California.

1. INTRODUCTION

Redwood Coast Energy Authority (RCEA) is pleased to submit this unsolicited request for a United States Outer Continental Shelf (OCS) commercial lease in accordance with the requirements of 30 CFR § 585.230.

In April 2018, RCEA conducted a competitive community-driven process[2] to select a team to enter into a public-private partnership to pursue the development of the Redwood Coast Offshore Wind Project ("Redwood Coast Project"). RCEA selected a consortium that includes **Principle Power, Inc (PPI)** for project management, design and technology engineering, project development services, operational and health and safety services to the project; **EDPR Offshore North America LLC (EDPR Offshore)** for project management, development, procurement, financing, construction management and wind farm operation; and **Aker Solutions Inc. (ASI)** for project management, project financing services, power system design, export/array cables design, offshore facilities design, and offshore O&M support to the project. In addition, planning, environmental, and permitting services will be provided by H. T. Harvey & Associates, and Herrera Environmental Consultants, Inc. Throughout this application, RCEA, the applicant, and its partners, are collectively referred to as the "Project Partners."

RCEA and Project Partners propose a commercial wind farm for deployment offshore of Humboldt County, California. The approximately 100-150 megawatt (MW) project is expected to consist of approximately 8 to 16 WindFloat foundations outfitted with large scale commercial offshore wind turbines not smaller than 8.0 MW. The floating wind farm would be sited in 600-1,000 meters of water approximately 21 to 29 nautical miles from shore (about 24 to 33 miles; 38 to 53 kilometers [km]). An offshore grid and subsea cable would be used to export produced electricity to facilities at the Humboldt substation. Infrastructure planning in conjunction with the Port of Humboldt Bay is already underway. The Project Partners plan for facilities at the Port of Humboldt Bay to potentially serve as the final assembly, hull load-out, turbine installation, and future maintenance base for WindFloat units.

The project, including the turbine, will be assembled and tested on-shore or quayside in a controlled environment. No heavy lift operations or commissioning of the turbines will be conducted at sea. As a result, transport and installation of the project is simplified, requires less-costly vessels, and is not subject to the same weather restrictions as offshore wind projects employing bottom-fixed foundations.

The wind resource off the California coast is robust (see Section 2.4.1). The Redwood Coast Project units will be deployed in water depths of approximately 600 to 1,000 meters, with development to occur away from areas where existing uses might conflict. A preliminary analysis of Humboldt's wind resource and known environmental and stakeholder constraints suggests that the proposed location is favorable for project development.

The proposed project plans for final configuration to be determined as the engineering, leasing and environmental assessments progress. The mooring system for each unit is made of conventional components: chain, polyester rope, and heavy chain, connected to anchors - a technology that requires no piling and is well suited to deep and variable seabed conditions. The installation is completely reversible (no permanent infrastructure will be left on the sea bed upon

[2] A Request for Qualifications (RFQ) was released by RCEA in February 2018. The RFQ document is attached in the appendices

decommissioning), and acoustic disturbances are expected to be minimal. RCEA and Project Partners will continue to conduct comprehensive stakeholder interviews and environmental/existing-use analyses prior to micro-siting the turbines within the requested lease area.

RCEA and the Project Partners have engaged with agencies (state and federal) and stakeholders regarding the development of the Redwood Coast Project, including BOEM, Department of Defense, California Energy Commission, U.S. Fish and Wildlife, NOAA Fisheries, Bureau of Land Management, and U.S. Coast Guard. Conversations held with the Humboldt Bay fishing community have included the Humboldt Fishermen's Marketing Association and the Pacific Coast Federation of Fishermen's Associations to identify the general location of several valued fishing areas within proximity to the project area. RCEA has also entered preliminary discussions with local and regional education and research institutions (e.g., Humboldt State University - Schatz Energy Research Center) and non–governmental organizations interested in the intersection of energy development and environmental protection in California. RCEA has also had initial meetings with local tribes including the Wiyot, Blue Lake Rancheria, Trinidad Rancheria, and Yuroks.

Principle Power, Inc's (PPI's) WindFloat is the leading technology in its class with the most promising current and projected levelized cost of energy (LCOE). The WindFloat technology has been proven in multiple scenarios ranging from a full-scale single prototype unit, to planned deployments of multi-unit demonstration projects (25-50 MW), and the ongoing development of a full-scale commercial wind farm (400MW+). Due to its shallow draft and deployment flexibility, the WindFloat is perfectly suited for Humboldt County. Its construction and installation philosophy are designed to leverage the natural advantages and existing onshore infrastructure and assets that Humboldt County currently features.

With more than 5GW located in the US, EDPR is ranked fourth in the world in wind energy based on net installed capacity. EDPR NA operates 228MW in California where it holds offtake agreements with utilities and community choice aggregators. PPI and EDPR track record of developing together multiple floating projects will enhance the development process and the ability of the project to reach bankability that will endorse its stand-alone commercial viability. In addition, ASI is part of the Aker Solutions group of companies, a 14,000 employee global energy services company with a proven track record in designing and delivering over 160 floating facilities. ASI will leverage its global capabilities and participate in the development and financing of the project, while building supply chain locally and throughout the region.

2. INFORMATION REQUIRED FOR AN UNSOLICITED REQUEST FOR A COMMERCIAL LEASE

The Bureau of Ocean Energy Management (BOEM) regulations allow for the submission of an unsolicited request for a commercial lease. The following information addresses each of the elements required, under 30 CFR 585.230, for a commercial lease.

2.1. Area Requested for Lease - 30 CFR 585.230(a)

RCEA and the Project Partners propose the deployment of a multi-turbine floating wind farm off of Humboldt County, California, at a location that is approximately 600 to 1,000 meters (1,968-3,280 feet) deep and approximately 21 nautical miles [nm] (24 miles or 38 kilometers [km]) from any land area of the State (Figure).

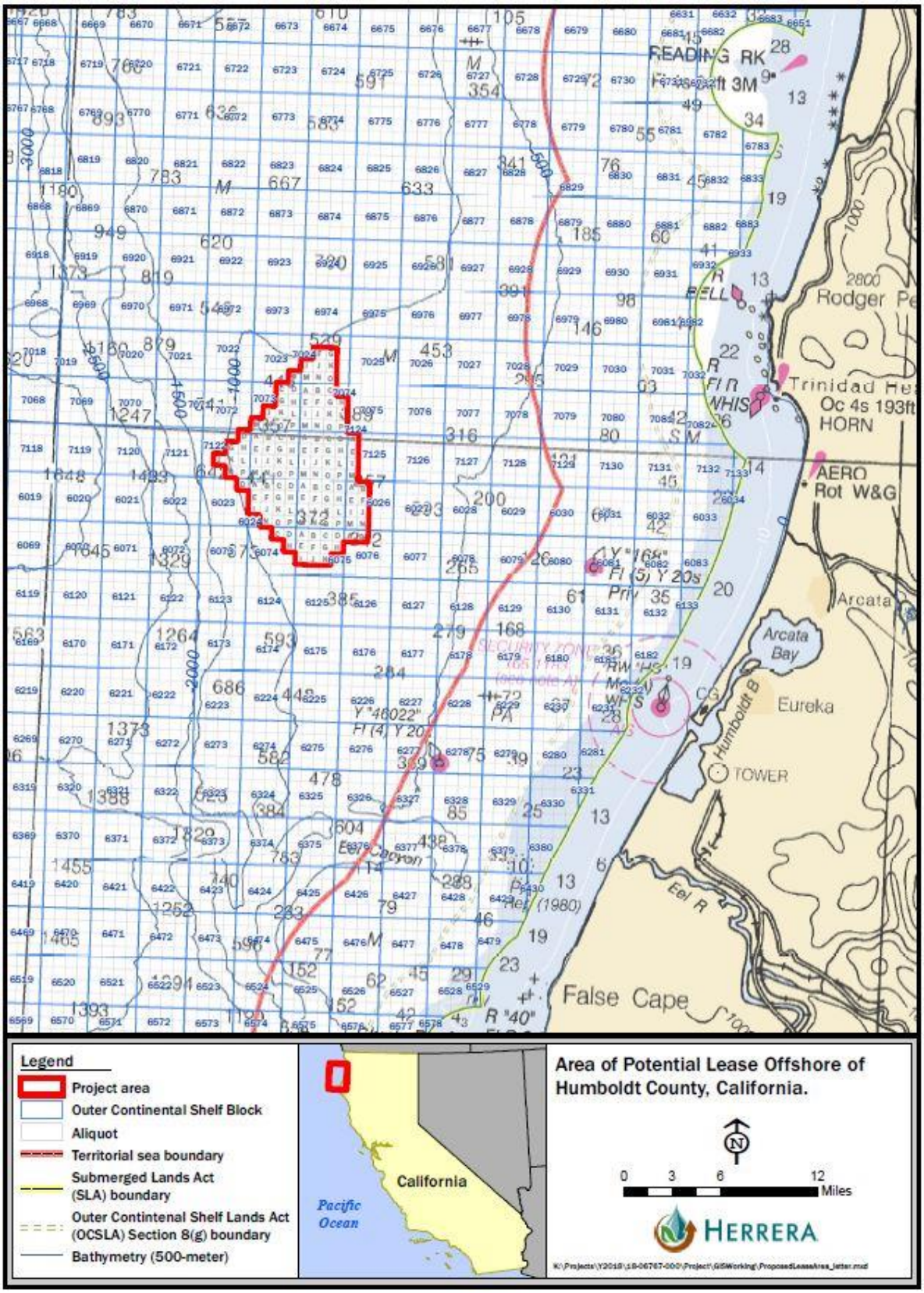


Figure 1. Area of Proposed Lease Offshore of Humboldt County, California

Table 1 provides the legal description of the proposed area for the lease is within the OCS official Protraction Diagram NK10-01.

Table 1. OCS Lease Area Blocks

Block Number	Partial Block (Aliquot) Designation	Quantity of Aliquots
6023	D	1
6024	A,B,C,D,E,F,G,H,I,J,K,L,N,O,P	15
6025	A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P	16
6026	A,B,E,F,I,J,M,N	8
6074	C,D,H	3
6075	A,B,C,D,E,F,G,H,I,J,K	11
6076	A,B	2
7023	P	1
7024	F,G,I,J,K,M,N,O	8
7073	C,D,G,H,J,K,L,M,N,O,P	11
7074	A,B,C,E,F,G,H,I,J,K,L,M,N,O,P	15
7122	D,G,H,J,K,L,O,P	8
7123	A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P	16
7124	A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P	16
7125	A,E,I,M	4

A spatial file compatible with ArcGIS 9.3 (geographic information system shape files) in a geographic coordinate system (North American Datum of 1983 [NAD 83]) is included with this submittal.

Figure represents the most suitable site location based on local stakeholder feedback (discussed below in Section 2.1.1), with the following characteristics to maximize energy capture while minimizing impacts:

- The total surface area of the proposed lease area is about 194 sq. km or 75 sq. miles. It is directly located offshore Humboldt Bay as close to the proposed interconnection point as possible.

- Once detailed assessments of oceanographic and seabed conditions have been undertaken, the final wind farm size is assumed to be significantly smaller. The approximately 100-150 MW wind farm will be micro-sited within the proposed lease area, with an expected total footprint of approximately 30 sq. km or approximately 12 sq. mi. Each platform of the wind farm will be spaced approximately one mile apart which would correspond to about 7-8 turbine diameters.

- This site taps into the highest average annual wind speed offshore Humboldt Bay to maximize the capacity factor of the project. Wind speed averages annually between 9 m/s and 10 m/s in the proposed lease area.

- To keep the project sited at a distance from shore ranging from 24 mi to 36 mi, the water depth varies between 600m and 1,000m. The rationale for this distance from shore is to minimize visual impacts from the coast by taking advantage of the curvature of the Earth and minimize impacts to the fishing community. This location will limit any potential viewshed issues and minimize conflicts with fishing activities.

2.1.1. Screening Process Used to Select Site

RCEA and its Project Partners have engaged in a systematic and comprehensive process to determine the best location for the Humboldt offshore site. In August 2018, RCEA and Project Partners shared the proposed project area with BOEM during their initial spatial planning process assessing north coast offshore wind potential. The following components are described in more detail below:

- An examination of wind, ocean, and sea floor resources

- An examination of environmental conditions and potential issues

- Extensive consultation with local stakeholders

Wind and Infrastructure Resources

At the broadest level, RCEA and Project Partners consider the market conditions and wind resource first, then grid interconnection and local infrastructure capabilities. Because of the WindFloat's flexibility in siting at a selected project location, consideration of local socioeconomic and environmental issues follows, although they are considered no less important.

Based on previous WindFloat deployments, several criteria were established to successfully implement the Humboldt offshore wind project and, therefore, address the project purpose and need. They include, but are not limited to:

- Strong wind resource, that is, greater than 18 miles per hour (mph) (8 meters per second [m/s]) average wind speed, with sufficient potential to generate project revenue.

- Close to harbor facilities with suitable heavy-lift capability, lay-down and assembly infrastructure, and deep-draft marine access

- Free from physical obstructions that would block access between onshore WindFloat assembly site and offshore installation site. The WindFloat units potentially will be assembled at a port facility, then towed out to sea. The tow route must be free of obstructions, such as bridges, that are less than 600 feet above the mean higher high-water elevation.

- Close proximity to a potential customer(s) willing to purchase power generated by the project

- Suitable onshore electrical/transmission infrastructure
- Water depth of at least 164 feet (50 meters) at installation site

The Humboldt County location was selected for the unsolicited lease application after application of these criteria and the following results:

- Sites with average wind speeds of more than 10m/s are quite common up and down the Humboldt County Coast (NREL 2016) which would induce very large capacity factors for wind farms sited there.
- Humboldt County already possesses natural assets and a strong ecosystem of local players to develop this project, with the potential to kick-start an entire industry as the leading offshore wind hub of the West Coast:
    - The Port of Humboldt Bay is a deep-draft port facility with upland infrastructure available that could be revitalized and upgraded at least for the erection of the floating wind turbines[3]. We are aware that quayside investments are needed, but these investments can be directed towards the broadest community benefit and with a larger pipeline of projects in mind.
    - RCEA is a community choice aggregator that provides some flexibility and is eager to develop the offshore wind resource in the County
    - Humboldt State University and the Schatz Energy Center provide tremendous academic and research support and can prepare the next generation of industry participants.
    - This project will rely on the existing grid infrastructure as much as possible and will not require any major upgrades. Humboldt County has been characterized as an electricity peninsula due to its limited local capacity and importing/exporting capabilities; this project can drive investment into transmission connecting to the larger California grid in the medium to long-term. Given the world-class wind resource, we can expect additional offshore wind projects will be proposed off of Humboldt County in the years following this project.
- Market conditions in California are the highest priced on the West Coast
- Other potential locations along the California coast were deemed incompatible with Department of Defense activities.

Environmental Resources

RCEA and Project Partners also use criteria to assure that a site will avoid or minimize impacts on environmental resources, such as fish and wildlife migration corridors, sensitive habitats, threatened or endangered species, marine navigation corridors, and major commercial fishing areas.

[3] This is also demonstrated in Robert Collier's paper: "High Road for Deep Water", available at: http://laborcenter.berkeley.edu/pdf/2017/High-Road-for-Deep-Water.pdf

To assess potential conflicts, RCEA and Project Partners examined nautical charts featuring the proposed project area and datasets in the Multi-Purpose Marine Cadastre (BOEM 2013) and California Offshore Wind Energy Gateway through DataBasin. In addition, RCEA and Project Partners consulted with local experts including representatives of the commercial fishing fleets, commercial vessels, and noncommercial users to determine the viability of the project area. RCEA and Project Partners also consulted with staff from the Harbor District, local agencies, the Ocean Protection Council, and BOEM.

Drawing from these consultations and expertise, RCEA and Project Partners have examined and identified the issues that will likely drive the environmental permitting process, and have initiated discussions with important stakeholder groups. The highest priority environmental interactions that will likely drive baseline and post-installation monitoring are expected to be:

- Potential threats to soaring seabirds from the turbine blades;
- Potential for the physical presence of multiple wind platforms to affect the nearfield habitat and sediments;
- Potential for the platforms to create a collision risk to marine mammals and interfere with whale migration;
- Potential effects of electromagnetic fields on elasmobranchs (sharks and rays);
- Potential effects of cable installation on whale migration and listed seabirds and fish;
- Potential effects of project moorings to entangle lost fishing gear; and
- Potential effects of lighting on birds.

Additional environmental issues that may be raised include:

- The physical presence of the device affecting the far field habitats in the region and resulting in avoidance by seabirds or cetaceans;
- Potential effects of electromagnetic fields on the behavior of fish and sea turtles; and
- Potential effects of boat traffic on marine mammals during installation and maintenance operations.

After these consultations and because of the WindFloat's ability to be sited in various water depths and sea bottom conditions, RCEA and Project Partners are confident in the proposed general location for the project.

RCEA and Project Partners will rely on the expertise of the Harbor District staff and consultations with local experts including representatives of the commercial fishing, recreational fishing, commercial vessels, noncommercial users, California state and local regulatory agencies, and the general public – and the results of studies completed and discussions with scientists - to microsite the project components within the project area to be leased

Outreach, Coordination and Engagement Efforts

RCEA and Project Partners believe that the project's success will depend on engaging, educating, and involving the local community and key stakeholders in all stages of the project development process. The permitting pathway provides opportunities for public input and comment, but a greater public participation role is desirable for this project to be community-based. RCEA and its partners have already reached out to the local community many times, with commitment to continue to engage, educate and involve these stakeholders through the development and operations of the project.

In June 2017 RCEA and PPI started a stakeholder engagement process with the local Humboldt community, and organized one-on-one meetings with different stakeholder groups. RCEA and/or PPI representatives met with the following types of organizations present in Humboldt County:

- Local government and city officials - Ongoing conversations and presentations
- Humboldt State University (notably the Schatz Energy Research Center), including faculty linked to environmental and fishing interests
- Humboldt Bay Harbor, Recreation and Conservation District (Humboldt Bay Harbor District)
- Environmental groups in the area
    - Humboldt Baykeeper
    - Northcoast Environmental Center
    - EPIC (Environmental Protection Information Center)
    - Redwood Sierra Club/Audubon
    - Redwood Alliance
    - Friends of the Dunes
    - Trinidad Coastal Land Trust
    - Humboldt 350.org
    - Humboldt Surfrider
- Local Tribes
    - Wiyot Tribe, Trinidad Rancheria, Blue Lake Rancheria, Bear River Rancheria
- Fishermen and local fishing associations
    - Local fishermen
    - Humboldt Fishermen's Marketing Association. See Appendix D for a Memorandum of Understanding (MOU).
    - Pacific Coast Federation of Fishermen's Associations
- Economic Development and Labor Organizations
    - City of Eureka - Economic Development

- Prosperity Network
- Carpenters Local 751
- Operating Engineers Local No. 3
- Greater Eureka Chamber of Commerce

- Supply chain and onshore infrastructure
  - Humboldt Bay Harbor District

- Public Presentations and Meetings
  - October 14, 2017, North Coast Sustainable Living Expo.
  - November 9, 2017, Humboldt State University Sustainable Futures Speaker Series.
  - November 13, 2017, Osher Lifelong Learning Institute lunchtime lecture series.
  - February 9, 2018, Governor's Office of Research and Planning workshop on North Coast regional Integrated Climate Adaptation, Resiliency, and Renewable Energy Development and Infrastructure.
  - March 5 & 6 2018, Open House Events in Eureka and Arcata, with displays, Q&A, discussions about offshore wind and other local energy issues.
  - March 22, 2018, Annual North Coast Economic Development Forum.
  - March 28, 2018 Humboldt Bay Harbor working group lunchtime lecture series.
  - April 18, 2018, Informal State and Federal North Coast Stakeholder Workshop.
  - April 20, 2018, CA Energy Commission Integrated Energy Policy Report North Coast Regional Workshop.
  - May 17, 2018, Humboldt Bay Harbor Safety working group.

- Media/Press
  - December 2017
    - **KHSU –** Radio interview with Matthew Marshall on the KHSU "Homepage" program.
  - January 2018
    - **KHUM –** Radio interview with Matthew Marshall on the "Coastal Currents" program.
  - February 2018
    - **North Coast Journal** (cover story, 5 pages) "I*n the Wind - Can offshore wind energy reshape the future of Humboldt County?*"- Humboldt's local weekly

journal looked at the potential benefits of a renewable wind energy industry based in Humboldt Bay. (See Appendix F)

- **KHSU EcoNews Report** – Hour-long produced program/discussion about offshore wind in Humboldt, with Matthew Marshall and Jen Kalt.

- March 2018
  - **Times-Standard** - '*Wind resource in Humboldt is phenomenal': Local experts look into area wind energy feasibility.*
  - **KIEM-TV** – Harbor Working Group explores potential offshore wind energy project, a TV broadcast.
  - **KMUD Community Radio -** A one-hour call-in talk show about offshore wind, with Matthew Marshall.
- April 2018
  - **North Coast Journal** – "RCEA Selects 'Highly Capable' Wind Energy Team"
  - **Times-Standard** – "RCEA announces partnership for offshore wind farm"
  - **KMUD Community Radio** – Interview with Matthew Marshall.
  - **Jefferson Public Exchange** – "North Coast Eyes Offshore Wind Farm," interview with Lori Biondini of RCEA, Jason Busch of the Pacific Ocean Energy Trust, and host Geoffrey Riley.
- June 2018
  - **Greater Eureka Chamber of Commerce** - June 12, 2018: Presentation for the "Business and Industry" committee.
- July 2018
  - **KHSU Thursday Night Talk** – Lori Biondini of RCEA and Jen Kalt of Humboldt Baykeeper discussed the proposal and potential environmental impacts, both positive and negative, with host Tom Wheeler.

With these preliminary meetings which aimed at engaging, informing and starting a dialogue with the local community, RCEA and Project Partners have already demonstrated commitment and a track record of transparent and collaborative community engagement and participation in Humboldt County. The project has received broad community support (see Appendix F).

Based on these discussions with the local community, the proposed site location avoids or minimizes impacts on environmental resources, such as wildlife migratory corridors, sensitive habitats, threatened or endangered species, marine navigation corridors, and major commercial fishing areas. Most importantly, this site location minimizes conflict with groundfish commercial fishing activities as much as possible (public data on the trawl fishing tracks in deeper waters in the past ten years was utilized to select the area with minimal impact), but further dialogue with

the fishing community, including recreational fishers, is planned to occur as the project progresses.

A multi-stakeholder approach will be taken for any investment that the project will drive, which means that any potential investment in the community will be discussed with local stakeholders to see how this investment could potentially benefit these groups as well. RCEA and pro Project Partners will continue to coordinate with stakeholders, including fishing interests, regulatory agencies, and the public, to learn of potential project-related concerns, to refine the project to address those concerns, and to enhance the benefits the project can bring to the community and minimize the impact of the project on current coastal uses. With these preliminary meetings which aimed at engaging, informing and starting a dialogue with the local community, RCEA and Project Partners have already demonstrated commitment and a track record of transparent and collaborative community engagement and participation in Humboldt County.

2.2. General Description of Objectives and Facilities

2.2.1. Objectives

The objective of the Redwood Coast Project is the installation and operation of approximately 8 to 16 WindFloat foundations outfitted with large scale commercial offshore wind turbines not smaller than 8.0 MW, for a total installed capacity of approximately 100-150 MW. The Project aims to be not only the first commercial offshore wind farm in California, but also the anchor to cast Humboldt County as the offshore wind industry hub of the West Coast and as a flagship for the Floating Offshore Wind industry worldwide. The planned capacity of approximately 100-150 MW and location approximately 21 to 29 nautical miles off the coast of Humboldt County will bring sufficient scale to produce competitive clean and sustainable energy and limited environmental impacts for the benefit of the Humboldt County community. Specifically, the project will address the following objectives:

- Deliver cost-effective renewable energy to the local grid. By harnessing the plentiful local offshore wind resource, the Redwood Coast Project will deliver clean energy to local ratepayers at an acceptable cost. The lack of anticipated major transmission upgrades will allow for a fast-track project and aid cost-effectiveness.

- Bring economic development to the region. The Redwood Coast Project will require investment and revitalization of local infrastructure at the Port of Humboldt Bay and other nearby onshore facilities. The Redwood Coast Project will maximize the use of existing facilities and collaborate with local stakeholders to identify and address local infrastructure improvements. These investments will require skilled labor from the immediate and surrounding area and will create jobs and training to fulfill on these commitments, thus advantageously positioning Humboldt County for future offshore development.

- Educate and promote social acceptance. RCEA and Project Partners will continue proactive community and stakeholder outreach to understand and address potential concerns.

- Mitigate impacts to the environment and community. RCEA and Project Partners will leverage experience and local knowledge to mitigate and address environmental issues

and will collaborate with fishers and recreational ocean users to mitigate any potential impacts to the community.

2.2.2. Offshore Production Facilities

Turbine

The offshore wind turbine considered initially for the Redwood Coast Project is a 12MW wind turbine. Table 2 shows the main characteristics and specifications of a wind turbine with a 12MW power rating.

Table 2. 12MW Turbine Specifications

Rated Power	12 MW	**Tower type**	Tubular Steel
Cut-In Wind Speed	3.5 m/s	**Hub Height (from water line)**	132 m
Cut-Out Wind Speed	28 m/s	**Blade Length**	107 m
Operational Rotor Speed	From ~3.0 to ~10.0 rpm	**Rotor Diameter**	220 m
Nominal Rotor Speed	~8.0 rpm	**Swept Area**	38,000 m²
		Generator	Permanent Magnet Synchronous
Design Parameters			
Wind Class	IEC B	**Nominal Voltage**	6.6 kV
Structural Life	25 years	**Frequency**	60 Hz (US Market)
		Gearbox Type	Direct Drive (no gearbox)

Floating Platform

The WindFloat is a unique semi-submersible type, column-stabilized, offshore platform with water-entrapment plates, an asymmetric mooring system, and an offshore wind turbine located on one of the columns. The WindFloat has been developed specifically to achieve exceptional stability performance while reducing structural weight and simplifying logistics during installation and operation. The practically pitch- and yaw-free performance in the offshore environment allows the use of existing commercial offshore wind turbines, with only minor modifications to control software.

Three columns (Figure 2, item 1) provide buoyancy to support the turbine and provide stability from the water plane inertia. Columns are spaced about 75m apart, laid out in a triangle, to counteract the large wind-induced overturning moment.

The columns are interconnected with a truss structure composed of main beams (Figure 2, item 2) connecting columns and bracings (Figure 2, item 3). The secondary structure includes a boat landing (Figure 2, item 4) on one of the columns, deck space and railings on top of columns and between columns to enable personnel access (Figure 2, item 5), and equipment to support the onboard crane, array cable hang off, etc. Additional areas may be used to support secondary structures, such as to provide access around the wind turbine tower. The height of the deck (freeboard) is positioned to ensure that the highest expected wave crests will not damage deck equipment or the turbine blades.

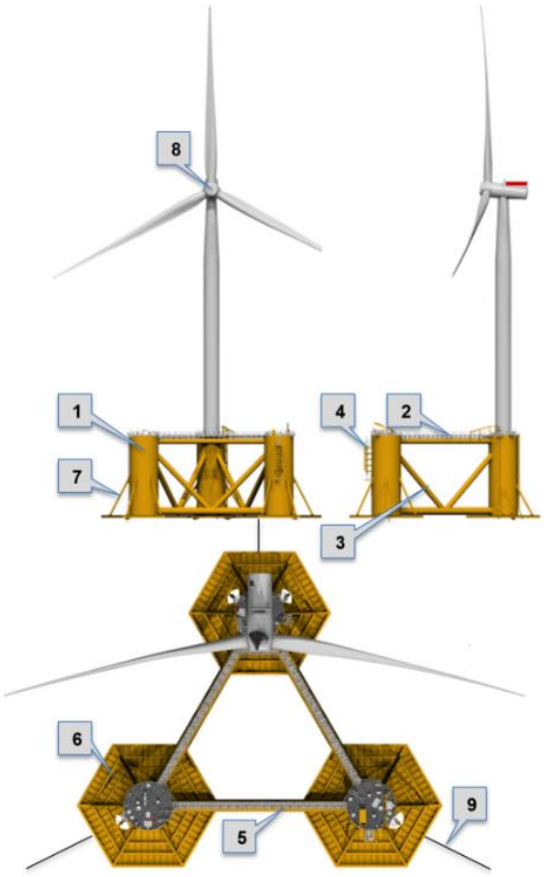


Figure 2. Front, Top and Side Views of the WindFloat

Horizontal plates (Figure 2, item 6) at the bottom of the columns shift the natural period away from the wave energy; increasing viscous damping in roll, pitch, and heave. These water-entrapment plates provide additional hydrodynamic inertia to the structure due to the large amount of water displaced as the platform moves. In addition, vortices generated at the edge of the plates generate large damping forces that further impede platform motion. Stiffeners cantilevered from the bottom of the columns, with bracings (Figure 2, item 7) provide structural support to the heave plates.

The WindFloat substructure is designed to keep wind turbine motions within the manufacture-specified design envelope, meaning that commercial offshore wind turbines can be used “off-the-shelf” with no physical modifications (Figure 2, item 8).

The tower is made of two or three large tubular steel sections that are usually bolted together via a flange. At its lower end, the turbine tower extends into the column in order to maximize continuity of the structure, leading to minimized stress concentration in critical areas of the structure where bending moments are highest due to wind-induced overturning moment, and where large tubulars connect to the other stabilizing columns.

Mooring System and Inter-Array Cables

Three mooring lines (Figure 2, item 9) are arranged in an asymmetrical fashion to provide a mooring system with low pretension requirements. The mooring system is designed to address

station keeping issues (it does not need to contribute to the floater's stability) and enables simple connection-disconnection procedures that can be performed by widely available and inexpensive tug vessels. The mooring system is made of conventional components: chain, polyester rope, and heavy chain, connected to anchors.

The inter-array electrical cable configuration between the units is also shown on Figure 3. Inter-array cables will use subsurface buoys and will be submerged to the depth that would provide for the safe operation of the wind farm.

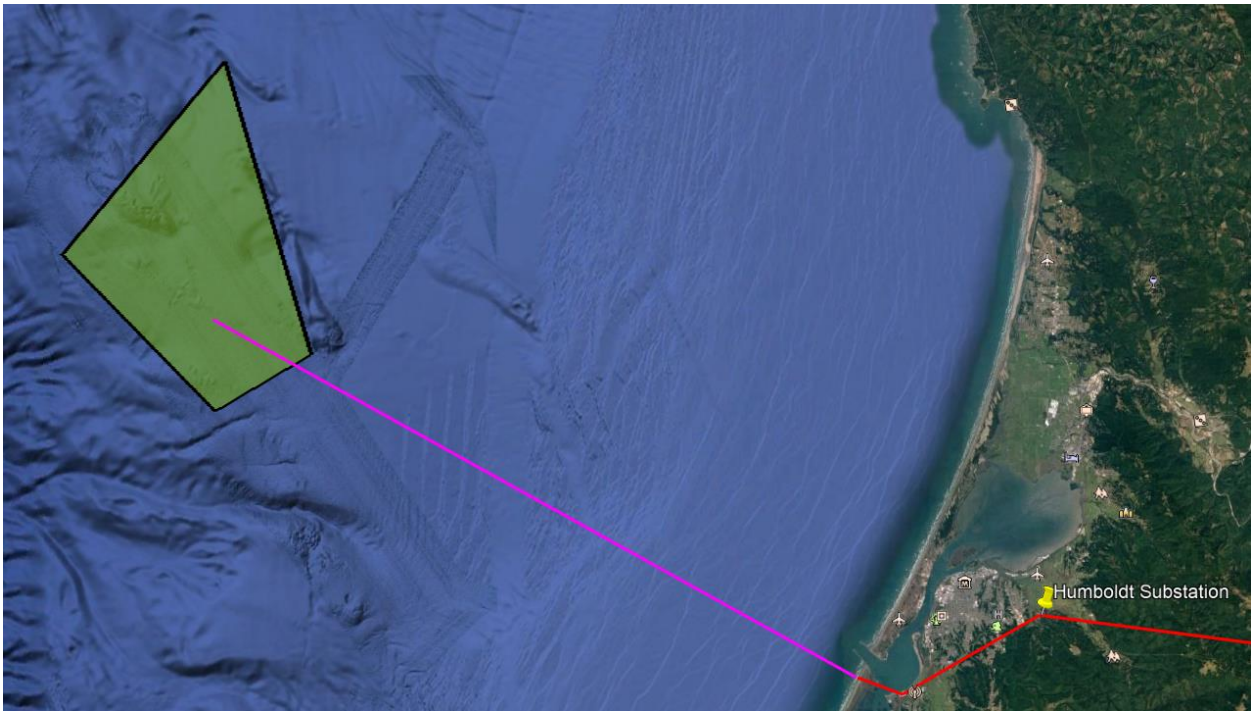
2.2.3. Power Transmission and Grid Interconnection

RCEA and Project Partners currently assume an electrical system that involves connection of the Redwood Coast Project to the grid with one parallel 115 kV export cable from a floating substation moored at the site. This configuration will need to be compared to a configuration with two parallel cables of 66kV directly connected to an onshore transformer that allows for full power transfer, minimizes the single-point-of-failure risk exposure, and avoids the need to install a high voltage substation offshore.

The proposed route of the approximately 24-mile offshore power cable will travel from the eastern most WindFloat unit in a straight line to shore. The power cable will be horizontally directionally drilled at a location offshore to be assessed by the Project Partners to avoid sensitive near-shore areas. From that point, the power cable will travel underground below the beach and the south spit of the Humboldt Bay to a point inland representing a junction with proposed onshore power infrastructure. The exact route will be subject to change based on design optimization and subsea conditions that will consider the inputs from site characterization. In cases where sensitive or hard-bottom habitat is identified, RCEA and Project Partners will have the flexibility to route the power cable around such sensitive areas.

Complete design of the offshore grid and cable infrastructure and connections, cable protection systems, and subsea connections will be completed by RCEA and Project Partners later after consideration of the results from metocean, seabed, geotechnical, and site characterization; operational factors; and interconnection requirements.

Once ashore, transmission cables will take a direct path to the interconnection point (Figure 4). After multiple site visits and investigations around the Humboldt Bay, RCEA and Project Partners found that the most suitable interconnection point would be located at the Humboldt substation. The existing transmission resources in the vicinity of the project site are owned by PG&E and are part of its Humboldt Service Area. RCEA and partners have requested a Point of Interconnection (POI) at Humboldt 115kV substation in the CAISO Cluster 11 study window. The Project is currently in Phase 1 of the CAISO Cluster Studies and was accepted into the CAISO system in early June 2018. A Phase 1 report will be issued by the end of 2018, with the full cluster study expected to be finalized in August 2020.



Note: Offshore export cable is show in purple and onshore transmission lines are shown in red

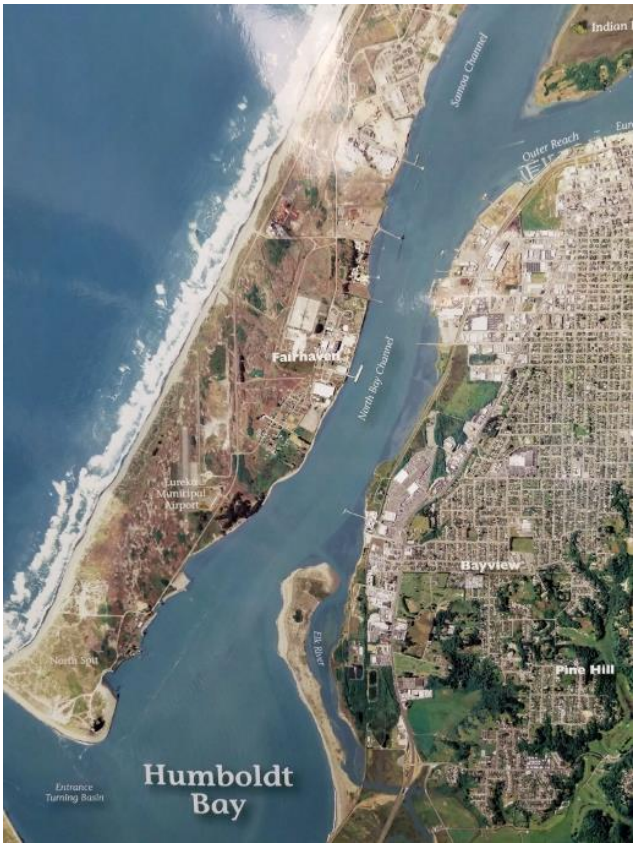
Figure 4. General Layout of Transmission Cable

Complete design of the onshore transmission route and interconnection infrastructure will be completed by RCEA and Project Partners at a later time after consideration of geotechnical conditions, land use and infrastructure constraints, and interconnection requirements.

2.2.4. Onshore Support Facilities and Staging Areas (Ports)

Port and redevelopment

RCEA and Project Partners would potentially contract with one or more facilities to fabricate platform components (i.e., columns, upper beams, V-braces, lower beams, bottom plates) and to perform final assembly (i.e., joining fabricated components and load out) of the WindFloat units. The ultimate final solution for supply chain strategy will include a balanced approach between local development and economical power prices.



Note: Picture taken by PPI at the Humboldt Bay Harbor District

Figure 5. Map of Humboldt Bay.

Humboldt Bay (shown on Figure 5) is the only deep-water port in Northern California located in Humboldt County with substantial port infrastructure. RCEA and partners made a preliminary assessment of the existing facilities in the past few months and believes that Humboldt Bay would serve as a good turbine erection and O&M facility for this project. There is also real opportunity to develop in the medium- and long-term capabilities for structures fabrication and assembly facilities by upgrading and piggy-backing on existing infrastructure at the port. There is ample space at harbor facilities for staging, storage, fabrication, and assembly operations. With the possibility to incrementally building the required infrastructure for larger commercial projects, Humboldt Bay could become a potential hub for offshore wind on the Northern Coast.

Harbor improvements and potential upgrades will be required to support this project. The harbor currently lacks a quay with sufficient size and bearing capacity to support turbine erection operations. Upgrades can be made in a way that will benefit local community, especially the fishing community. These required upgrades are expected to draw strong local community support, when carried out with the right approach and outreach effort.

The Harbor District at the Port of Humboldt Bay has shown strong interest to help plan for and build suitable facilities that will eventually serve the project. A multi-purpose berth/dock project that would accommodate assembly of floating wind turbines, and potentially other uses for local stakeholders is underway and will require inputs from the Redwood Coast Project partners.

2.3. General Schedule of Proposed Activities

RCEA and Project Partners propose a preliminary schedule that can be divided into pre-site control, early development/survey, late development, financing and pre-construction, construction and installation, commercial operations, and project lease renewal/repowering or decommissioning. The plan for each activity is detailed in this section. More engineering studies are planned to be conducted by RCEA and its partners in the next few years to refine the project construction plan. All dates assume a non-competitive lease process.

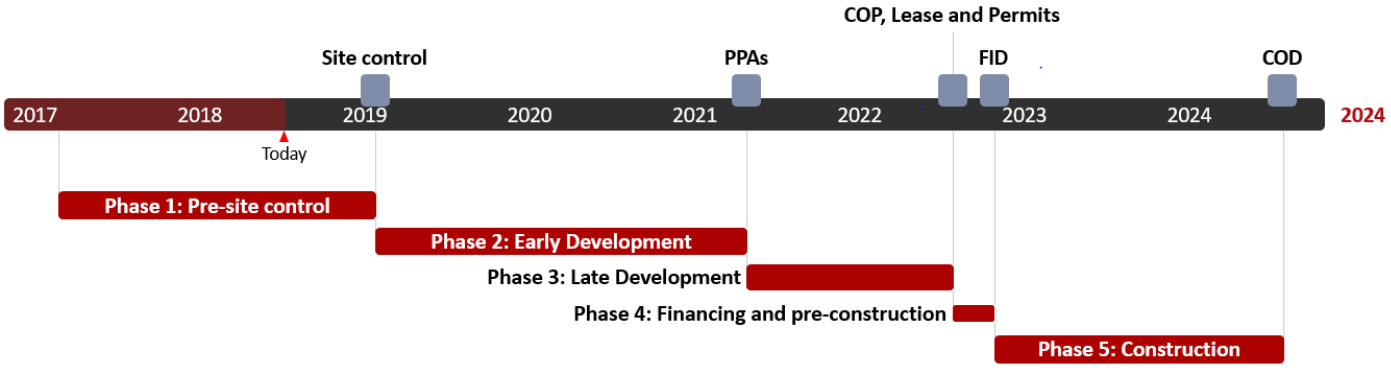


Figure 6. Key Milestones for the Humboldt project

2.4. Renewable Energy Resource and Environmental Conditions in Area of Interest

2.4.1. Energy Resource

The offshore wind resources of the United States were first estimated by the National Renewable Energy Lab (NREL) in 2003 (Musial and Butterfield 2004). Offshore wind mapping has been updated since then, most recently in 2016. A wind speed map for California (Figure 7) is available at an adjusted reference height of 100 meters above the water. Table 4 show the estimated wind speeds at different distances from shore based on these calculations.

As next steps, RCEA and Project Partners will conduct a meteorological campaign in order to collect relevant information from wind and metocean conditions. The dataset will be compiled from existing historical sources as well as project-specific measurements. As part of the project's metocean modeling effort, RCEA and Project Partners propose a dual- or multi-Doppler LIDAR field campaign in order to make comprehensive measurements of winds in the near-shore and offshore regimes. Detailed wind resources will be characterized using floating scanning LIDAR.

Table 4. California Offshore Wind Resource by Wind Speed Interval, Water Depth, and Distance from Shore within 50 nm of Shore (EERE, WINDExchange, 2015)

	Distance from Shore (nm)								
	0 - 3			3 - 12			12 - 50		
Depth Category	**Shallow (0 - 30 m)**	**Transitional (30 - 60 m)**	**Deep (> 60 m)**	**Shallow (0 - 30 m)**	**Transitional (30 - 60 m)**	**Deep (> 60 m)**	**Shallow (0 - 30 m)**	**Transitional (30 - 60 m)**	**Deep (> 60 m)**
Wind Speed at 90 m (m/s)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)	Area km^2 (MW)
7.0 - 7.5	266 (1,331)	236 (1,181)	257 (1,287)	101 (504)	457 (2,284)	4,554 (22,770)	8 (38)	23 (115)	5,537 (27,684)
7.5 - 8.0	239 (1,196)	257 (1,285)	190 (948)	79 (394)	596 (2,978)	3,855 (19,273)	0 (0)	33 (165)	19,616 (98,080)
8.0 - 8.5	125 (626)	178 (891)	282 (1,409)	7 (36)	106 (529)	4,539 (22,695)	0 (0)	0 (0)	17,822 (89,111)
8.5 - 9.0	43 (216)	142 (708)	176 (882)	1 (3)	38 (190)	4,560 (22,799)	0 (0)	0 (0)	17,892 (89,460)
9.0 - 9.5	2 (10)	19 (94)	15 (74)	0 (0)	1 (4)	988 (4,940)	0 (0)	0 (0)	12,160 (60,801)
9.5 - 10.0	0 (0)	6 (30)	14 (69)	0 (0)	0 (0)	656 (3,280)	0 (0)	0 (0)	14,555 (72,774)
>10.0	0 (0)	0 (0)	0 (1)	0 (0)	0 (0)	288 (1,441)	0 (0)	0 (0)	6,638 (33,188)
Total >7.0	676 (3,379)	838 (4,189)	187 (937)	187 (937)	1,197 (5,985)	19,440 (97,198)	8 (38)	56 (279)	94,220 (471,098)

nm = nautical miles
m = meters
m/s = meters per second
km^2 = square kilometers
MW = megawatts

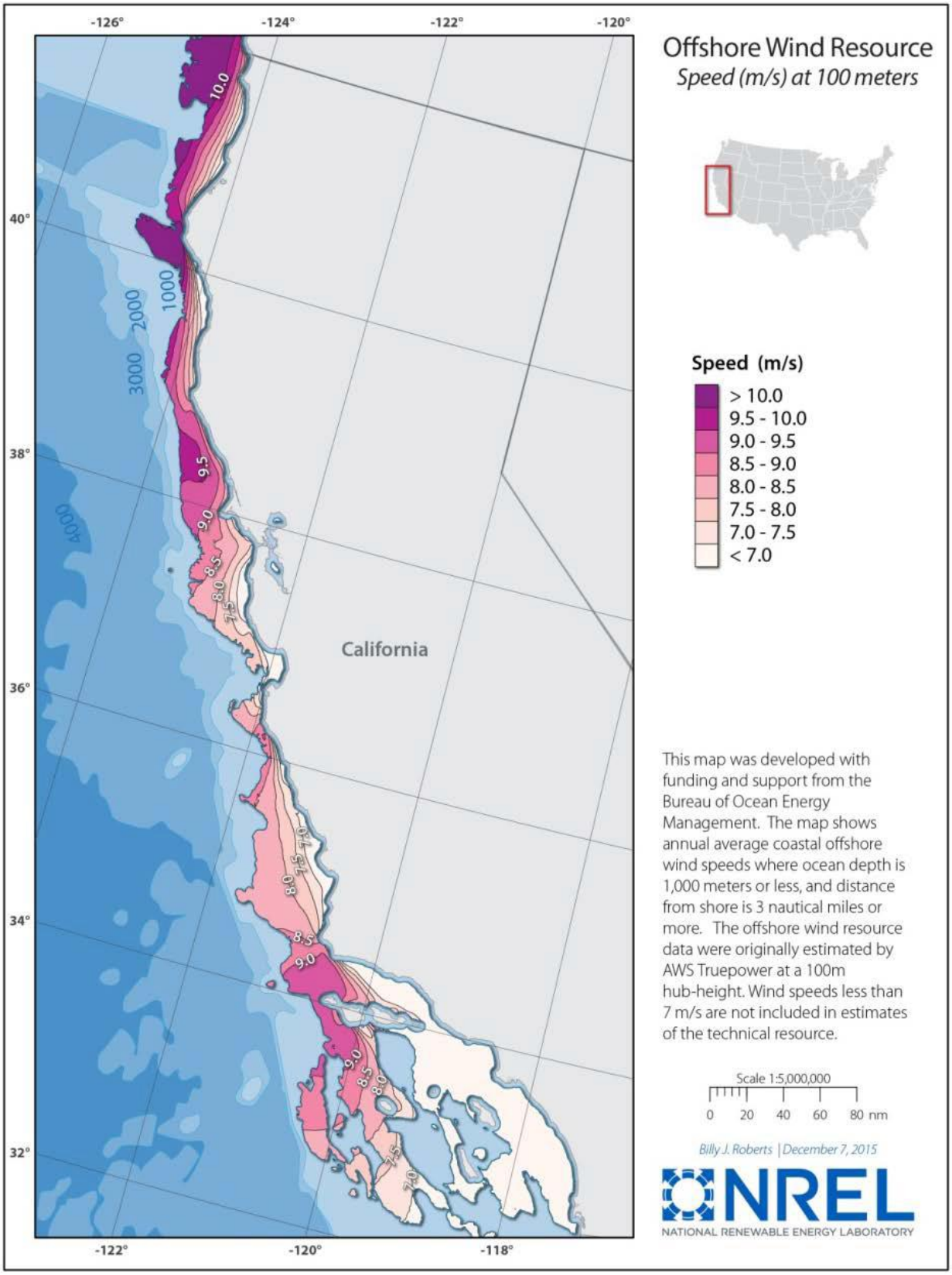


Figure 7. Wind Speed Map of California Offshore Technical Wind Resources Calculated at a 100-Meter Elevation Above Water (NREL 2016)

2.4.2. Environmental Resources

Marine geology

Overall, the complex topography in the project area is the result of the meeting place of three major tectonic plates at the Mendocino triple junction: the Gorda, the North American, and the Pacific plates. More specifically, the dominant geologic features in the vicinity of the project site are the Eel River Canyon, Trinidad Canyon and Humboldt Slide. The project lies on the south flank of the Trinidad Canyon and extends well up onto the continental slope. The area also lies north and west of a large slide complex, called the Humboldt Slide (Field et al. 1987, Gardner et al. 1999).

Tectonic uplift is significant throughout the coastal ranges in this area. This produces a large sediment supply to the ocean. The continental shelf and upper slope in this area is a known depocenter for Eel River derived sediments (Wheatcroft and Borgeld 2000). This large sediment supply produces thick deposits that can be remobilized in (geologically) frequent earthquakes associated with subduction of Juan de Fuca underneath the Pacific Plate (Goldfinger et al. 2013).

The unusual oceanographic combination of the deep nearby canyons and current conditions leading to persistent upwelling flows create the favorable conditions for diverse density of sea life.

Marine biological resources (avian resources, benthic habitat, coral reefs, fish species and Essential Fish Habitat, marine mammals, listed threatened and endangered species)

Threatened and endangered species

Federal and state threatened and endangered species and designated critical habitat that occur or may occur in the Project Area are shown in Table 5.

Avian resources

Many marine bird species, including, albatrosses, shearwaters, storm-petrels, phalaropes and jaegers occur in the Outer Continental Shelf (OCS) portion of the project site where wind turbines would be placed. Other species of seabirds more closely associated with the nearshore environment, such as loons, grebes, pelicans, cormorants, scoters, gulls, terns, murres, murrelets, puffins, and auklets, occur in the nearshore portion of the project, and some of these species nest on the offshore rocks, islands, and remote cliffs along the northern California coast (Adams et al. 2014).

Bat species that could occur in the marine Project area include hoary bats, which are known to migrate south in autumn along the California coast and occasionally land on Southeast Farallon Island 30 miles offshore of the Golden Gate, especially under certain weather and moon conditions (Cryan and Brown 2007). Some species of bats hunt for insects in offshore areas in areas where they normally migrate across open ocean areas, such as the Baltic Sea, and have been found to forage for flying insects around, and rest on, offshore wind turbines (Ahlén et al. 2007).

Table 5. Threatened and Endangered Species that could occur in the Project Area

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Birds					
Marbled murrelet	*Brachyramphus marmoratus*	FT, ST	Final	Final	Primarily nearshore waters from California to Alaska. Increases in abundance northward
Short-tailed albatross	*Phoebastria albatrus*	FE	n/a	Final	The North Pacific and Bering seas; occasionally off the Pacific Coast from California to Alaska in very small numbers, especially south of Alaska, but increasing.
Hawaiian Petrel	*Pterodroma sandwichensis*	FE	n/a	Final	Recently determined to occur regularly offshore of California, including offshore Humboldt County, in small numbers, primarily from late April through September.
Scripps's Murrelet	*Synthliboramphus scrippsi*	ST, Federal Candidate	n/a	n/a	Casual to rare in early and mid-fall offshore off Humboldt County, primarily over and beyond the shelf break.
Bald Eagle	*Haliaeetus leucocephalus*	SE	n/a	n/a	Occurs along the coast throughout the year.
Western Snowy Plover	*Charadrius alexandrinus nivosus*	FT	Final	Final	Uncommon local migrant and winter visitor and rare local breeder in dry portions of sandy beaches in Humboldt County.
Marine Mammals					
Steller sea lion	*Eumetopias jubatus*	FT	Final	Final	Ranges from Russia to Alaska, and along the coast south to southern California
Guadalupe fur seal	*Arctocephalus townsendi*	FT, ST	n/a	n/a	Occurs in subtropical waters of southern California and Mexico, but reported occasionally as far north as Oregon and Washington. Breeds almost exclusively at Guadalupe Island, Mexico, although a small population occurs at San Miguel Island in southern California.
Blue whale	*Balaenoptera musculus*	FE	n/a	Final	In the North Pacific Ocean, from Kamchatka to southern Japan in the west and from the Gulf of Alaska and California south to Costa Rica in the east. They occur primarily south of the Aleutian Islands and the Bering Sea.
Fin whale	*Balaenoptera physalus*	FE	n/a	Final	Deep, offshore waters of all major oceans, primarily in temperate to polar latitudes, and less common in the tropics.
Gray whale, Western North Pacific DPS	*Eschrichtius robustus*	FE	n/a	n/a	Mainly in shallow coastal waters in the North Pacific Ocean. The Eastern North Pacific population migrates along the coast between Baja California and the Arctic.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Humpback whale	*Megaptera novaeangliae*	FE	n/a	Final	All major oceans from the equator to sub-polar latitudes.
Right whale, North Pacific	*Eubalaena japonica*	FE	Final	n/a	Pacific Ocean, particularly between 20° and 60° latitude. Has been reported as far south as the southern tip of Baja California.
Sperm whale	*Physeter macrocephalus*	FE	n/a	Final	Oceans worldwide from the equator to polar regions
Killer whale, southern resident	*Orcinus orca*	FE	Final	Final	Inland waterways of Puget Sound, Strait of Juan de Fuca, and southern Georgia Strait in spring, summer, and fall. Have been reported in coastal waters off Oregon, Washington, and as far south as central California.
Sei whale	*Balaenoptera borealis*	FE	n/a	Final	In temperate waters, usually beyond the continental shelf within all the major oceans, and undergoes seasonal migrations to lower latitude breeding areas
North Pacific right whale	*Eubalaena japonica*	FE	Final	Final	The Sea of Okhotsk and the Kuril Islands east though the Bering Sea and the Aleutians to the Gulf of Alaska. A few sightings have occurred along the U.S. West Coast as far south as California.
Reptiles					
Loggerhead turtle, North Pacific Ocean DPS	*Caretta caretta*	FE	n/a	Final	In the eastern Pacific, loggerheads have been reported as far north as Alaska, and as far south as Chile.
Leatherback turtle	*Dermochelys coriacea*	FE	Final	Final	Distributed in oceans worldwide. No designated critical habitat off Humboldt.
Green turtle	*Chelonia mydas*	FT	Final	Final	Distributed in oceans worldwide but usually found near shore in warm tropical and sub-tropical coastal waters. In the eastern North Pacific, has been sighted from Baja California to southern Alaska, but most commonly occur from San Diego south.
Olive ridley turtle	*Lepidochelys olivacea*	FT	n/a	Final	Does not nest in the U.S., but during feeding migrations, olive ridley turtles nesting in the East Pacific may disperse into Pacific coast waters as far north as Oregon.
Fish					
Green sturgeon, Southern DPS	*Acipenser medirostris*	FT	Final	Draft	Mexico to at least Alaska in marine waters, and observed in bays and estuaries up and down the west coast of North America

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Eulachon, Southern DPS	*Thaleichthys pacificus*	FT	n/a	Final	Ranges from northern California to southwest and south-central Alaska and into the southeastern Bering Sea. The southern DPS is comprised of fish that spawn in rivers south of the Nass River in British Columbia to, and including, the Mad River in California
Longfin smelt	*Spirinchus thaleichthys*	ST	n/a	n/a	Ranges from San Francisco Bay to Prince William Sound, Alaska and occurs in oceans, bays, estuaries, and rivers in small, scattered populations.
Chinook salmon, California Coastal ESU	*Oncorhynchus tshawytscha*	FT	Final	Final	Chinook salmon are found from the Bering Strait in Alaska to Southern California. This ESU includes all naturally spawned populations between the Klamath River in Humboldt County to the Russian River in Sonoma County, California.
Chinook salmon, Central Valley spring-run ESU	*Oncorhynchus tshawytscha*	FT, ST	Final	Final	Chinook salmon are found from the Bering Strait in Alaska to Southern California. This ESU includes all naturally spawned populations of spring-run Chinook salmon in the Sacramento River and its tributaries in California.
Chinook salmon, Sacramento River winter-run ESU	*Oncorhynchus tshawytscha*	FE, SE	Final	Final	Chinook salmon are found from the Bering Strait in Alaska to Southern California. This ESU includes all naturally spawned populations of winter-run Chinook salmon in the Sacramento River and its tributaries in California, as well as two conservation programs maintained at the Livingston-Stone National Fish Hatchery.
Coho salmon, Central California coast ESU	*Oncorhynchus kisutch*	FE, SE	Final	Final	Coho salmon are historically distributed throughout the North Pacific Ocean from central California to Point Hope, Alaska, through the Aleutian Islands, south to Hokkaido, Japan. This ESU includes all naturally spawned populations from Punta Gorda in Humboldt County south to Aptos Creek in Santa Cruz County.
Coho salmon, Southern Oregon/ Northern California Coasts ESU	*Oncorhynchus kisutch*	FT, ST	Final	Final	Coho salmon are historically distributed throughout the North Pacific Ocean from central California to Point Hope, Alaska, through the Aleutian Islands, and from the Anadyr River, Russia, south to Hokkaido, Japan. This ESU includes all naturally spawned populations in coastal streams and rivers between Cape Blanco, Oregon, and Punta Gorda, California and includes coho salmon from three artificial propagation programs.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Steelhead, Central California Coast DPS	*Oncorhynchus mykiss*	FT	Final	Final	In the U.S., steelhead are found along the entire Pacific Coast, and may use the waters along the entire coast during their oceanic residence. This DPS spawns in rivers and streams around San Francisco Bay, from the Upper Russian River to the Guadalupe River.
Steelhead, Southern California DPS	*Oncorhynchus mykiss*	FE	Final	Final	In the U.S., steelhead are found along the entire Pacific Coast, and may use the waters along the entire coast during their oceanic residence. This DPS spawns in the Santa Maria, Santa Ynez, Ventura, and Santa Clara Rivers and their associated tributaries in southern California.
Steelhead, Northern California DPS	*Oncorhynchus mykiss*	FT	Final	Final	In the U.S., steelhead are found along the entire Pacific Coast, and may use the waters along the entire coast during their oceanic residence. This DPS spawns in rivers and streams along the California coast from Redwood Creek to Gualala River.
Steelhead, South/Central California Coast DPS	*Oncorhynchus mykiss*	FT	Final	Final	In the U.S., steelhead are found along the entire Pacific Coast, and may use the waters along the entire coast during their oceanic residence. This DPS includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Pajaro River to (but not including) the Santa Maria River.
Steelhead, California Central Valley DPS	*Oncorhynchus mykiss*	FT	Final	Final	In the U.S., steelhead are found along the entire Pacific Coast, and may use the waters along the entire coast during their oceanic residence. This DPS spawns in tributaries to the Sacramento and San Joaquin rivers, confined below river dams.
Invertebrates					
Black abalone	*Haliotis cracherodii*	FE	Final	Final	Ranges from about Point Arena, CA, to Bahia Tortugas and Isla Guadalupe, Mexico. Rare north of San Francisco and south of Punta Eugenia.

Benthic habitat

The intertidal zone in the Project area is primarily exposed sandy beach, with the exception of two rock and concrete jetties at the entrance to Humboldt Bay. The soft-bottom subtidal zone lies seaward of the intertidal zone and extends across the continental shelf; within this zone lies the surf zone (the zone of breaking waves), the inner shelf (where waves frequently agitate the substrate) to water depths of approximately 60 m, and then the outer shelf to water depths of about 120 m. The shelf break marks the end of the continental shelf and the beginning of the continental slope, which is a steep slope towards the deep-ocean basin.

The continental shelf off Humboldt Bay is highly dynamic and benthic habitats are affected by sediment transport associated with floods, storm intensity, large-scale shelf circulation patterns and interannual variability of physical forcing (Guerra et al. 2006). The Eel River transports sediment onto the inner shelf (20 to 55 m depth) and northward approximately 25 kilometers (km); the inner shelf is composed largely of sand, and sediment grain sizes decrease with increasing water depth (Pequegnat et al. 1990, Crockett and Nittrouer 2004). At depths of 35 to 50 m, the substrate changes to very fine sands and coarse silts, with a mud-sand transition from 50 to 75 m (Pequegnat et al. 1990). Grain sizes off Eureka between 500-130 m depth averaged 26 µm with 82% silt/clay fraction (Henkel et al. 2015). At depths of 100 to 200 m (and likely beyond), sediment types are classified as a combination of “mud” and “sandy mud” (Goff et al. 1999, Henkel et al. 2015).

Intertidal benthic fauna present on the sandy beach bordering the seaward side of the Samoa Peninsula was dominated by motile, burrowing crustaceans, able to swim and rapidly burrow in response to substrate disturbance by wave action, plus a few species of polychaetes and insects (ERC 1976; Gail Newton and Associates [GNA] 1988; Pacific Affiliates 2006, 2007). In the intermediate depths of the subtidal zone (around 20-30 m depth) off the Humboldt County coast, the community structure was characterized by soft-bottom benthic invertebrates such as polychaete worms, and amphipods, bivalves, gastropods, brittle stars, and proboscis worms (ERC 1976). In water depths of 50-75 m on the continental shelf off the Humboldt County coast, a diverse assemblage of epibenthic invertebrates has been reported, dominated by decapod crustaceans such as Dungeness crab, shrimp, mysids, and euphausids (Pequegnat et al. 1990, Pequegnat et al. 1995) with benthic infauna characterized by relatively high abundances of the bivalve *Axinopsida serricata* (Henkel et al. 2015). Several species of flatfish are likely to occur in the soft-bottom habitats and prey on benthic and epibenthic invertebrates (Pequegnat et al. 1990, Pequegnat et al. 1995). In even deeper benthic habitats (50-130 m depth), there is a decrease of bivalves and increase of polychaetes at deeper stations with greater silt/clay fraction.

Within Humboldt Bay, shallow water benthic habitats support extensive eelgrass beds and habitats supporting a diverse benthic in- and epi-fauna. The bay also provides habitat for numerous fish species and nursery habitat for commercially and recreationally fished species including Dungeness crab (Barnhart et al. 1992).

Reefs

Rocky reef habitat is designated as a Habitat Area of Particular Concern (HAPC) by the National Marine Fisheries Service (NMFS) for its importance as Essential Fish Habitat and its rarity, sensitivity, and/ or vulnerability (PFMC 2005). There are several rocky reefs designated as HAPCs located west of Eureka in the general Project area. The placement of the project anchoring system and transmission cable will be sited to avoid damage to these habitats.

Rocky reefs in the Pacific Northwest provide habitat for a variety of sessile organisms such as sponges, anemones, barnacles, bryozoans, tunicates, and coldwater corals (Henkel et al. 2014). The rocks, algae, and attached invertebrates provide habitat for mobile invertebrates such as crabs, snails, sea stars, urchins, brittle stars, nudibranchs, chitons, and worms. Fish species associated with rocky reefs include rockfish, lingcod, cabezon, and greenlings (Kaplan et al. 2010). Fish such as herring, smelt, sharks, ratfish, salmon, and green sturgeon may occur as visitors. Seabirds and marine mammals, especially seals and sea lions, forage on the fish and invertebrates associated with rocky reefs.

Dunes

Humboldt Bay is separated from the Pacific Ocean by sand spits and dunes, these areas provide nesting habitat for western snowy plover and habitat for native plant communities and listed plants such as beach layia.

Fish species and Essential Fish Habitat

There are many species of sharks, salmon, demersal fishes, and pelagic schooling fishes (mackerel, anchovies, and sardines) that occur in and forage within the marine waters of the Project area.

Essential Fish Habitat (EFH) identifies waters and substrates required by fish for spawning, breeding, feeding, and growth to maturity (PFMC 1998). EFH waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish. For Pacific coast species, EFH is designated for groundfish, coastal pelagic species, highly migratory species, and Pacific coast salmon; these are described below.

EFH for groundfish is designated along the entire continental shelf of the U.S. West Coast and includes all waters from the high tide line (and parts of estuaries) to 1,914 fathoms (3,500 meters) in depth and includes the Project area (PFMC 2005). Groundfish includes species of rockfish, roundfish, flatfish, and sharks and skates.

EFH for coastal pelagic species (CPS) covers Pacific sardine, Pacific mackerel, northern anchovy, jack mackerel, and market squid. The east-west boundary of CPS EFH includes all marine and estuary waters from the coasts of California, Oregon, and Washington to the limits of the exclusive economic zone (200 nautical miles [nm] from shore) and above the thermocline where sea surface temperatures range between 10° and 26° C (PFMC 1998). The southern boundary of CPS EFH is the U.S.-Mexico maritime boundary, and the northern boundary is the position of the 10°C isotherm which varies both seasonally and annually.

EFH for highly migratory species covers several species of tuna, swordfish, and sharks; species that may occur in the Project area include common thresher shark, bigeye thresher shark, albacore, bluefin tuna, and swordfish. Highly migratory species are usually not associated with the features that are typically considered fish habitat (such as seagrass beds, rocky bottoms, or estuaries), but the habitats are defined by temperature ranges, salinity, oxygen levels, currents, shelf edges, and seamounts (PFMC 2007).

EFH for Pacific coast salmon covers Chinook, coho, and pink salmon. In estuarine and marine waters, salmon EFH extends from the extreme high tide line in nearshore and tidal submerged

environments within state territorial waters out to the exclusive economic zone (200 nm from shore) offshore of Washington, Oregon, and California north of Point Conception (PFMC 2016).

Rocky reef habitat is designated as a Habitat Area of Particular Concern (HAPC) by NMFS for its importance as EFH and its rarity, sensitivity, and/ or vulnerability (PFMC 2005). There are several rocky reefs designated as HAPCs located west of Eureka in the general Project area. The placement of the project anchoring system and transmission cable will be sited to avoid damage to these habitats.

Marine mammals

Marine mammals that may occur in the northern California coastal waters of the Project area include pinnipeds (seals and sea lions), and cetaceans (whales, dolphins, and porpoises).

Pinniped species that may occur in the nearshore waters of the Project area include the harbor seal, Steller sea lion, and California sea lion. Harbor seals and Steller sea lions breed along the Humboldt coast and inhabit the area throughout the year, while California sea lions, primarily males, occur in the region during the fall and winter non-breeding period and do not breed in the area. In addition, northern elephant seal, northern fur seal, and Guadalupe fur seal could occur rarely or infrequently in the Project area.

Cetaceans likely to occur in the Project area are the gray whale, humpback whale, minke whale, blue whale, killer whale, fin whale, sperm whale, northern right whale dolphin, harbor porpoise, Dall's porpoise, Risso's dolphin, and Pacific white-sided dolphin. There are a number of additional dolphin and whale species that could occur sporadically or rarely in the area.

Physical oceanography and meteorology

The California Current System, which comprises the California Current, the Davidson Current, and the California Undercurrent, drives the general ocean current system along the California coast. The California Current is a surface current that flows toward the equator along the entire West Coast of the United States between the shelf break and 540 nautical miles (1,000 km) offshore. The Davidson Current is a seasonal surface current that manifests itself as a poleward-flowing countercurrent to the California Current during the fall and winter months over the continental slope and shelf. The California Undercurrent is a poleward subsurface flow that follows the continental slope. Since currents are strongly influenced by wind-stress, demonstrating a seasonal variability. During the spring/summer, strong upwelling-favorable winds drive the currents toward the equator along the California coast while flow is driven by a sea surface pressure gradient toward the equator off the Washington coast (Kaplan et al. 2010). The result is high production of phytoplankton from April through September fueled by a nearly continuous supply of nutrients and concomitant high biomass of zooplankton during summer (NWFSC 2013). During the winter months off the California coast, the upwelling-favorable winds "relax" and allow a sea surface pressure gradient to drive the flow toward the poles (Kaplan et al. 2010). Episodic phenomenon such as the Pacific Decadal Oscillation and ENSO can interrupt and/or intensify currents and upwelling (Kaplan et al. 2010).

The coastal zone is characterized by wet winters, relatively dry summers, and mild temperatures throughout the year. Occasional strong winds strike the California Coast, usually in advance of winter storms. Wind speeds can exceed hurricane force. Such events are typically short-lived, lasting less than one day. Rainfall intensities in the Eel River basin and other smaller river basins that drain to this area can exceed 100 inches per year. These rainfall rates as well

as local tectonic uplift produce prodigious amounts of sediment that ultimately influence physical oceanography and drive seabed change.

Geology – terrestrial

No onshore areas would be included in the area requested for lease. The following description of terrestrial geology is included only for background information.

Humboldt Bay is located along the northern California coast and at the northern end of the Northern Coast Range. The topography of the Humboldt Bay area is relatively flat and characterized by bay waters, tidal flats, and slightly elevated flat to gently rolling terraces. The Coast Range is comprised mainly of the Franciscan complex inland, sand, and other alluvial deposits located closer to the coast. Marine deposits, ranging in altitude between sea level and 400 feet extend in a three-and-a-half-mile wide band from the area of Crannell to the Mad River, just north of Arcata. The shore line in this region is composed of Holocene dunes along the Arcata and Humboldt Bays and the Eel river estuary (Shaw 2007).

The Eel River basin is a mountainous area underlain by a deformed, faulted, locally sheared and, in part, metamorphosed accumulation of subducted continental margin deposits. About 99 percent of the bedrock underlying the basin is sedimentary and metasedimentary. Cape Mendocino lies south of Eureka and the Eel River, and is where the east-west trending, submarine Mendocino Fault intersects the coast and the termination point of the San Andreas Fault. The offshore and coastal regions of Humboldt County contain three major faults, including the San Andreas, the Mendocino fracture zone, and the southern end of the Cascade subduction zone. (Humboldt County 2017).

Air quality

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set national ambient air quality standards (federal standards) for ozone, respirable particulate matter (PM10, particles of 10 micrometers or less), fine particulate matter (PM2.5, particles of 2.5 micrometers or less), carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead (EPA 2018). In California, the Air Resources Board (ARB) has established State ambient air quality standards (state standards) for the above parameters as well as visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride (ARB 2017). The federal and state air quality standards are set for pollution concentration value and time of exposure and classify each area as attainment (meeting or below air quality standards), nonattainment (exceeding air quality standards), or unclassified. OCS sources within 25 miles of the States' seaward boundaries are subject to the same Federal and state requirements as those that would apply if the source were located onshore.

The North Coast Unified Air Quality Management District reports annually on the air quality throughout Humboldt, Del Norte and Trinity counties and notes any exceedances of air quality standards. There are currently three air quality monitoring stations in Humboldt County where samples are collected: Eureka Downtown, Jacobs Station, and Humboldt Hill. Different pollutants may be monitored depending upon the site equipment of the station.

Humboldt County is in attainment of all federal and state criteria air pollutant standards, except for State PM10 levels (particles of 10 micrometers or less), for which the entire North Coast Air Basin, including Humboldt County, is currently designated as a non-attainment area (ARB 2017; EPA 2018). Primary sources of particulate matter in the Eureka area are on-road vehicles

(engine exhaust and dust from paved and unpaved roads), open burning of vegetation (both residential and commercial), residential wood stoves, and stationary industrial sources (NCUAQMD 2018). In 2014, almost 75% of PM10 emissions were from residential fuel combustion, managed burning and disposal, and unpaved road dust (Humboldt County 2017). The ambient air in Humboldt County exceeds California's State PM10 standard during many of the winter months (ARB 2017). Exceedances of PM2.5 related to wildfires are excluded from attainment decisions (NCUAQMD 2018). All other standards are below federal and/or state standards for public health.

Less is known about the air quality in the open ocean at the proposed lease site. The state of California requires the use of cleaner marine distillate fuels in ocean-going vessels and commercial harbor craft (i.e., ferries, excursion vessels, tugboats (including ocean-going tugs), towboats, push boats, crew and supply vessels, barge and dredge vessels, work boats, pilot vessels, and commercial and charter fishing boats) within California Waters and 24 nautical miles of the coastline and that visit California seaports (ARB 2018). In addition, EPA has adopted exhaust emission standards for marine diesel engines installed on U.S. vessels ranging in size and application from small recreational vessels to tugboats and large ocean-going vessels. The International Maritime Organization (IMO) officially designated waters off North American coasts as an area in which stringent international emission standards apply to ships for fuel sulfur NOx engine standards. No known sources of contamination are likely to degrade air quality in the area.

Water quality

Pollutants

Marine pollutants along the western coast of the U.S. in the Pacific Ocean include oil, sewage, garbage, chemicals, radioactive waste, thermal pollution, and eutrophication. No data on these pollutants were found for the offshore project vicinity.

Humboldt County is funded by the EPA Beach Environmental Assessment and Coastal Health Act (BEACH Act) to monitor for the presence of bacteria in ocean water areas. From April to October, five beaches are monitored weekly for 3 types of indicator bacteria (total coliform, E. coli, and enterococcus) (Humboldt County 2018). California has established standards for bacteria present at beaches, and the samples taken within the county are compared against these standards. A Health Advisory is issued when bacteria levels exceed health standards, and beaches can be closed if there is an imminent threat such as a known discharge of pollutants (Humboldt County 2018).

The Mad, Eel, Trinity, and Klamath rivers extend beyond the Humboldt County borders, linking the county to complex regional, state, and interstate water resource and habitat management issues. The 12 watersheds found within Humboldt County encompass nearly 4.04 million acres, of which over 2.29 million acres is within Humboldt County (Humboldt County 2017). Flows are seasonally influenced, with an abundance of water in the winter and spring but limited water in the summer and fall making both flooding and low-flow shortages significant water management issues (Humboldt County 2017). Controlling sedimentation, preventing further increases in water temperature, preserving flow rates, and monitoring water quality are the chief watershed management challenges in Humboldt County (Humboldt County 2017).

The California North Coast Regional Water Quality Control Board and the EPA approved 12 Total Maximum Daily Load (TMDL) designations for the watersheds to address environmental concerns. The TMDLs include (North Coast Regional Water Quality Control Board 2018):

- North Fork Eel River Sediment and Temperature TMDL (approved December 2002).
- Upper Main Eel River Sediment and Temperature TMDL (approved December 2004).
- Middle Fork Eel River Sediment and Temperature TMDL (approved December 2003).
- Lower Eel River Sediment and Temperature TMDL (approved December 2007).
- South Fork Eel River Sediment and Temperature TMDL (approved December 1999).
- Elk River Sediment TMDL (adopted April 2016; approval pending).
- Klamath River Temperature, Dissolved Oxygen, Nutrient, and Microcystin Impairments TMDL (approved December 2010).
- Mad River Sediment and Turbidity TMDL (approved December 2007)
- Redwood Creek Sediment and Temperature TMDL (approved December 1998).
- South Fork Trinity River Sediment and Temperature TMDL (approved December 1998).
- Trinity River Sediment TMDL (approved December 2001).
- Van Duzen River Sediment TMDL (approved December 1999).

Noise and visual resources

Natural noise sources in the offshore and onshore areas include wind, waves, birds, and other wildlife. Human-caused noise sources offshore include ship motors and horns and aircraft. Onshore noise sources include motor vehicles, aircraft, construction equipment, and industrial activity.

Humboldt County's varied and extensive coastline allows for a wide range of scenic vistas from roads and highways, and from beaches, state parks, and coastal access points. These viewing points are popular sites for observing scenery, whales, seals, other marine life, and birds. Natural elements of the viewscape include the shoreline, Humboldt and Arcata bays, and the open ocean.

The scenery along the coast is spectacular, so oceanfront viewsheds may be highly sensitive to visual changes offshore. In addition, seaside residents would potentially be very sensitive to changes visible from the shore; hence viewsheds from seaside residences are of concern in analyzing potential visual impacts of offshore energy structures (Norman et al. 2007).

Marine transportation and commerce

Arcata Bay, Entrance Bay, and South Bay, and the waterways connecting them to the Pacific Ocean (collectively Humboldt Bay) and the Pacific Ocean offshore Humboldt Bay support a wide variety of recreational and commercial vessel traffic. The Port of Humboldt Bay (Port), is

California's northernmost deep-water shipping port and the only port between San Francisco (258 miles south) and Coos Bay, Oregon (180 miles north) (CalTrans 2013). The Port is managed by the Humboldt Bay Harbor, Recreation and Conservation District (District).

Commercial traffic in the Humboldt Bay area includes commercial fishing vessels, tug and barge traffic, petroleum barges and tankers, large oceangoing deep-draft vessels (including the capability to accommodate Panama Canal-class vessels), and cruise ships. From 2010 through 2017 the number of commercial vessel Port calls (excluding fishing vessels) averaged 58 per year and ranged between 42 and 78. In 2017 there were 48 calls (Humboldt County 2018b)..

Commercial vessels operate in a highly organized fashion when entering and exiting ports, and generally travel in straight lines between two points when operating outside of a port. Humboldt Bay and the area offshore of Humboldt Bay does not have a vessel traffic service area and there are no formally designated shipping lanes at or near Eureka. All vessels operating within the Humboldt Bay area shoreward of a 4 nautical mile radius line drawn to the west of the Humboldt Bay Entrance Lighted Whistle Buoy must operate under the requirements of the Humboldt Bay Security Zone. From the harbor entrance and throughout Humboldt Bay, vessel traffic is restricted to existing designated navigation channels and must operate under the requirements of the Regulated Navigation Area (RNA) for all navigable waters of the Humboldt Bay Bar Channel and the Humboldt Bay Entrance Channel. Normally only one-way traffic exists, and only one ship moves at a time in Humboldt Bay (HSP 2017).

Commercial vessel traffic occurs in the vicinity of the proposed lease blocks, but the majority of non-fishing commercial vessels run further offshore from Humboldt Bay and the proposed project area (24 nm [28 miles]), following California's 2008 establishment of more stringent emissions standards (TEC 2014). Tankers generally travel parallel to the coast at a distance of approximately 50 nm (92 km), while larger deep draft ships operate approximately 25 nm (46 km) offshore. Smaller ships travel at a distance of approximately 5 to 10 nm (9 to 18 km) from shore. Most tugs and barges operate within 4 to 10 nm (7 to 18 km) offshore of Eureka. Most commercial vessels are equipped with technology (e.g., Automatic Identification System) to aid in avoiding conflicts (Industrial Economics, Inc. 2012).

About 100–120 commercial fishing vessels are homeported at Eureka, including bottom and mid-water trawlers, trollers, smaller groundfish vessels, and crabbers (including some crabber/trollers) (Pomeroy et al. 2010). In addition, as noted under Commercial and Residential Fishing, more than 500 vessels from other West Coast ports use the bay's facilities annually.

Military and Coast Guard operations

The Department of Defense conducts training, testing and operations in the airspace, sea surface, subsurface and seafloor of California's Outer Continental Shelf. The proposed lease area is within the Northwest Training Range Complex. Activities conducted on the OCS support low-altitude training, electronic warfare training, surface navigation/seamanship, and ship/helicopter anti-submarine training. DoD also utilizes designated offshore special use airspace for daily flight operations to support basic, intermediate and advanced squadron training requirements, and open ocean areas for carrier landing certifications. In 2018, the Department of the Navy presented a mission compatibility assessment for the outer continental shelf off California. The compatibility assessment reflects the requirements of Navy and Marine Corps missions conducted in the air, on the surface, and below the surface of these waters. The areas offshore Humboldt County were designated with "site specific stipulations." (DoD 2018)

The U.S. Coast Guard operates Station Humboldt Bay, one of 21 surf stations in the Coast Guard and located along the north spit of Humboldt Bay overlooking the entrance, and Coast Guard Air Station Humboldt Bay located at the Arcata-Eureka Airport 16 miles north of Eureka. Surf stations are required where surf greater than 8 feet occurs 10 percent (36 days) or greater each year. There has been a Coast Guard presence in Humboldt Bay since 1856. The primary mission of the Coast Guard in the Humboldt County area is maritime search and rescue, MEDEVAC support for injured personnel in the mountains surrounding the area, aerial support for aids to navigation, law enforcement, and marine environmental protection. The Coast Guard Cutter Barracuda, an 87-foot patrol boat, is homeported in Eureka. (USCG 2018)

Airspace utilization – civilian and military

Humboldt County and the communities within the County are served by several airports, including the California Redwood Coast – Humboldt County Airport (Arcata-Eureka Airport [ACV]) which is the County's regional airport about 15 miles north of Eureka in McKinleyville, California. Secondary airports make up the remaining facilities that serve the region, including Samoa Field Airport (formerly Eureka Municipal Airport), Murray Field, Rohnerville Airport, Garberville Airport, Dinsmore Airport, and Kneeland Airport. (Humboldt County Airports 2017). Arcata-Eureka Airport is open for public use with commercial flights to San Francisco and Los Angeles. Commercial flights are provided by United Airlines. Arcata-Eureka Airport is also home to the command center for and primary facilities of the United States Coast Guard Air Station Humboldt Bay. Local airspace surrounding the airport is designated as Class E Airspace. Class E airspace at ACV extends upward from 700 feet above the surface within a 7-mile radius, with a segment 4.2 miles wide extending from the 7-mile radius of the airport to 14.1 miles southeast of the airport. Class E airspace extending upward from 1,200 feet above the surface at ACV was removed in 2017. Also in this class are federal airways, airspace beginning at either 700 feet above ground level used to transition to and from the terminal or en route environment, and en route domestic and offshore airspace areas designated below 18,000 feet mean sea level (MSL).

In 2018, the Department of the Navy presented a mission compatibility assessment for the outer continental shelf off California. The compatibility assessment reflects the requirements of Navy and Marine Corps missions conducted in the air, on the surface, and below the surface of these waters. The areas offshore Humboldt County were designated with "site specific stipulations." (DoD 2018). The closest active restricted special use airspace exists off the California coast approximately 35 miles north of the proposed project area, which is primarily used by Oregon Air National Guard aircraft and occasionally by aircraft located at Naval Air Station Whidbey in Oak Harbor, Washington. (FAA 2015).

Commercial and recreational fishing

Humboldt Bay and the surrounding ocean supports commercial and recreational fishing, as well as whale watching and charter boats. Commercial fishing has been an important part of the history, culture, and economy of the Humboldt Bay area. Although the number of registered commercial fishing boats in the Humboldt Bay area has declined from approximately 500 in the 1950s to approximately 220 in 2004, the bay is still an important port for commercial fishing. More than 500 vessels from other West Coast ports use the bay's facilities annually. The commercial fishing fleet is based at Woodley Island Marina, the City of Eureka Marina, and to a lesser extent, the private King Salmon Marina (HBHRCD 2007).

Commercial crab fishing is highly active in nearshore waters off Eureka and makes up the overwhelming majority of Eureka commercial landings and ex-vessel revenue between 1992 and 2014 (Hackett et al. 2017). Groundfish trawl fisheries occur at greater depths, generally in water depths less than 600 fathoms (1100 meters), with an average depth of <300 fathoms (550 meters) (Sommers et al. 2016). Since 1981, total pounds of all fish landed in Eureka has dropped from a high in 1981 of 36.9 million pounds to on average 16.9 million pounds between 2001 and 2007; most of the decline was due to a decrease in groundfish landings (Pomeroy et al. 2010). Table 6 shows the common target fisheries, typical distances from shore, and/or depths for each fishery (Industrial Economics, Inc. 2012).

Table 6. Northern California Commercial and Recreational Fisheries, Gear Types, and Locations

Fishery	Gear Type	Commercial[b]	Charter[c]	Recreational
Albacore (tuna)	Mobile (troll, hook-and-line)	Pelagic/surface, Distribution varies by water temperature and feed BRG: ≤25 nm, 500 fathoms and beyond ERK: ≥30-40 nm and beyond the EEZ; Range: Pt Arena–Canadian border	BRG: 10-60 nm ERK: 10-60 nm (some further)	BRG: 15-40 nm, some closer (e.g., 10 nm off Albion), at canyon edges with strong currents ERK: 10-60 nm (some further)
Black cod	Mobile (trawl); Fixed (pot, longline)	Transitional hard, mud and some sand bottom BRG longline: edges of canyons, outside RCA (150 fathoms), ~200 fathoms, ~14 nm NW; range: Pt Arena – Shelter Cove. BRG trap: 8 nm west ERK: longline and groundfish trawl occur ~ same areas	n/a	n/a
Crab	Fixed (pot)	Sand or mud bottom, shelf Most of N Coast in winter BRG: ≤60 fathoms (Federal waters here) for smaller boats; ≤100 fathoms for larger boats; avoid canyons; most in state waters; a few OCS spots ERK: most boats ≤60 fathoms, 5-100 fathoms, ≤15 miles	BRG: state waters, ≥ 20 ft ERK: state waters	ERK: Humboldt Bay, river mouths (e.g., Eel River), w/in 1 nm of harbor entrance; 23-30 F, some go out ≤ 5 nm
Groundfish	Mobile (bottom and midwater trawl, hook-and line)	Fish move in and out over season; different species distributed differently ERK: “beach” fishing (<100 fathoms, some 3-4 nm; most 45-80 fathoms, 5-10 nm); offshore fishing (outside RCA), some out to ~28 nm, 40°10’ N	BRG: rockfish inside 20 fathoms (due to RCA), experimental chilipepper permit outside 150 fathoms ERK: <20 fathoms (due to RCA); rockfish on rocky	Rocky bottom BRG: <20 F (due to RCA) and ≤3 nm, ERK: <20 F (due to RCA) most ≤3 nm; when allowed few travel ~16

Fishery	Gear Type	Commercial[b]	Charter[c]	Recreational
		BRG longline: <20 fathoms and >150 fathoms (5-6 nm) BRG trawl: soft bottom, sand mud; ~4.5–20 nm; 600-700 fathoms, 40°10' line - below Cordell Banks; inside RCA to Pt Arena	bottom 16 miles off ERK for deepwater species when permitted; otherwise travel to False Cape and Trinidad	miles W of port for deeper rockfish
Hagfish	Fixed (pot lines)	Mud bottom, similar to crab ≥35 fathoms	n/a	n/a
Pacific Halibut	Fixed (longline)		BRG: ≥ 3 nm ERK: Punta Gorda to Mad River, ≥30 ft, ≤ 10 nm at canyons at Cape Mendocino and Gorda	BRG: Flat, muddy bottom, gravely bottom; canyon mouths, ≥150 ft (some in state waters) ERK: Punta Gorda to Mad River, ≥30 ft, ≤10 nm
Salmon	Mobile (troll, hook-and-line)	Pelagic, distribution varies by feed and time of season BRG: inside and outside the RCA, often 3 nm good ERK: KMZ closures have sharply limited ERK-CRS fishery since 1985; ≤25 miles, some follow 100 fathom curve, canyon fingers	BRG: Edge of nearby canyons, ~8-12 nm ERK: ≤10 nm	BRG: ~3 nm, 300-350 feet (~50 fathoms) ERK: ≤10 nm for most
Shrimp	Mobile (trawl)	Mud/soft bottom ERK: 3 nm – 110 fathoms; 40-100 fathoms, range from Westport, California to Coos Bay, Oregon	n/a	n/a
Spot Prawn	Fixed (pot)	85-120/130 fathoms, Washington to California; primarily hard bottom at around 100 fathoms	n/a	n/a

BRG = Ft Bragg area/fleet, ERK = Eureka area/fleet, nm = nautical miles, ft = feet

a Since space and use information for fisheries off Crescent city is limited, this table focuses on the Eureka area and Fort Bragg.

b For most commercial fisheries, most productive area is 3-20 nm, although much crabbing occurs in state waters, and some fisheries (e.g., albacore tuna) range > 20 nm. Bottom trawling is prohibited in state waters (<3 miles), and since 2006, has been prohibited outside 700 fathoms throughout most of the U.S. West Coast EEZ under Federal Essential Fish Habitat (EFH) regulations. The Rockfish Conservation Areas (RCAs), which vary by gear type and change periodically, also constrain space use.

c Except for albacore and some salmon (especially off ERK), most recreational fishing occurs well within 10 nm because of vessel range, safety and time considerations. Rockfish anglers out of ERK tend to head south of port to fish because more areas to the north are used by the Trinidad sport fleet, although some prefer to heard north because northwesterly winds come up later in the day, making it difficult and dangerous to return from the south. In either case, the recreational RCA precludes fishing for rockfish outside 20 fathoms.

Historic and cultural resources

Before European settlement, the coasts and rivers were settled by the Yurok and Wiyot peoples (Humboldt County 2012). These tribes relied on fish and marine mammals as their primary

source of food. The North Coastal Information Center has records for approximately 2,040 cultural resource sites, including cemeteries, villages, and lithic scatters (NWIC 2018). Culturally sensitive areas include sites and regions of special importance to Native Americans, primarily along coastlines and riverbanks with outstanding religious or resource-producing importance. Over 32,000 acres of land in Humboldt County are designated as culturally sensitive (Humboldt County 2012).

Humboldt County has a rich and diverse history and was one of the first areas in California to be explored and settled by Europeans. Thirteen Humboldt County locations are California State Historical Landmarks and 51 sites are listed on the National Register of Historic Places (Humboldt County 2012). These sites include architecturally significant nineteenth-century homes, banks, hotels, libraries, public buildings, bridges, schools, churches, lighthouses, and historic districts of Ferndale, Eureka, Hoopa, and Bald Hills in Orick. The National Register of historic places in Humboldt County along the Humboldt County coast include (Humboldt County 2012):

- Bald Hills Archeological District, Orick, California; listed 1982.
- Bank of Loleta, Loleta, California; listed 1985.
- Fern Cottage Historic District, Ferndale, California; listed 1988.
- Fernbridge, Fernbridge, California; listed 1987.
- Grizzly Bluff School, Ferndale, California; listed 1979.
- Humboldt Bay Life-Saving Station, Samoa, California; listed 1979.
- Old Jacoby Creek School, Bayside, California; listed 1985.
- Prairie Creek Fish Hatchery, Orick, California; listed 2000.
- Punta Gorda Light Station, Petrolia, California; listed 1976.

Specific cultural resource information is confidential. A records search and literature review would need to be conducted at the appropriate California Historical Resources Information System Information Center located in the Northwest Information Center at Sonoma State University, Rohnert Park to determine the types, sizes, and quantity of known cultural resources (prehistoric archaeological resources, historic-period archaeological resources, and built-environment resources) in the immediate vicinity of the project area.

The National Oceanic and Atmospheric Administration's (NOAA) Office of Coast Survey charts known shipwrecks and other navigational obstructions through the Automated Wreck and Obstruction System (AWOIS). Shipwrecks Humboldt Bay include several named vessels (Weott, Sea Gull, San Jacinto, Oneatta, Tiverton, Sparrow, Susan Wardwell, Toronto, Spud, Aeolus, Success, Corona, Sequoia) and one unnamed vessel (BOEM and NOAA 2018).

Tourism and recreation

The northern California coast and Humboldt County offer a variety of outdoor activities including fishing; kayaking; sailing and bay cruises; wildlife, bird, sea lion, and whale watching charter

tours, cycling, and many more activities. State parks in the project vicinity include Agate Point, Benbow Lake State Recreation Area, Big Lagoon County Park, Clam Beach County Park, Centerville Beach County Park, Gold Bluffs Beach Campground, Harry A. Merlo State Recreation Area, Humboldt Redwoods State Park, Humboldt Lagoons State Park, Little River State Beach, Mad River County Park, Patricks Point State Park, Richardson Grove State Park, Sinkyone Wilderness State Park, Stone Lagoon, and Trinidad State Beach. The state parks have a variety of amenities ranging from trails, vistas, picnic tables, child play areas, beach access, open space, barbeques, and restrooms. Several of the state and county parks have amenities for tent camping and RV hookups.

Socioeconomics and environmental justice

According to data from the California Employment Development Department (CEDD 2018), the unemployment rate in Humboldt County, as of February 2018, was 4.0 percent, while that of California, as a whole, was 4.5 percent. Total employment in the County was 61,080 in February 2018, down by 0.9 percent from February 2017. Over the same time period, total employment in the state of California increased by 0.6 percent. The US Census estimates the median household income in 2016 at $43,164, and the poverty rate at 20 percent (US Census 2018).

The largest industry sectors in Humboldt County, based on 2018 data, are: Local Government; Education and Health Services; Trade, Leisure and Hospitality, Goods Producing, State Government, Professional and Business Services; Natural Resources, Mining, and Construction, followed by Manufacturing, Financial Activities, and Transportation and Utilities (CEDD 2018).

The US Census estimates the population of Humboldt County in 2016 as 136,623. The median age was 37.1 years; 22.8 percent of the population was under the age of 18, and 16.5 percent of the population was over 65. Race and ethnic groups are reported as shown in Table 7.

Table 7. Humboldt County Race/Ethnic Groups, 2016

Race/Ethnic Group	Population (%)
Non-Hispanic	
White	75.4
Black	1.0
American Indian and Alaska Native	4.5
Asian	2.7
Pacific Islander	0.2
Some Other Race	0.2
Two or More Races	5.1
Hispanic	10.7

Source: Census 2016

Public services, infrastructure, and utilities

Humboldt County is accessible via air, sea, and road. The Arcata-Eureka Airport and the six other small airports are used for air transportation. The major road connecting Humboldt County to nearby communities is US Highway 101 going north-south, and State Route 299 going east-west. Several bus or transit lines operate within Humboldt County and connecting Humboldt County to other locations, including Greyhound Bus Lines, Humboldt Transit Authority (which operates and/or maintains the Eureka Transit Service, Redwood Transit System, the Willow Creek Transit Service, and the South Humboldt Transit Systems. The Arcata and Mad River Transit System and the Blue Lake Rancheria Transit also operate in Humboldt County. There is no commercial freight rail service nor any passenger rail service to Eureka. The Humboldt Bay Harbor District manages the Fields Landing Boat Yard and the Woodley Island Marina, which has slips for commercial, recreational, research and safety vessels, and other guest facilities. The majority of the locally homeported commercial fishing vessels moor in Eureka. Commercial and/or recreational infrastructure consists of several acres of dock/pier offloading and boat slip facilities, as well as buildings, parking and storage areas, and service facilities (launch ramps, fish cleaning station, work docks, etc.) located at Woodley Island Marina, along the city waterfront, and at Fields Landing (ERK 2011).

Eureka City Schools, a Unified District, supports 9 public schools (ECS 2018). Other school districts in the areas surrounding Eureka include the Arcata School District, the Loleta Union Elementary School District, the Peninsula Union School District, the Arcata School District, the Pacific Union School District, the Jacoby Creek School District, the South Bay Union School District, the Ferndale Unified School District, and the Fortuna Elementary School District, among others. Humboldt State University and College of the Redwoods are in Humboldt County.

The City of Eureka provides water and sewer service for the residents of Eureka. Drinking water is supplied to other area residents by the Humboldt Bay Municipal Water District, City of Arcata, Humboldt Community Services District, McKinleyville Community Services District, Manila Community Services District, and City of Blue Lake. Communications (mobile phone, internet, telephone) are provided by a large number of local and national providers, and electric power is administered by RCEA and PG&E.

The Humboldt Waste Management Authority (HWMA) is a joint powers authority comprised of six municipal jurisdictions: the cities of Arcata, Blue Lake, Eureka, Ferndale, Rio Dell and Humboldt County. The HWMA owns and operates solid waste transfer stations, recycling facilities, and a landfill; and operates collection and diversion programs and manages contracts for those activities with a number of private operators.

Public safety is provided by the Humboldt Bay Fire Authority (a consolidation of the Humboldt No. 1 Fire Protection District and the City of Eureka Fire Department), City of Eureka Police Department, Humboldt County Sheriff's Office, and the Arcata Police Department. Local hospitals include the St. Joseph Hospital in Eureka, the Mad River Community Hospital in Arcata, and the Jerold Phelps Community Hospital in Garberville.

Offshore utility infrastructure includes four north-south submarine cables approximately 45 nautical miles west of the proposed project area; four east-west submarine cables originating at approximately Point Arena (BOEM 2018).

Natural hazards, hazardous materials, offshore dump sites, unexploded ordinance and artificial reefs

The primary natural hazards that could affect Humboldt County include coastal erosion, drought, earthquake, flood, landslide, tsunami, wildfire, and wind storms. Coastal erosion occurs throughout the year but is accelerated during the winter months when storms increase the rate of erosion. Winter wind storms can also cause heavy damage on shore to buildings, utilities, and transportation systems. Tsunamis can result from either local earthquake events or distant earthquake events. Over the past 150 years, California has had 12 tsunamis which have caused damage (Humboldt County 2017). Tsunamis that have affected Humboldt County occurred in 1855, 1992, and 2011 (Humboldt County 2012).

Humboldt County is located at the southern end of the Cascadia subduction zone, a 700-mile fault stretching from Cape Mendocino to Vancouver Island in Canada. The zone includes three tectonic plates: the Gorda and Juan de Fuca plates dive beneath the North American plate creating the Coastal Ranges, the Trinity Alps, the Modoc Plateau, and the Cascade Volcanoes. Offshore of Cape Mendocino, the three crustal plates intersect to form the Mendocino Triple Junction and has the highest concentration of earthquake events anywhere in the continental U.S. Research shows that this system has produced a series of great earthquakes (magnitude 8 to 9) over the last 20,000 years at intervals of 300 to 500 years (Humboldt County 2017). The last great earthquake occurred about 300 years ago (Humboldt County 2017). Lesser magnitude earthquakes have occurred more frequently.

Rainfall and inclement weather occur seasonally from November through March. Flooding may occur when storms bring rainfall that exceeds the conveyance capacity of the creeks, rivers, and stormwater infrastructure in the county. Following the large flood events in 1955 and 1964, Humboldt County has improved drainage management and adopted floodplain regulations (Humboldt County 2017); however, seasonal floods regularly occur in the lower river and stream reaches.

According to the California Department of Forestry and Fire Protection's (CAL FIRE) Fire and Resource Assessment Program (FRAP), 575 wildfires burned in Humboldt County between 1908 and 2009 (Humboldt County 2012). The FRAP is also used to analyze wildfire hazard throughout the county, using factors such as fuels, terrain, and weather (FRAP 2010). The potential for destructive fires in Humboldt County ranges from moderate to very high in severity classification (Humboldt County 2017). The very high ratings are generally in the drier eastern portions of the county or in steep terrain, whereas the coast has a moderate to high rating where there is greater fuel potential, but the climate is wetter (Humboldt County 2017).

Potential manmade hazards include dredge material disposal sites, unexploded ordnance, artificial reefs, and shipwrecks. There is an active dredged material disposal site located approximately 3.5 nautical miles northwest of the North Spit offshore of Humboldt Bay and a discontinued dumping ground located approximately 1.75 nautical miles south of South Spit (BOEM and NOAA 2018). There is no known unexploded ordnance in the project vicinity; however, the unexploded ordnance data is not complete. The presence and locations of the unexploded ordnance have been derived from graphical representations recorded on NOAA Raster Navigation Charts (BOEM and NOAA 2018). There are no known artificial reefs in the project vicinity. Likewise, this is not a complete data set. The presence and location of artificial reefs have been derived from multiple state websites (BOEM and NOAA 2018). There are at

least 12 submerged shipwrecks and obstructions in and around Humboldt Bay (BOEM and NOAA 2018).

2.5. Conformance with State and Local Energy Planning Initiatives

The California Legislature has adopted a requirement that 50% of all retail electric energy sales in the state must come from renewable sources by the end of 2030 (State of California, 2015) - the California Renewable Portfolio Standard ("RPS"). SB100 was signed on September 10, 2018, which will increase the RPS to 100%. California greenhouse gas (GHG) programs and requirements are also strong drivers for increased availability of renewable energy.

Three California authorities administer RPS and GHG programs.

- California Public Utilities Commission (CPUC) administers the RPS compliance required under SB 107, SB 2 and SB 350 for IOUs, ESPs and CCAs.
- CEC administers the RPS compliance required under SB 107, SB 2 and SB 350 for Publicly Owned Utilities (POUs).
- California Air Resources Board (CARB) is responsible for implementing the GHG reductions required under AB 32 and SB 350.

With easily accessible onshore wind sites largely exhausted, the opportunity for out-of-state wind limited by the transmission delivery requirements associated with Portfolio Content Category 1 ("PCC 1") of the California RPS, and supported by material declines in technology costs, the vast majority of new renewable projects that have been constructed in California in recent years have been solar photovoltaic. While solar has been able to provide an increasingly cost-effective path towards meeting the CA RPS, its dominance has also given rise to several issues, chief amongst them the so-called "duck curve".

Due to the relative homogeneous nature of the solar resource, most solar in the state shares a similar production profile during daylight hours. With increasing supply to meet demand, sometimes decreasing due to factors such as energy efficiency, pricing in CAISO has decreased significantly during prime production hours, trending negative in an increasing number of hours over the year. Moreover, lacking sufficient energy storage or gas to provide the requisite ramping capabilities, the state is having increasing difficulty in meeting its late afternoon and evening demand as solar production precipitously drops-off with the sun's setting. While energy storage and energy imports can and have assisted California in addressing this and related problems, offshore wind can also be an important part of the solution.

First, the production profile of offshore wind serves as a natural complement to solar. Not dependent on the sun, offshore wind produces output around the clock and can deliver a much-needed local source of production to assist in meeting the evening ramp and other peak demand periods that can't be adequately addressed by solar. Relatedly, offshore wind has less exposure to negative price risk due to its significantly more diverse generation profile.

Secondly, offshore wind can deliver a PPC 1 product under the RPS. Most new onshore wind seeking to serve California load must assume costly transmission to meet the PCC1 delivery requirements and even then, can only achieve PCC1 status for a fraction of plant output.

Offshore wind allows for 100% of plant output to assist buyers in meeting their RPS or internal renewable targets from an innovative technology that is a natural complement to solar.

Thirdly, offshore wind is positioned to deliver significant benefits locally in California—it can provide resource adequacy, it can delivery economic benefits, and it can provide significant direct and indirect employment, potentially stimulating a nascent supply chain in California.

2.6. Documentation of Lessee Qualifications

2.6.1. Legal Qualifications

Table 8 summarizes legal information for the Applicant and Project Partners.

Table 8. Summary of Applicant and Project Partner Organizations

Organization	Role	Headquarters	State of Incorporation
Redwood Coast Energy Authority (RCEA)	Applicant: Project partner	Eureka, CA	California
Principle Power	Project partner	Emeryville, CA	Nevada
EDPR Offshore	Project partner	Houston, TX	Delaware
Aker Solutions	Project partner	Houston, TX	Delaware

RCEA is authorized under the operating rules of its business to hold and operate leases, right-of-way grants, or right-of-use and easement grants for activities that produce, or support production, transportation or transmission of, energy from sources other than oil and gas, on the Outer Continental Shelf (OCS), and right-of-use and easement grants for the alternate use of OCS facilities for energy or marine related activities.

Appendix A includes copies of RCEA's Articles of Incorporation, Company By-Laws, Meeting minutes from latest Board of Directors Meeting, and Corporate Charter.

2.6.2. Technical Capability

The qualifications and roles of RCEA and its Project Partners are described below, and additional detail is provided in Appendix B. RCEA and its project partner's experience spans industries from high-tech manufacturing to offshore construction and oil and gas. The proposed project will leverage RCEA's community focus and unique position in Humboldt County, and pair it with the collective know-how and lessons learned from the Project Partners. RCEA and Project Partners are committed to the success of the project. Individual organizational staffing levels and resources will be allocated to meet project needs and will not be split across multiple projects.

Applicant and Project Partner

Redwood Coast Energy Authority - RCEA is a local government joint powers agency with member agencies consisting of the County of Humboldt, the Cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, Trinidad and the Humboldt Bay Municipal Water District. Formed in 2003, RCEA's mission is to develop and implement sustainable energy initiatives that

reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region. Relating to the local development of floating offshore wind energy, RCEA's 2003 Joint Powers Agreement includes specific goals to:

- Lead, coordinate and integrate regional efforts that advance secure, sustainable, clean and affordable energy resources.

- Support research, development, demonstration, innovation, and commercialization of sustainable energy technologies by public and private entities operating in Humboldt County.

- The Humboldt County General Plan designates RCEA as the regional energy authority with the responsibility to coordinate and facilitate countywide strategic energy planning and implementation.

RCEA will provide project management, interconnection support, power purchasing, local stakeholder engagement, community liaison, and project financing support to the project.

Project Partners

Principle Power, Inc. – Principle Power is an innovative developer, technology and services provider for the offshore wind energy market. Our leading, proven and patented technology, the WindFloat – a floating wind turbine foundation – provides access to transitional (40-60 meters) and deep-water (over 60 meters) sites, globally – by offering an enabling technology for the development of the OFW industry as whole and opening new deep-water markets. Principle Power will provide project management, design and technology engineering, project development services, operational and health and safety services to the project.

EDPR Offshore North America LLC is a wholly owned subsidiary EDP Renewables North America LLC ("EDPR NA"). EDPR NA is a wholly owned subsidiary of EDP Renováveis ("EDPR"). EDPR NA develops, constructs, owns, and operates wind and solar renewable energy projects throughout the U.S, Canada and Mexico. EDPR NA is based in Houston, Texas, with over 500 employees and regional offices in New York, Oregon, Illinois, and Massachusetts. EDPR NA's rigorous approach has led to the successful development of more than 5GW of renewable energy facilities located in the U.S., Canada and Mexico, and the company has demonstrated a proven ability to successfully navigate complicated land, interconnection and permitting environments in order to achieve commercial operations for its projects.

EDPR NA's operational assets, 44 wind farms and 4 solar parks, are spread across 13 U.S. states, one Mexican state and one Canadian province, making EDPR NA the 4th largest owner of renewable energy in North America. EDPR NA is an industry leader in operational reliability: with nearly 3,000 turbines in operation and drawing on over 120 million turbine-hours of operational history, EDPR NA is able to maintain over 97% availability fleet-wide. EDPR NA is also actively developing a portfolio of more than 10,000 MW of additional renewable energy assets in over fifteen states in the U.S.

EDPR is a leading global renewable energy company that develops, builds, owns and operates power plants that generate electricity using renewable energy sources. With more than 11 GW of installed wind capacity and close to 28TWh generated as of YE 2017, EDPR is ranked fourth

in the world in wind energy based on net installed capacity and is consistently ranked in the top three in terms of sectorial growth.

Please see Appendix C for EDPR's corporate structure.

Aker Solutions Inc.- Aker Solutions Inc. is headquartered in Houston, Texas and is a wholly owned subsidiary of Aker Solutions ASA, a Norwegian founded company with offices across the globe and a history encompassing a variety of industries over the last 177 years. The company is a central player in a wide range of industries, including ship building, hydro-power, oil and gas, wave power and bottom fixed offshore wind jackets. The modern capabilities and offerings of Aker Solutions were developed from the combination of two premier industrial Norwegian, Aker and Kvaerner, both with significant activities supplying the offshore oil and gas industry with equipment and engineering and construction services. This phase of the company started with the activities leading up to the first commercial oil discovery in the North Sea in 1969, which was drilled by an Aker-delivered floating drilling unit. The two companies combined in 2002, forming Aker Kvaerner, which in 2008 was renamed to Aker Solutions. Aker Solutions is currently represented in 20 different countries, 52 locations, and counts approximately 14,000 employees.

ASI will provide project management, project financing services, power system design, export/array cables design, offshore facilities design, and offshore O&M support to the project.

Consultants

H. T. Harvey & Associates - Since 1970, the highly trained ecologists and professionals at H. T. Harvey & Associates have delivered exceptional consulting services to public agencies, private entities, and nonprofit organizations. The expertise of our staff encompasses a wide range of biological and design disciplines required to perform high-quality work on ecological projects. We apply our expertise in wildlife ecology, restoration ecology, plant ecology, fish and aquatic ecology, and landscape architecture in pursuit of our mission to create ecologically sound solutions to our clients' complex natural resource challenges. Our senior scientists average 25 years of experience in their respective disciplines, and many are recognized leaders in their fields. Collectively, we have published more than 500 peer-reviewed scientific research papers on a variety of subjects. Today the company includes nine principals and over 75 ecologists, landscape architects, and other professionals in six offices in California and Hawaii. We have successfully completed thousands of projects for our clients.

Herrera Environmental Consultants (Herrera) – Established in 1980, Herrera's interdisciplinary teams of scientists, engineers, planners, and regulatory specialists provide scientifically defensible and realistic solutions to complex resource challenges facing businesses, municipalities, utilities, and government agencies. Herrera has the specific expertise necessary to address key challenges facing ocean energy development and is experienced with marine environmental compliance. Herrera offers complete permitting, planning, and environmental services to support energy developments.

Experience with Similar Projects

Detailed descriptions of RCEA's and project partner's, and consultant's project experience is provided in Appendix B.

2.6.3. Financial Capability

There have been no bankruptcy or other adverse financial proceedings against RCEA over the last five years.

Detailed descriptions of RCEA's and Project Partner's financial capability is provided in Appendix C.

Development Costs

Development costs have been estimated using a bottom up approach. RCEA and Project Partners have a substantial amount of insights into the development expenditures required to bring a floating project of this size to Final Investment Decision (FID). The development budget would span from 2018 through the 2022 FID. The project is expected to be fully operational in 2024). This table should be viewed as a preliminary estimate only. Additional information on project costs will be determined over the course of the early and late development phases.

Financing Plan

Detailed descriptions of RCEA's and Project Partner's financing plan is provided in Appendix C.

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