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

OLYMPIC WIND

Floating Offshore Wind Project

Submitted To:
U.S. Department of the Interior
Bureau of Ocean Energy Management
Pacific Region

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1 DEFINITIONS AND ABBREVIATIONS

AQI	Air Quality Indices
BOEM	Bureau of Ocean Energy Management under the Department of Interior
CSZ	Cascadia Subduction Zone
CETA	2019 Clean Energy Transformation Act
CFR	Code of Federal Regulations
COD	Commercial Operations Date
COP	Construction & Operations Plan
CPS	Coastal Pelagic Species
DoD	Department of Defense
DPS	Distinct Population Segment
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat
EIS	Environmental-Impact Statement
EPA	Environmental Protection Agency
ESU	Evolutionarily Significant Unit
FEED	Front-End Engineering Design
GHPUD	Grays Harbor Public Utility District
GW	gigawatts, equal to 1,000 megawatts, or 1,000,000 kilowatts, a unit measure of power
GWh	gigawatt hours
km	kilometers
km^2	square kilometers
LIDAR	Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth
MSL	mean sea level
MSP	Marine Spatial Plan
MTR	military training routes
MW	Megawatt, equal to 1,000,000 watts or 1,000 kilowatts, a unit of measure of power
mya	million years ago
NOAA	National Oceanographic and Atmospheric Administration
nm	nautical mile, equal to 1.15 statutory miles

NEPA	National Environmental Policy Act
NREL	National Renewable Energy Laboratory
OCS	Outer Continental Shelf of the Unites States
PM2.5	particulate matter 2.5 micrometers or less
Psu	practical salinity units
QIN	Quinault Indian Nation
SAP	Site Assessment Plan
TMDL	Total Maximum Daily Load
U&A	Usual and Accustomed Area
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
USCG	U.S. Coast Guard
UTC	Washington Utilities and Transportation Commission
WTG	wind turbine generator

2 OVERVIEW

Trident Winds Inc. (Trident) is pleased to submit this unsolicited request for a United States Outer Continental Shelf (OCS) renewable energy lease in accordance with the requirements of 30 CFR § 585.230.

On June 20, 2018, the Washington Coastal Marine Advisory Council published the final Marine Spatial Plan for Washington's Pacific Coast (MSP) and supporting Final Programmatic Environmental Impact Statement (EIS). The MSP sets out the process to be followed by project developers to ensure early compliance with state laws.

On May 7, 2019, the 2019 Clean Energy Transformation Act (CETA) was signed into law. CETA commits the State of Washington State to an electricity supply free of greenhouse gas emissions by 2045. CETA applies to all electric utilities serving retail customers in Washington and sets specific milestones to reach the required 100 percent clean electricity supply. The first milestone is in 2022, when each utility must prepare and publish a clean energy implementation plan with its own targets for energy efficiency and renewable energy. By 2025, utilities must eliminate electricity generated by coal-fired power plants from their state portfolios. The first 100 percent clean electricity standard applies in 2030. The 2030 standard is greenhouse gas–neutral, which means utilities have flexibility to use limited amounts of electricity from natural gas if it is offset by other actions. By 2045, utilities must supply Washington customers with electricity that is 100 percent renewable or non-emitting, with no provision for offsets.

Trident proposes to permit, develop, construct, operate and maintain a floating offshore wind farm with approximately 2,000-megawatt (MW) nameplate capacity on the OCS in United States (U.S.) federal waters, named Olympic Wind (the Project). The proposed site for the Project is off the coast of Grays Harbor and Pacific counties, Washington (Figure 1).

The Project is planned to be in 1,970 feet to 4,300 feet (600 to 1,300 meters, or 325 to 710 fathoms) water depth approximately 43 miles (38 nm) or 70 km) from Grays Harbor, taking advantage of an offshore wind resource with an average speed of 17.9 to 19 knots (8 to 8.5 meters/second).

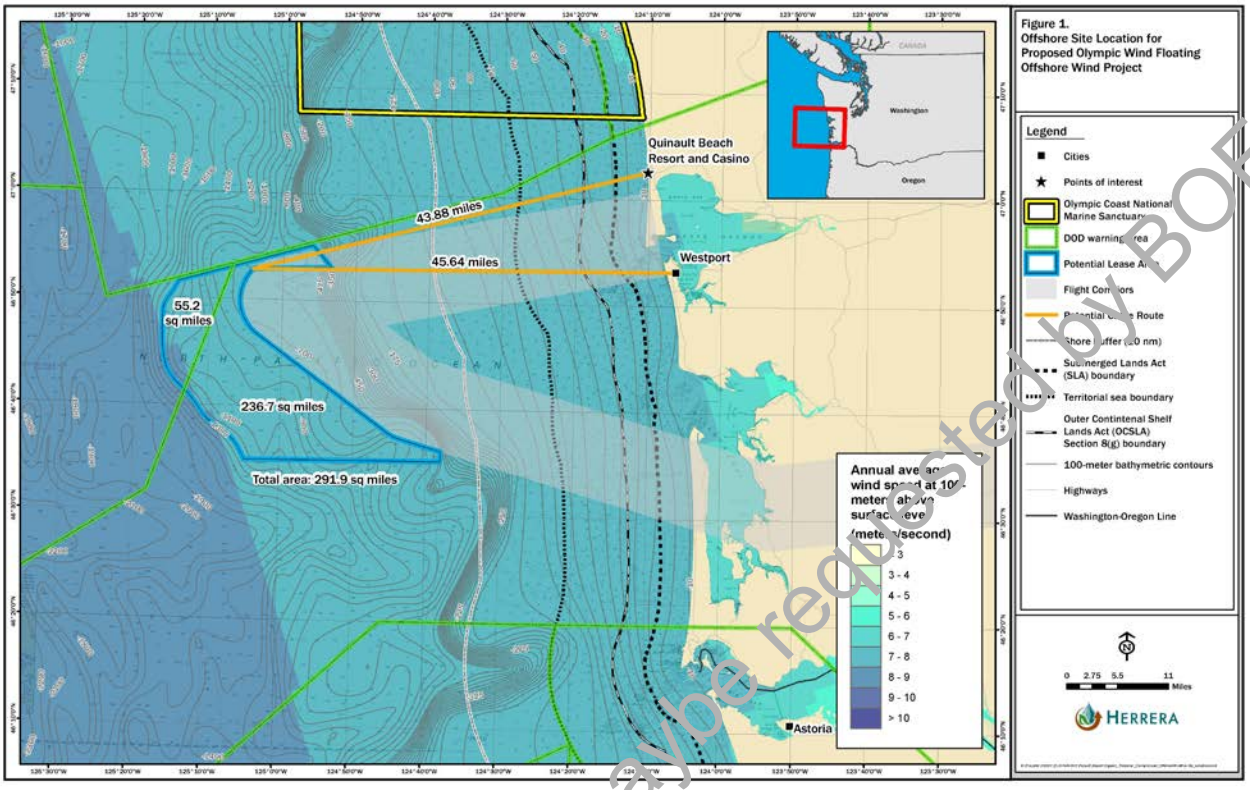

Figure 1 - Offshore Site Location for Proposed Olympic Wind Floating Offshore Wind Project

Preliminary analysis of known environmental and ocean resource uses and conflicts suggests that the proposed location is favorable for the Project development and would reduce, if not eliminate, potential visual impacts (Figure 1). A small part of the planned location is in the Department of Defense (DoD) Warning Area W237D.

Trident has completed an informal review with the DoD's Clearing House and has initiated negotiations of the mitigation agreement.

The Project will deploy floating offshore wind units consisting of competitively selected and commercially available floating foundations with large, 10- to 20-MW, offshore wind turbine generators (WTGs). Trident will evaluate commercially available floating foundations at the time of the Site Assessment Plan (SAP) preparation to ensure that the site assessment is conducted for a proper foundation and anchoring units.

Each offshore wind unit is planned to be spaced approximately 1 nautical mile (nm) (2,000 meters) apart to reduce, or eliminate, wake effects and mooring lines overlap. Each offshore wind unit would be moored using conventional, properly sized anchors, a technology that requires no piling and is well suited for deep and variable seabed conditions. The installation will be completely reversible (no permanent infrastructure will be left on the seabed upon decommissioning), with minimal acoustic disturbances. Individual floating offshore wind units will be electrically interconnected with inter-array cables that will be brought together to a floating substation to form an offshore wind farm.

Energy produced and collected at the floating substation will be delivered to shore via one or more (for redundancy purposes) export cable(s) using a predefined export cable route. The export cable shore landing is likely to be in one of two places: (1) near the Quinault Beach Resort and Casino, with an onshore connection to the Grays Harbor Public Utility District (GHPUD) substation at Hogan's Corner (Figure 2) or (2) near Westport, with an onshore connection to the GHPUD substation at Westport (Figure 3).

Figure 2 - Potential Olympic Wind Project Export Cable Connection to the GHPUD Substation at Hogan's Corner

Figure 3 - Potential Olympic Wind Project Export Cable Connection to the GHPUD Substation at Westport

Trident will explore all available avenues for energy sales to various markets over time. Trident expects to seek a long-term power purchase agreement or a build-own-transfer transaction with one or more load-serving utilities or power purchase agreement(s) with commercial and industrial customers.

Following award of a non-competitive lease, provided no expressions of interest are received by the Bureau of Ocean Energy Management (BOEM) in response to a Request for Information, Trident will initiate preparation of the SAP and subsequently the Construction and Operations Plan (COP). The final investment decision for the Project is expected to be made in the 2028-time frame, leading to a full commissioning and commercial operation date of the Project around 2030.

The Project schedule coincides with the Washington market demand for new renewable energy sources under CETA, which requires all electric utilities in Washington to transition to greenhouse gas–neutral electricity by 2030 and to 100 percent renewable or non-emitting electricity by 2045.

As the Project is the first of its kind off the coast of Washington, Trident has conducted broad initial stakeholder outreach during development of this unsolicited lease request. Trident has actively engaged in communications and information exchange with federal and state agencies, state and local elected officials, and key stakeholders regarding the proposed development of the Project. Trident has or will have discussions with non-governmental organizations interested in the intersection of energy development and environmental protection in Washington. The list of these early outreach activities is included in ANNEX A.

The Project is poised to be the first floating, commercial-scale offshore wind installation off the coast of Washington, harnessing for beneficial use the unlimited offshore wind resources, while spearheading a new industry which promises economic benefits in the state for generations to come.

3 INFORMATION REQUIRED FOR AN UNSOLICITED REQUEST FOR A COMMERCIAL LEASE

BOEM regulations allow for the submission of an unsolicited request for a commercial lease. The following information addresses the elements of an unsolicited lease request prescribed by 30 CFR 585.230.

3.1 Screening Process Used to Select Site

Trident has followed a systematic approach to the site selection, including the following initial assessments and consultations.

3.1.1 Jurisdictional Constraints

Using data presented in the 2017 MSP, Trident identified the ocean area off the coast of Grays Harbor as the potential site location. Three types of jurisdictional constraints addressed were:

- The Olympic Coast National Marine Sanctuary, where BOEM does not have authorization to lease the OCS for renewable energy generation. This area was eliminated from further consideration.
- DoD warning areas (W237D and W237A), where the DoD's Northwest Training Range Complex Operating Area has air, surface, and subsurface operating areas that are used for various air, surface, subsurface, air-to-surface, and surface-to-air exercises,[1] and military training routes (MTR) VR331 and IR344.
- Quinault Indian Nation (QIN) Ocean Usual and Accustomed Area (Ocean U&A).

Trident has worked extensively with the DoD and QIN to identify a potential site location that would have the least conflicts with the presented uses of the ocean space.

Trident initiated an informal review with DoD's Clearing House in July 2019. The informal review was concluded in December 2021, resulting in the agreement with DoD for an acceptable site location, with further stipulations to be refined during mitigation agreement negotiations.

Trident held two-year-long discussions with QIN and has determined that installation of the floating offshore turbine within the QIN Ocean U&A could be incompatible with QIN traditional uses of the QIN Ocean U&A.

The proposed lease area is outside the QIN Ocean U&A, but there is a small portion within the W237D Warning Area and one of the MTRs. The need to locate the floating offshore wind units outside MTRs VR331 and IR344 resulted in distance to shore of more than 40 miles.

3.1.2 Available Onshore Infrastructure

The site selection included a desktop assessment of local infrastructure capabilities/constraints in the Port of Grays Harbor, as well as availability of existing substation and grid interconnection and their suitability for delivering up to 2,000 MW of power.

3.1.3 Environmental Conditions, Including Wind and Metocean Conditions, and Conflicting Uses of Space

The site selection included a desktop assessment of environmental resources and constraints in the ocean areas south of the Olympic Coast National Marine Sanctuary, west of Grays Harbor and Pacific counties, north of the Oregon-Washington border, and extending offshore approximately 60 miles. Results of the assessments, conducted using publicly available data, are presented in Section 3.3 below.

3.1.4 Stakeholders and Public Outreach

Trident has conducted initial outreach via virtual, phone, and in-person meetings to provide the overview of the Project and to receive feedback on potential permitting issues that may arise. Discussions were focused on the issues anticipated to be of concern, prior to formal federal and state environmental review and permitting activities, including compliance with the National Environmental Policy Act (NEPA). These processes will solicit information and views from stakeholders, to be determined by the relevant authorities, but Trident is encouraging a broad participatory process.

ANNEX A provides a summary of the initial outreach to a wide range of stakeholders. Trident has contacted and is continuing an ongoing dialog with State of Washington agencies such as the Department of Fish and Wildlife, Department of Ecology (Ecology), Department of Natural Resources, and Energy Facility Site Evaluation Council regarding the Project, the onshore cable routing plans, as well as consistency and compliance with the Coastal Zone Management Act and state regulations.

These initial engagements have primarily focused on informing stakeholder groups of the proposed Project with a focus on the offshore site location, floating offshore wind technologies, answering project-specific questions, and seeking inputs on areas or issues that may be of concern. Research results and the outcome of discussions with regulatory agencies, as well as important stakeholder groups, have also been documented for the follow-on NEPA process.

As a result of Trident's initial engagement with the local fishing community and the DoD, the proposed site location was moved farther offshore to minimize potential impacts to commercial and recreational fishing.

3.1.5 Offshore Wind Area Suitable for Offshore Wind Development off the Coast of Washington

The analysis conducted by Trident over an extended period, coupled with the extensive stakeholder outreach and the informal review completed with the DoD, provided a good understanding of the sea space potential for offshore wind development.

The sea spaces that are most suitable for offshore wind development off the coast of Washington are represented by two areas south and outside the Olympic Coast National Marine Sanctuary, outside the QIN Ocean U&A and mostly outside the DoD warning areas and MTRs. The first is a total of approximately 560 square miles in water depths of 1,800 to 4,300 feet (550 to 1,300 meters, or 300 to 710 fathoms); the second is an area of approximately 340 square miles in water depths of 4,300 to 6,235 feet (1,300 to 1,900 meters, or 710 to 1,040 fathoms).

While developing offshore wind in water depths of 4,300 to 6,235 feet (1,300 to 1,900 meters, or 710 to 1,040 fathoms) is technically feasible, the economics of offshore wind development in such water depths would likely be prohibitive given available technology.

3.2 Area Requested for Lease - 30 CFR 585.230(a)

As a result of the initial site selection assessment as outlined in Section 3.1 above, the Project site is proposed to be located in 1,970 feet to 4,300 feet (600 to 1,300 meters, or 325 to 710 fathoms) of water more than 40 miles (35 nm, or 64.5 km) from Grays Harbor, Washington (Figure 4).

Preliminary analysis of known environmental, ocean use, and resource conflicts suggests that the proposed Project location would have the least conflicts and offers minimal, if any, visual impacts.

Trident is requesting the area on the OCS, as described below, for a non-competitive lease.

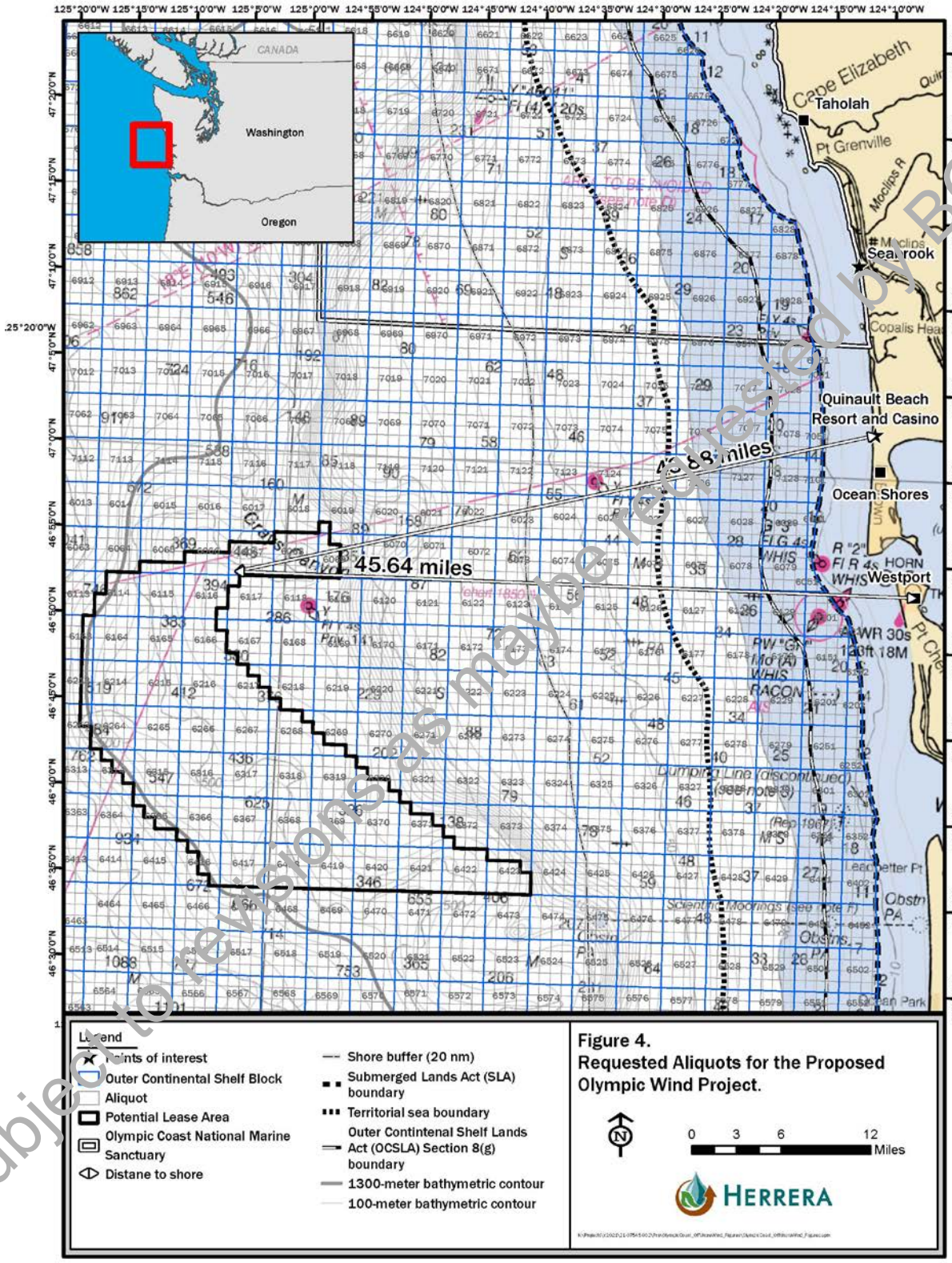

Figure 4 – Requested Aliquots for the Proposed Olympic Coast Project

Table 1 provides the legal description of the proposed area for the lease within the OCS official Protraction Diagram NK10-01. The actual aliquots from the following blocks are included in the spatial file compatible with ArcGIS 10 or higher (geographic information system shape files) in a geographic coordinate system[2] that forms part of this submittal.

Table 1 - OCS Lease Area Blocks (Partial and Full)

Block Number	Partial Block (Aliquot) Designation	Quantity of Aliquots
6019	M	1
6065	M, N, O, P	4
6066	I, J, K, L, M, N, O, P	8
6067	E, F, G, H, I, J, K, L, M, N, O, P	12
6068	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6069	A, E, F, I, J, M, N	7
6114	B, C, D, F, G, H, I, J, K, L, M, N, O, P	14
6115	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6116	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O	15
6117	A	1
6163	D, H, L, P	4
6164	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6165	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6166	A, B, C, E, F, G, H, I, J, K, L, M, N, O, P	15
6167	M	1
6213	D, H, L, P	4
6214	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6215	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6216	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6217	A, B, E, F, G, I, J, K, L, M, N, O, P	13
6218	M	1
6263	D, H	2
6264	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6265	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6266	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6267	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6268	A, B, C, E, F, G, H, I, J, K, L, M, N, O, P	15
6269	I, M, N, O	4
6314	B, C, D, G, H, L	6
6315	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6316	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6317	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6318	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6319	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6320	E, I, J, K, M, N, O, P	8

Block Number	Partial Block (Aliquot) Designation	Quantity of Aliquots
6365	A, B, C, D, F, G, H, K, L	9
6366	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6367	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6368	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6369	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6370	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6371	A, E, F, G, I, J, K, L, M, N, O, P	12
6372	M	1
6416	B, C, D, G, H, K, L, P	8
6417	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6418	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6419	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6420	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6421	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6422	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P	16
6423	E, F, G, I, J, K, L, M, N, O, P	11
	Total	**608**

The gross size of the proposed lease area consists of 603 aliquots corresponding to 338.05 square miles (875.5 square km [km^2] or 216,326.4 acres).

3.3 Renewable Energy Resource and Environmental Conditions in Area of Interest

3.3.1 Energy Resource

The National Renewable Energy Laboratory (NREL) first estimated the offshore wind resources of the United States in 2003.[3] Since then, updated offshore wind mapping has been undertaken by NREL, most recently in 2017 using data for the period 2007 to 2013. For Washington, the wind speeds at 300 feet (90 meters) height were originally estimated by AWS Truepower as part of an onshore wind mapping project. These data have been extrapolated to 300 feet (90 meters) and extrapolated to 50 nm offshore (Table 2) by NREL.[4] The 328 feet (100 meter) height wind speeds were developed by NREL via the Wind Integration National Dataset Toolkit.[5]

Prior to the design and optimization modeling of the offshore project system (WTG, floating substructure, anchoring, and inter-array cable), a suitable dataset of wind, current, and wave is required. The dataset will be compiled from existing historical sources as well as project-specific measurements. Statistical analyses will yield normal and extreme events for wind, current, and wave criteria to be used in the design basis and engineering.

Trident is planning to install a floating Light Detection and Ranging (LIDAR) unit following approval of the SAP to collect the site-specific wind data that will then be correlated to the available data sets.

Table 2 - Washington Offshore Wind Resource by Wind Speed Interval, Water Depth, and Distance from Shore within 50 nm Offshore[6]

	Distance from Shore (nm)			*Depth Category (m)*			*Wind Speed at 90m (m/s)*		
	0–3	**4–12**	**13–50**	**0–30**	**31–60**	**> 60**	**7.0–7.5**	**7.6–8.0**	**8.1–8.5**
GW	26.16	15.40	55.69	15.09	9.10	231.56	4.16	6.60	84.85
km²	1,971	4,906	12,550	644	2,032	16,751	1,620	2,890	11,717
nm = nautical miles; m = meters; m/s = meters per second									

3.3.2 Environmental Resources

Trident conducted an initial examination of nautical charts for the proposed Project area and held initial consultations with local experts to determine the viability of the Project area. In addition, Trident reviewed the Washington MSP,[7] Multi-Purpose Marine Cadastre,[8] and a wide variety of other available datasets.

Using available public information, Trident conducted a desktop biological resource sensitivity analysis for the coastal and marine environments of Washington that cover the area of interest for the seabed lease and potential cable route, including the potential for use of local infrastructure for foundation final assembly, turbine integration, and operations and maintenance activities. In addition, Trident conducted preliminary assessment of the use of horizontal directional drilling techniques to avoid sensitive nearshore areas and considered potential economic and socioeconomic benefits of the proposed Project.

While these and other potential impacts to environmental resources will be studied and analyzed during the leasing and permitting process, based on the initial analysis, Trident is confident in the proposed Project location. Baseline and post-installation monitoring are also expected to document and help address potential impacts to environmental resources.

3.3.2.1 Marine Geology

The Project area is near several submarine canyons with deeper topography, which cut into the continental shelf and slope. The largest and most relevant are Grays Canyon and Guide Canyon. The canyons in the area are largely relict from deglaciation and lower stands to sea level.[9] Minor amounts of sedimentation occur throughout these areas.[10]

The continental slope, including the submarine canyons, are regions where submarine landslides occur and create channels for coastal sediment to reach the seafloor.[11] These canyons, along with regional currents described below, enhance coastal upwelling by providing a conduit for deep, cold, nutrient-rich water to reach the bottom boundary layers of the shelf, where it can be upwelled by local wind, contributing to the high productivity of Washington's ocean water.

The continental shelf is much more dynamic. The shelf, by definition, is influenced by wave motions from winter storms. There are spatially intermittent mud deposits in mid-shelf regions.[12] These features are dynamic but largely depositional.

Closer to shore, near the potential cable landing sites, the seabed is influenced by nearshore transport and the dynamics of Grays Harbor's mouth.[13] The dynamics of the mouth are influenced by the construction of two large jetties that serve to provide navigation to the Port of Grays Harbor. The navigation channel is also actively dredged. Dredged sediment is occasionally placed on adjacent shorelines to mitigate erosion associated with the jetties. However, the landing site itself is largely accretional and is expected to remain so in the coming years.

3.3.2.2 Marine Biological Resources

Threatened and Endangered Species

Several species that are listed as threatened or endangered under the federal Endangered Species Act may occur in the project area. Listed species and designated Critical Habitat are under the jurisdiction of either the U.S. Fish and Wildlife Service (USFWS) or National Oceanographic and Atmospheric Administration (NOAA) Fisheries. Table 3 and Table 4 show federally listed threatened and endangered species that may occur in Grays Harbor or Pacific County.

Table 3 - Threatened and Endangered Species for Grays Harbor County and Pacific County under USFWS Jurisdiction[14]

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Marbled murrelet	*Brachyramphus marmoratus*	Threatened	Final	Final	Known to occur in Washington, Oregon, and California.
Northern spotted owl	*Strix occidentalis caurina*	Threatened	Final	Final	Known to occur in British Columbia, Washington, and Oregon.
Short-tailed albatross	*Phoebastria albatrus*	Endangered	Not Designated	Final	Known to or is believed to occur in Alaska, California, Hawaii, Oregon, and Washington.
Streaked horned lark	*Eremophila alpestris strigata*	Threatened Critical Habitat	Final	Draft	Known to occur in British Columbia, Washington, and Oregon. Critical Habitat designated in Damon Point in Grays Harbor.
Western snowy (coastal) plover	*Charadrius alexandrinus nivosus*	Threatened Critical Habitat	Final	Final	Known or believed to occur in Washington, Oregon, and California. Critical Habitat designated in Damon Point in Grays Harbor.
Western yellow-billed cuckoo	*Coccyzus americanus*	Threatened	Final	n/a	Known to or is believed to occur along western United States from southern British Columbia to northwestern Mexico, including Washington, Oregon, and California.
Bull trout	*Salvelinus confluentus*	Threatened Critical Habitat	Final	Final	Known to occur in Washington, Oregon, Idaho, Nevada, Montana, and western Canada. Critical Habitat includes Grays Harbor and nearshore coastal waters from Grays Harbor north.
Loggerhead sea turtle	*Caretta*	Endangered	Not Designated	Final	In the eastern Pacific, loggerheads have been reported from Alaska to Chile. Along the west coast of the United States, the majority of recorded sightings are of juveniles off the coast of California.
Green sea turtle	*Chelonia mydas*	Threatened	Not Designated	Final	In the eastern North Pacific, green turtles have been sighted from southern Alaska to Baja California, but most commonly occur from southern California to northwestern Mexico.
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Final	Final	Leatherbacks are commonly known as pelagic (open ocean) animals, but they also forage in coastal waters. Leatherbacks are the most migratory and wide ranging of sea turtle species and nest along the Pacific coast of Mexico and Costa Rica.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Olive (Pacific) Ridley sea turtle	*Lepidochelys olivacea*	Threatened	Not Designated	Final	This species does not nest in the United States, but during feeding migrations, olive ridley turtles nesting in the East Pacific may disperse into waters off the U.S. Pacific coast as far north as Oregon.

Table 4 - Endangered and Threatened Species under NOAA Fisheries Jurisdiction[15]

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Marine Mammals					
Blue whale	*Balaenoptera musculus*	Endangered	Not Designated	Final	The eastern North Pacific Ocean blue whale's range extends from the Gulf of Alaska to Mexico and Central America. They occur primarily south of the Aleutian Islands and the Bering Sea.
Fin whale	*Balaenoptera physalus*	Endangered	Not Designated	Final	Fin whales are found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes, and less commonly in the tropics.
Gray whale, Western North Pacific Distinct Population Segment (DPS)	*Eschrichtius robustus*	Endangered	Not Designated	n/a	Gray whales are found mainly in shallow coastal waters in the North Pacific Ocean. Most of the eastern North Pacific gray whales feed in Alaska, but some feed along the Pacific coast in waters off Southeast Alaska, British Columbia, Washington, Oregon, and northern California.
Humpback whale	*Megaptera novaeangliae*	Endangered	Final	Final	Several populations that breed in tropical waters feed off the west coast, including Alaska, British Columbia, Washington, Oregon, and California.
Killer whale, Southern Resident DPS	*Orcinus orca*	Endangered	Final	Final	Killer whales are found in all oceans. The most well-studied killer whale populations occur in the eastern North Pacific Ocean. Resident killer whales have been observed from California to Russia. The Southern Resident killer whales range extends from Canada to California, although they are most frequently observed in the Salish Sea, Washington.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Right whale, North Pacific original listing as "northern right whale"	*Eubalaena japonica*	Endangered	Final	Final	North Pacific right whales inhabit the Pacific Ocean from temperate to subpolar latitudes. Sightings have mostly occurred in the central North Pacific and Bering Sea; however, other they have been reported as far south as central Baja California and Hawaii.
Sei whale	*Balaenoptera borealis*	Endangered	Not Designated	Final	Sei whales prefer temperate waters in the mid-latitudes. The movement patterns of sei whales is not well known and they have an unpredictable distribution but are typically observed in deeper offshore waters.
Sperm whale	*Physeter macrocephalus*	Endangered	Not Designated	Final	Sperm whales inhabit all of the world's oceans. Their migrations are not predictable or as well understood as migrations of baleen whales. Some populations appear to have different migration patterns by life history status, with males making long oceanographic migrations into temperate waters, whereas females and young stay in tropical waters year-round.
Guadalupe fur seal	*Arctocephalus townsendi*	Threatened	Not Designated	n/a	Guadalupe fur seals live in waters off southern California and the Pacific coast of Mexico. They are not common along the West Coast of the United States, but immature animals commonly strand on beaches as far north as Washington.
Steller sea lion	*Eumetopias jubatus*	Endangered	Final	Final	The eastern Steller sea lion DPS range includes southeast Alaska, British Columbia, Washington, Oregon, and California.
Sea Turtles (Note: USFWS has lead responsibility on nesting beaches, NOAA Fisheries in marine waters)					
Loggerhead turtle, North Pacific Ocean DPS	*Caretta*	Endangered	Not Designated	Final	In the eastern Pacific, loggerheads have been reported from Alaska to Chile. Along the west coast of the United States, the majority of recorded sightings are of juveniles off the coast of California.
Leatherback turtle	*Dermochelys coriacea*	Endangered	Final	Final	Leatherbacks are commonly known as pelagic (open ocean) animals, but they also forage in coastal waters. Leatherbacks are the most migratory and wide ranging of sea turtle species and nest along the Pacific coast of Mexico and Costa Rica.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Green turtle	*Chelonia mydas*	Threatened	Not Designated	Final	In the eastern North Pacific, green turtles have been sighted from southern Alaska to Baja California, but most commonly occur from southern California to northwestern Mexico.
Olive ridley turtle	*Lepidochelys olivacea*	Threatened	Not Designated	n/a	This species does not nest in the United States, but during feeding migrations, olive ridley turtles nesting in the East Pacific may disperse into waters off the U.S. Pacific coast as far north as Oregon.
Marine and Anadromous Fish					
Rockfish	*Sebastes ruberrimus* *S. pinniger* *S. paucispinus*	Threatened; Endangered	Final	Final	The threatened yelloweye rockfish, threatened canary rockfish, and endangered bocaccio range from Punta Blanca, Baja California, to the Gulf of Alaska off Krozoff and the Kodiak Islands, but are most common between Oregon and northern Baja California.
Chinook salmon, Lower Columbia River Evolutionarily Significant Unit (ESU)	*Oncorhynchus tshawytscha*	Threatened	Final	Final	Chinook salmon are found from the Bering Strait in Alaska to southern California. Lower Columbia River Chinook salmon includes all-natural spawned populations of Chinook salmon from the Columbia River and its tributaries downstream of a transitional point east of the Hood and White Salmon rivers, and any fish originating from the Willamette River and its tributaries below Willamette Falls.
Chinook salmon, Puget Sound ESU	*Oncorhynchus tshawytscha*	Threatened	Final	Final	Chinook salmon are found from the Bering Strait in Alaska to southern California. The Puget Sound Chinook salmon includes all naturally spawned populations in lake, riverine, and estuarine habitat in Washington, Oregon, and Idaho, as well as in marine nearshore habitat in Puget Sound.
Chinook salmon, Upper Willamette River spring-run ESU	*Oncorhynchus tshawytscha*	Threatened	Final	Final	Chinook salmon are found from the Bering Strait in Alaska to southern California. The Upper Willamette River Chinook salmon includes all naturally spawned populations of spring Chinook salmon from the Clackamas River and in the Willamette Basin upstream of Willamette Falls.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Chum salmon, Columbia River ESU	*Oncorhynchus keta*	Threatened	Final	Final	Chum salmon are found from the Bering Strait in Alaska to southern California. The Columbia River chum salmon includes all naturally spawned populations of chum salmon from the Columbia River and its tributaries in Washington and Oregon.
Coho salmon, Lower Columbia River ESU	*Oncorhynchus kisutch*	Threatened	Final	Final	Coho salmon are found from the Bering Strait in Alaska to central California. The Lower Columbia River coho salmon includes all-natural spawned populations of coho salmon from the Columbia River and its tributaries downstream from the White Salmon and Hood rivers, and any such fish originating from the Willamette River and its tributaries below the Willamette Falls.
Eulachon, southern DPS	*Thaleichthys pacificus*	Threatened	Final	Final	Eulachon range from the Bering Sea in Alaska to northern California. The southern DPS of eulachon consists of fish that spawn in rivers south of the Nass River in British Columbia to, and including, the Mad River in California.
Green sturgeon, southern DPS	*Acipenser medirostris*	Threatened	Final	Final	The critical habitat for the green sturgeon includes nearshore oceanic waters, bays, and estuaries from San Francisco north to Washington. The green sturgeon ranges from Mexico to at least Alaska in marine waters, and is observed in bays and estuaries up and down the west coast of North America
Steelhead, Lower Columbia River DPS	*Oncorhynchus mykiss*	Threatened	Final	Final	Steelhead are found from the Aleutian Islands in Alaska to southern California. The Lower Columbia River steelhead includes all naturally spawned anadromous *O. mykiss* originating below natural and manmade impassable barriers from rivers between the Cowlitz and Wind rivers and the Willamette and Hood rivers and tributaries below Willamette Falls.

Species	Scientific Name	Status	Critical Habitat Designation	Recovery Plan	Range
Steelhead, Puget Sound DPS	*Oncorhynchus mykiss*	Threatened	Final	Final	Steelhead are found from the Aleutian Islands in Alaska to southern California. The Puget Sound steelhead includes all naturally spawned steelhead originating below natural and manmade impassable barriers in rivers flowing into Puget Sound from the Elwha River (inclusive) eastward, including rivers in Hood Canal, South Sound, North Sound, and the Strait of Georgia.
Steelhead, Upper Willamette River DPS	*Oncorhynchus mykiss*	Threatened	Final	Final	Steelhead are found from the Aleutian Islands in Alaska to southern California. The Upper Willamette River steelhead includes all naturally spawned anadromous winter-run *O. mykiss* originating from the Willamette River and its tributaries upstream from Willamette Falls to the Calapooia River.

n/a = Not Applicable

Avian Resources

The beaches, dunes, forest, tidal salt and brackish marshes, intertidal mudflats, and tidal open water of Grays Harbor and Willapa Bay provide high quality foraging and roosting habitats and refuge for dozens of species. The Grays Harbor estuary is one of four major staging areas for migrating shorebirds in North America and hosts one of the largest concentrations of shorebirds on the Pacific coast. Shorebird species using the Grays Harbor and Willapa Bay estuaries include large numbers of western sandpiper, dunlin, semipalmated plover, black-bellied plover, least sandpiper, short- and long-billed dowitcher, and red knot. Common raptors include osprey, bald eagle, northern harrier, red-tailed hawk, peregrine falcon, and merlin. During the winter, the estuaries provide refuge to thousands of dunlins, some black-bellied plovers, and large concentrations of more than 25 species of waterfowl, and waterbirds, including loon, grebe, pelican, heron, sora, bittern, rail, gulls, terns, coots, and cranes.

Pelagic avian species are birds that use the offshore areas of Grays Harbor and Willapa Bay, and include the short-tailed albatross, northern fulmar, pink-footed shearwater, flesh-footed shearwater, Buller's shearwater, sooty shearwater, fork-tailed storm-petrol, red phalarope, northern phalarope, pomarine jaeger, parasitic jaeger, long-tailed jaeger, south polar skua, glaucous-winged gull, western gull, herring gull, California gull, black-legged kittiwake, Sabine's gull, arctic tern, common murre, Cassin's auklet, rhinoceros auklet, and tufted puffin.[16]

Ten of the 15 species of bats that occur in Washington are found in Grays Harbor or Pacific counties, including the big brown bat, California myotis, hoary bat, Keen's myotis, little brown myotis, long-eared myotis, long-legged myotis, silver-haired bat, Townsend's big-eared bat, and Yuma myotis. To date no studies have been done on bats' use of the ocean areas off the Washington coast. A study in Sweden showed that many species of bats hunt for insects in offshore areas. They have also been found to use offshore turbines for roosting.[17] Bat studies on the West Coast indicate that bats may use the offshore areas when an offshore location (such as an island) guides them.[18]

Benthic Habitat

The Washington seafloor is structurally complex and geographically variable. It can be divided into a variety of habitats, each with unique physical and biological characteristics. Mud can be a more pronounced bottom type in areas receiving less energy from water movement (i.e., isolated, and sheltered embayments) and in deeper waters. Subtidal, soft-bottom habitats are diverse, as a result of distinct organism assemblages that are influenced by differences in substrate type (sand versus mud), organic content, and bottom depth.

The Washington State Outer Coast Seafloor Atlas shows the primary surficial substrate types from the shoreline to 700 fathoms. The substrate type offshore of Grays Harbor consists predominantly of sand with patches of gravel, gravel mixes, mud, and bedrock.[19] Farther offshore, the substrate is composed of mud, muddy sand, and small pockets of gravel and gravel mixes along bedrock.[20] Species associated with soft-bottom subtidal habitats provide a spectrum of ecosystem services. Most widespread but least apparent are nutrient cycling by deposit feeders and microbes living within the sediments. Soft-bottom communities are commonly named or described based on the species or species groups most apparent. Most of these communities are dominated by burrowing invertebrates such as polychaeta worms. However, other organisms, such as crustaceans, echinoderms, and mollusks, may be locally abundant. Common organisms on the sediment surface can include species of shrimp, crabs, snails, bivalves, sea

cucumbers, and sand dollars. Dungeness crabs are important components of sandy-bottom communities and are found both on the surface and buried in the sand. Sea pens are common on more muddy bottoms. The distance of the project site from shore is expected to correspond with a decrease in the density of benthic community resources related to the decrease in primary production (food source).

Rocky Reefs

Rocky reef habitat is designated as a Habitat Area of Particular Concern by the NOAA Fisheries for its importance as Essential Fish Habitat (EFH) and its rarity, sensitivity, and/ or vulnerability.[21] There are several small rocky reefs offshore of Grays Harbor between 6 miles and 50 miles offshore.[22]

Ecotypes of rocky subtidal habitats include the following:

- Shallow rocky reefs [less than 80 feet (25 meter depth)] with kelp beds
- Shallow rocky reefs [less than 80 feet (25 meter depth)] without kelp beds
- Deep rocky reefs [less than 80 feet (25 meter depth)]
- Subtidal artificial substrate[23]

Subtidal rocky reefs are known for their abundant and diverse biological communities. Habitat-forming organisms, such as kelp or large invertebrates, grow attached to the reef substrate and provide additional structures and types of microhabitats used by reef species. Biological communities using reefs include algae and other marine plants, attached and mobile invertebrates, fish, marine mammals, and sea birds. Many reefs have extensive growths of attached invertebrates, often covering nearly every square inch of rock surface. Common types of organisms include sponges, anemones, barnacles, bryozoans, tunicates, and cold-water corals. The rocks, algae, and attached invertebrates provide homes for a variety of mobile invertebrates such as crabs, snails, sea stars, urchins, brittle stars, nudibranchs, chitons, and worms. Free-swimming invertebrates such as shrimps and drifting (planktonic) invertebrates also are common on reefs. Reef fish include the more familiar types such as rockfish, perch, lingcod, and greenlings and a large variety of smaller sculpins, gunnels, poachers, and blennies, among others. Many fish species are entirely dependent on reefs for parts of their life cycle, while others are visitors. Common visitors include herring, smelt, sharks, ratfish, and salmon. Marine mammals, especially seals and sea lions, and seabirds often feed on the abundant fish and invertebrates on rocky reefs.

The benthic habitat and rocky reef provide food and refuge to a great diversity of fishes, invertebrates, and other marine life off the coast of Washington.[24]

Fish Species and Essential Fish Habitat

Essential Fish Habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity".[25] NOAA further clarified the terms associated with EFH (50 CFR 600.05 through 600.930) by the following definitions:

- Waters – aquatic areas and their associated physical, chemical, and biological properties that are used by fish and, where appropriate, may include aquatic areas historically used by fish
- Substrate – sediments, hard bottoms, structures underlying the waters, and associated biological communities
- Necessary – the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem

- Spawning, breeding, feeding, or growth to maturity – stages representing a species' full life cycle

The Pacific Fisheries Management Council manages four groups of species (i.e., Fishery Management Units) that occur along the Washington coast and have designated EFH: Pacific coast groundfish, Pacific coastal pelagic species, Pacific salmon, and Pacific highly migratory species.

There are more than 90 species of Pacific Coast groundfish that are segregated into four general categories; (1) sharks, skates, chimaeras; (2) groundfish; (3) rockfish; and (4) flatfish. Many of the Pacific Coast groundfish species use a portion of the project area for all or a portion of their life cycle. EFH for groundfish is designated along the entire OCS in the project vicinity and includes all waters from the high tide line (and parts of estuaries) to 1,914 fathoms (3,500 meters) in depth. The rocky reefs to the west of Grays Harbor and Willapa Bay are designated as Habitat Areas of Particular Concern, which are discrete subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation.[26]

The coastal pelagic species (CPS) fishery includes four finfish (Pacific sardine, Pacific [chub] mackerel, northern anchovy, and jack mackerel) and market squid. CPS finfish generally live nearer to the surface than the sea floor. The definition of EFH for CPS is based on the temperature range where they are found and on the geographic area where they occur at any life stage. This range varies widely according to ocean temperatures. The EFH for CPS also considers where these species have been found in the past and where they may be found in the future.[27] 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 (the 200-mile limit) and above the thermocline where sea surface temperatures range between 10° and 26° Centigrade.[28]

Pacific salmonids are anadromous, meaning the salmon spend much of their life in saltwater but spawn in freshwater. Salmonid populations are separated into Evolutionarily Significant Units (ESUs), and the populations are evaluated based on historical returns to determine if the population is in decline or is healthy. Pacific salmon ESUs include Chinook salmon, chum salmon, coho salmon, pink salmon, sockeye salmon, and steelhead. Salmon range from more than 1,000 miles (1,600 km) inland to thousands of miles out at sea. In estuaries and marine areas, salmon habitat extends from the shoreline to the 200-mile limit of the exclusive economic zone and beyond.[29]

Highly migratory and schooling species are typical of the waters and biological communities living in the water column over the continental shelf. Defining EFH for highly mobile species such as tuna, swordfish, and sharks is a challenging task because these species range widely in the ocean, both in terms of area and depth. Highly migratory species are usually not associated with the features that are typically considered fish habitat (such as seagrass beds, rocky bottoms, or estuaries). Their habitat may be defined by temperature ranges, salinity, oxygen levels, currents, shelf edges, and seamounts.[30]

Skates

Several species of skates live along the Washington coast, including the big skate, California skate, longnose skate, and sandpaper skate.[31] The spotted ratfish are also commonly encountered off the Washington coast.[32]

Marine Mammals

Over 35 different species of marine mammals occur along the Washington coastal waters, including many cetaceans (whales, dolphins, and porpoises) and pinnipeds.[33] Six species of pinnipeds frequent the Washington coast for feeding and/or resting. These include Guadalupe fur seals, Northern (Alaska) fur seals, Steller sea lions, California sea lions, northern elephant seals, and Pacific harbor seals.[34] The Washington coast also hosts a small population of northern sea otters; however, their distribution does not currently extend south of Destruction Island, approximately 50 miles north of Grays Harbor.[35]

Shellfish

Shellfish along the Washington coast are an important food source for humans as well as prey for important finfish (bony fish, such as salmon) species. In Washington, valued shellfish include crab, shrimp, mussels, clams, and oysters. Limited data are available to identify the precise geographic distribution and abundance of these shellfish. Near the proposed lease area and potential cable route, the primary shellfish harvested from the wild are Dungeness crabs, pink shrimp, and razor clams.

3.3.2.3 Physical Oceanography and Meteorology

The Northern California Current System, which comprises the California Current, the Davidson Current, and the California Undercurrent, drives the general ocean current system along the Washington coast.[36] 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 site is close to the northern terminus of the Davidson Current. The California Undercurrent is a poleward subsurface flow that follows the continental slope. Because currents are strongly influenced by wind stress, they demonstrate a seasonal variability. During the spring/summer, flow is driven by a sea surface pressure gradient toward the equator off the Washington coast.[37] 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.[38] During the winter off the Washington coast, the upwelling-favorable winds reverse and allow a sea surface pressure gradient to drive the flow toward the poles.[39] Episodic phenomenon such as the Pacific Decadal Oscillation and El Niño Southern Oscillation can interrupt and/or intensify currents and upwelling.[40]

Close to the potential cable landing sites in shallower water, currents are also influenced by outflow from Grays Harbor and, ultimately, the Chehalis River. River flow, during higher runoff periods (winter and spring), drives standard estuarine circulation near the mouth, with outflow of fresher water near the surface, curved northward by the Coriolis force, with inflow into the mouth of denser water.

The Washington coastal zone is characterized by wet winters, relatively dry summers, and mild temperatures throughout the year. Strong winds can strike the Washington coast, usually in advance of winter storms. Wind speeds can exceed hurricane force. Such events are typically short-lived. Annual precipitation totals more than 100 inches per year are characteristic of the west slope of the Olympics.[41] Lowland areas near the coast see less rain, but annual totals typically exceed 70 inches.[42]

Climate change caused by anthropogenic emissions of greenhouse gases is putting additional stress on coastal and marine ecosystems. The effects of climate change are altering the characteristics of the ocean

and the success and behavior of marine life. As carbon dioxide and other greenhouse gas concentrations have risen in the Earth's atmosphere, changes in the environment around Grays Harbor and Willapa Bat have the potential for rising sea levels, higher sea surface temperatures, more intense storm events and greater wave heights, and acidification of ocean water.

3.3.2.4 Geology – Terrestrial

The western foothills and plains of the Coast Range include varying sedimentary contexts. The basic geology of the region consists largely of sedimentary layers of sandstones, siltstone, and conglomerates, formed in shallow marine and non-marine conditions prior to approximately 15 million years ago (mya). During the later Miocene (from 15 to 2 mya) and Pleistocene epochs (after 2 mya), these layers were gradually uplifted to form the Coastal Range.[43] The Fraser glaciation during the Pleistocene covered the coastal plains in glacial drift, which has been cut through by creeks and rivers in the area.[44] Soils in the vicinity of the potential cable landing consist of glacial and alluvial deposits, including stratified sand, gravel, silt, and clay deposits.[45]

Beach slopes along the Grays Harbor and Pacific County coasts are steepest at the southern profiles and decrease to the north. Median grain sizes are largest near the mouth of Grays Harbor and Willapa Bay and decrease to the north where the finest sediment can be found. Dune crest elevations are highest at the southern end of the area and decrease in height to the north. North of the Copalis River, the beaches are backed by cliffs or bluffs.[46]

3.3.2.5 Air Quality

The Washington coast enjoys good air quality due to the proximity to the ocean, lack of large pollution producers, and prevailing winds. The Olympic Region Clean Air Agency reports annually on the air quality throughout Clallam, Grays Harbor, Jefferson, Mason, Pacific, and Thurston counties and notes any exceedances of air quality standards. Two air quality monitoring stations are maintained in Grays Harbor (Aberdeen-Division St and Rosalia-Josephine St) that monitor particulate matter 2.5 micrometers or less (PM2.5). Little is known about the air quality in the open ocean at the proposed lease site; no known sources of contamination are likely to degrade air quality in the area.

Air Quality Indices (AQIs) are numbers used by government agencies to characterize the quality of the air at a given location. As the AQI increases, an increasingly large percentage of the population is likely to experience increasingly severe adverse health effects. Air quality index values are divided into ranges, and each range is assigned a descriptor and a color code. Standardized public health advisories are associated with each AQI range. The AQI for Grays Harbor in 2021 showed that PM2.5 were rated as healthy. Other stations within the Olympic Region Clean Air Agency in 2021 shows no air pollutants were rated as unhealthy or hazardous and levels of ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and PM10 (particles of 10 micrometers or less) were rated "good."[47]

3.3.2.6 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.

Ecology monitors water and sediment quality under the federal Clean Water Act to assess the quality of rivers, lakes, and marine water bodies. The assessed water bodies are assigned a category of 1 to 5 based on the quality of water and the status of any needed cleanup, with Category 1 meeting the tested standards for clean water and Category 5 referring to polluted water that requires a water improvement project. Category 5 lists are also called the 303(d) list. There is only one Category 5 listing, which is for the insecticide dieldrin from a tissue sample in Grays Harbor near Westport Light State Park.[48]

Grays Harbor is mainly fed by the Chehalis River watershed, as well as several small creeks and tributaries. The Chehalis watershed drains approximately 2,119.6 square miles of Grays Harbor County. Land cover is dominated by deciduous, evergreen, and mixed forests; low intensity residential; and commercial uses.[49] Environmental concerns within the watershed include sedimentation within Grays Harbor, increased temperature, elevated amounts of pathogens and nutrients, reduced amounts of dissolved oxygen, and invasive aquatic species. Ecology and the U.S. Environmental Protection Agency (EPA) approved two Total Maximum Daily Load (TMDL) designations for the watershed to address environmental concerns. The TMDLs include the following:[50]

- Chehalis/Grays Harbor Dissolved Oxygen, Temperature, and Fecal Coliform Bacteria TMDL, covering the upper Chehalis River, Black River, and Grays Harbor Estuary (approved November 2004)
- Grays Harbor (Inner) Dioxin TMDL, covering the inner Grays Harbor Estuary (June 1992)

Willapa Bay is mainly fed by the North River, Willapa River, and Nacelle River watersheds, as well as several small creeks and tributaries. The Willapa Bay subbasin drains approximately 1,103 square miles of Grays Harbor and Pacific counties. Land cover is dominated by evergreen, deciduous, and mixed forest; open water; and bare rock/sand/clay.[51] Environmental concerns within the watershed include major resource concerns such as streambank erosion; impaired water quality from increased temperature; elevated amounts of pathogens and nutrients; reduced amounts of dissolved oxygen; and invasive aquatic species, forest health issues, and invasive weeds. Ecology and the U.S. EPA approved one TMDL designations for the watershed to address environmental concerns. The TMDLs include the Lower Willapa River Dissolved Oxygen, Temperature, and Fecal Coliform Bacteria TMDL (approved November 2004).[52]

Water-Column Characteristics

An assessment of the status of the ecological condition of soft sediment habitats and overlying waters along the western OCS, between the target depths of 30 and 120 m (10 and 40 feet), was conducted during June 2003.[53] The assessment included vertical water-column profiles of conductivity, temperature, chlorophyll *a* concentration, transmissivity, dissolved oxygen, and depth. Results showed that surface salinity was generally less than 33 practical salinity units (psu) north of Cape Blanco, Oregon, and greater than 33 psu south of Cape Blanco. Mean surface water temperature of Washington marine waters was approximately 54°F (12°C). The range of dissolved oxygen concentrations in the surface waters of the Pacific OCS (data available for 140 stations) was 4.1 milligrams per liter (mg/L) to 13.3 mg/L, with higher values observed in Washington compared to Oregon and California. The U.S. EPA proposed that a dissolved oxygen value below 2.3 mg/L is harmful to the survival and growth of marine animals. Water-column stratification was greatest for waters off Washington. Total suspended solids in surface waters of the Pacific OCS ranged from 0 to 10 mg/L (137 stations with data available). The characteristics of the open ocean area of the proposed Project are expected to be similar to those seen at the deeper site examined.

3.3.2.7 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.

Visual resources for the coastal area inshore of the proposed Project site include scenic views from popular viewpoints near Grays Harbor, including Grays Harbor Lighthouse and the Quinault Beach Resort and Casino. Other public parks on or near Grays Harbor, along the coastal bluffs, and sandy beaches are popular sites for observing scenery, whales, seals, other marine life, and birds. Natural elements of the viewscape include the shoreline and the open ocean. In the Willapa Bay area, there are several recreation or wildlife areas, including Willapa National Wildlife Refuge, Leadbetter Point State Park, Bone River Natural Area Preserve, Bush Pioneer County Park, Bruceport County Park and Campground, Smith Creek State Wildlife Recreation Area, and Seashore Conservation Area State Park.

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; therefore, viewsheds from seaside residences are of particular concern in analyzing potential visual impacts of offshore energy structures.[54]

3.3.2.8 Marine Transportation and Commerce

Grays Harbor and Willapa Bay support recreational and commercial vessel traffic. Commercial traffic includes commercial fishing vessels, for which the Westport Marina maintains 650 slips in Grays Harbor. In Willapa Bay, the Bay Center Marina provides mooring space for 20 commercial vessels on a first-come-first-served basis. The vessels in Bay Center participate in the Washington CPS, salmon, crab, and shrimp fisheries. The Tokeland Marina provides moorage for 45 vessels up to 45 feet in length. The other main ports along the southern Washington coast are Ilwaco and Chinook.

A variety of other vessels transit the offshore area near the proposed lease area in addition to commercial fishing vessels, including container ships, tug/tow vessels, barges, dry bulk and liquid bulk carriers, and occasional cruise ships. Figure 1 shows a color plot of 2019 vessel counts within and offshore Grays Harbor based on Automatic Identification System (AIS) data from Marine Cadastre (NOAA Office for Coast Management 2021). The majority of commercial vessel traffic along the Washington coast is farther offshore or farther inshore relative to the proposed lease area, but overlaps slightly with a small portion in the southeast corner.[55] As shown, the proposed lease area is the least conflicting area relative to offshore commercial vessel traffic including those entering and exiting Grays Harbor, Willapa Bay, or the Columbia River.

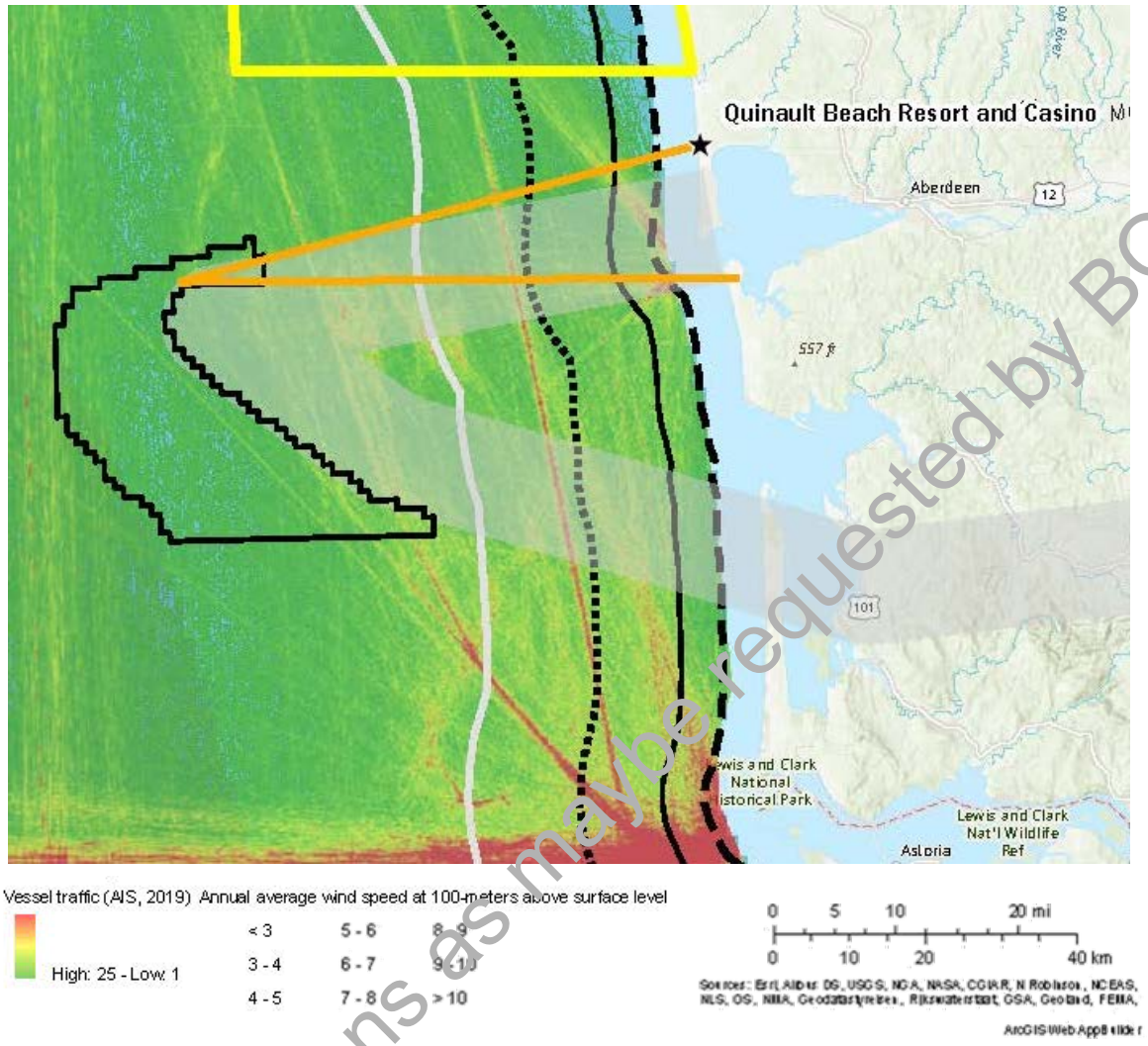

Figure 5 –Overlay of Proposed Lease Area and Existing Vessel Traffic Patterns

3.3.2.9 Military and Coast Guard Operations

The entire outer Washington coast is mapped as the DoD Pacific Northwest Operating Area, including offshore of Grays Harbor. The operating area extends westward from approximately 12 nm offshore of Grays Harbor and from approximately 3 nm offshore of the coast north of Grays Harbor.[56] Within the operating area, a DoD Warning Area exists (W-237) north and west of the proposed lease area. This Warning Area is used routinely by aviation and surface and subsurface defense vessels for joint air/surface operations such as missile firings, air-to-surface bombing, air-to-air firing, combat tactics, intercepts, aerial refueling, instrument training, aerobatics, and formation flight training. Western Air Defense radars are also active in the Warning Area. A small portion of the proposed lease area overlaps the eastern-most portion of Area W-237D.

The United States Coast Guard (USCG) operates Coast Guard Station Westport, which is adjacent to the Westport Shipyard in Westhaven Cove. The USCG maintains 42 active-duty personnel and 21 reserve personnel at National Security Base and Search and Rescue Station at Grays Harbor to provide the USCG services for 63 miles along the Washington coastline from the Queets River to Ocean Park and 50 miles

offshore.[57] Seventy-five percent of the station's mission is search and rescue, and the other 25 percent is law enforcement, marine environmental protection, and recreational boating safety.[58]

3.3.2.10 Airspace Utilization – Civilian and Military

Grays Harbor and surrounding communities have access to the Bowerman Airport in Hoquiam, Ocean Shores Municipal in Ocean Shores, Westport Municipal in Westport, and Copalis State in Copalis. Pacific County and surrounding communities have access to the Port of Ilwaco Airport in Ilwaco, and the Willapa Harbor Airport in Raymond. The local airports are open for public use, with hangars available to lease. The closest airport with commercial flights is the Seattle-Tacoma International Airport, with access to most major airlines. Local airspace surrounding the county airports is designated as Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. Also in this class are federal airways, airspace beginning at either 700 or 1,200 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). Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nm of the coast of the 48 contiguous states and Alaska, up to but not including 18,000 feet MSL, and the airspace above Flight Level 600.[59]

There are two designated MTRs, VR331 and IR344 in the area and DoD is authorized to fly as low as 500 feet above the surface within their boundaries. The DoD Pacific Northwest Operating Area exists off the Washington coast, as described above. The proposed project area would overlap with a small part of a MTRs and military warning area, as described above.[60] However, no turbines would be located within the MTRs.

3.3.2.11 Commercial and Recreational Fishing

Commercial fishing is an important element of Washington's economy, including Grays Harbor and Pacific counties in particular. The region's commercial fishing industry, tribal and non-tribal, is organized around a multi-species fishery. Major species groups important to the industry in the fisheries off the coast of Grays Harbor and Pacific counties and the proposed project area include groundfish, halibut, sablefish, salmon, Dungeness crab, and razor clams. In terms of regional catch, the coastal area outside the project area is by far the largest contributor to the state's commercial fish harvest, accounting for about 85 percent of total pounds landed and 63 percent of total the dollar value of commercial landings.

The harvest value of Washington onshore landings has increased from $186.5 million for 192.6 million pounds of fish harvested in 2010 to $197.8 million for 177.6 million pounds of fish harvested in 2019.[61] Additional value is provided by shore-based processing and their associated value chains. Although total landings in weight have decreased since 2000, the total revenue generated from the harvest has increased by 56 percent. Producing more than $52.6 million in landings from Washington fisheries in 2019, Grays Harbor County is the state's largest commercial port area and is ranked 13th in the nation.[62] Major regional fishing centers along the Washington coast are Ilwaco, Chinook, Westport, Tokeland, and LaPush. The economic impact from the commercial fisheries in these ports is substantial.

Table 5 shows typical distances from shore and/or depths for each fishery, preferred habitat type, and revenue from the 2019 harvest.

Table 5 - Depths and Distances from Shore and Revenue for Washington Commercial Fisheries

Fishery	Distance/Depth of Harvest[63]	Washington Revenue from 2019 Harvest[64]
Shellfish	Intertidal	$47,097,286
Crab	Breakers to 130 fathoms and up to 700 fathoms in some years; around tops of canyons, high spots	$85,014,968
Salmon	Breakers to 200 fathoms; sometimes up to 650 fathoms	$13,880,287
Shrimp	30 to 150 fathoms; 90 percent is in 60 to 140 fathoms; muddy, soft, flat bottom	$11,290,505
Groundfish	Breakers to 400 to 700 fathoms; 1,200 fathoms for midwater, but nets are not this deep	$1[illegible],429,985
Tuna	Generally near surface, 30 nm or more from shore at 50 to 100 fathoms up to 500 to 2,000 fathoms	$15,800,194
Sablefish	100 to 500/650 fathoms	$4,921,741
Halibut	22 nm at 100 to 125 fathoms	$3,696,189

Charter fishing businesses offer overnight trips as well as day trips. Charter operations are dependent on access to habitats for some target species (e.g., rocky structures and reefs for bottom fishing, sandy or muddy bottom for crabbing) and on water column and current conditions for others (e.g., salmon and tuna).[65] There were about 30 charter vessels operating out of Westport in 2014 that hosted about 32,000 charter boat trips and caught 410,000 fish.[66] The total landings by charter vessels in 2014 represent almost 50 percent of the total charter landings in Washington. In addition to commercial fisheries, a large recreational fishing charter industry operates in Ilwaco and Chinook, in Willapa Bay. Up to 16 vessels operated from Ilwaco and Chinook in recent years during the recreational fishing seasons for salmon, groundfish, tuna, and sturgeon.[67]

Recreational boaters (many of whom are also recreational fishermen) travel anywhere from 3 to 40 nm (75 km) from shore. The WDFW estimates the total marine recreational finfish catch and effort in Washington. The primary recreational fishing off southern Washington targets rockfish and tuna.[68]

Figure 6 shows the combined non-tribal commercial and recreational fishing intensity in the area of the proposed lease based on data compiled for the Marine Spatial Plan for Washington's Coast[69]. The vast majority of commercial and recreational fishing activity off the Washington coast in the vicinity of the proposed lease area is farther inshore. As shown, the proposed lease area is the least conflicting area relative to commercial and recreational fishing intensity and within viable distance to onshore infrastructure.

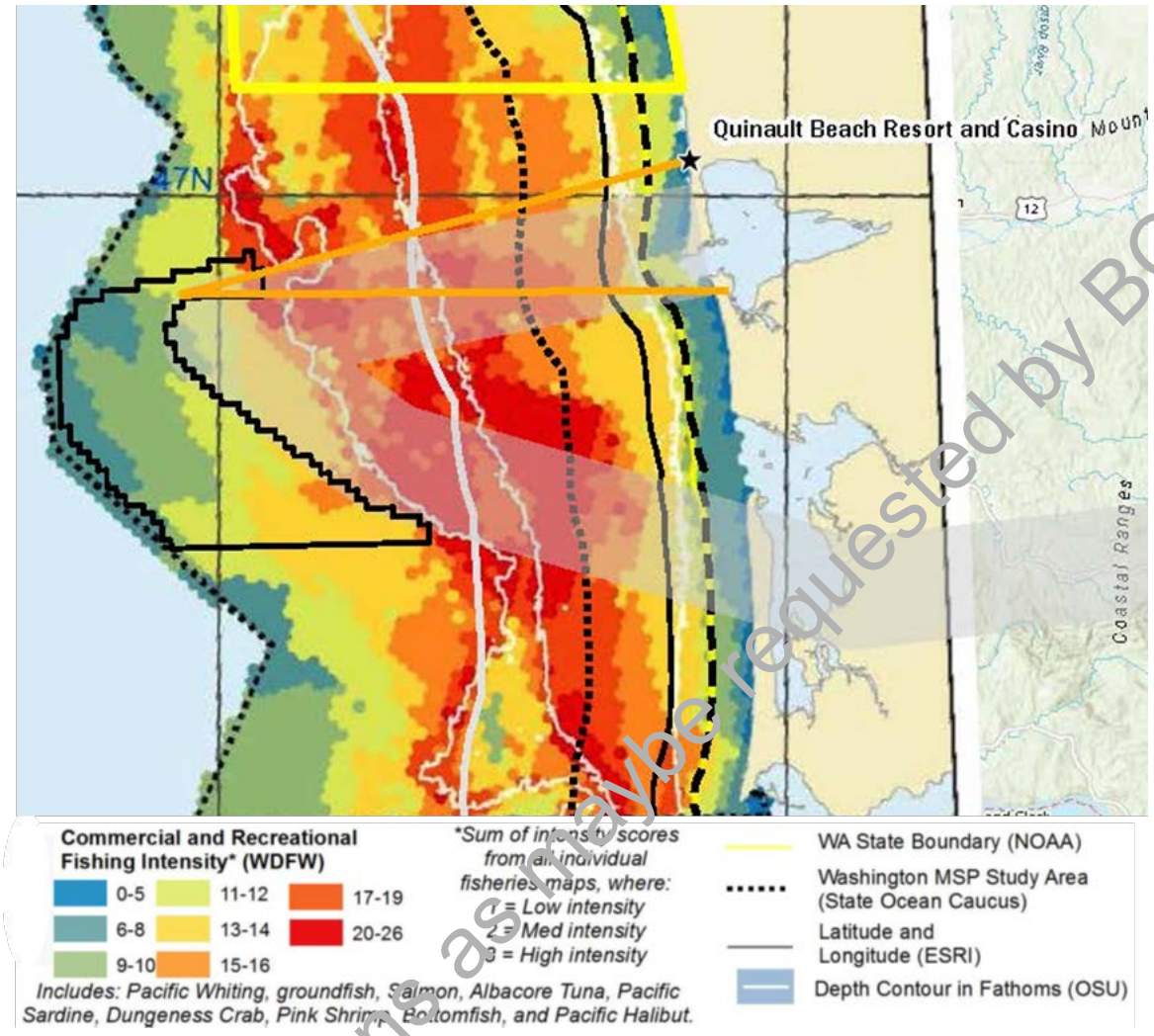

Figure 6 –Overlay of Proposed Lease Area and Commercial and Recreational Fishing Activity (Non-Tribal)

3.3.2.12 Historic and Cultural Resources

The Quinault, Quileute, Queets, and Hoh peoples originally inhabited lands north of Grays Harbor. Many of these peoples were removed to their current 10,000-acre reservation around the village of Taholah in 1856; others refused, and small areas of land were reserved for their village use. To accommodate so many indigenous people, the reservation was expanded to 190,000 acres and a boundary correction was later authorized through passage of the North Boundary Restoration Act in 1988, which remains the same boundary today. Specific cultural resource information is confidential and sensitive and is not available in the public records. The area has provided natural resources to local inhabitants for centuries. Living in family groups in longhouses along rivers and the coast, native people relied on salmon runs, abundant marine mammals, wildlife, and forests to provide subsistence living material that they maintain and rely on for a close spiritual connection to this day.

The north end of Willapa Bay around the present-day location of the Shoalwater Bay Tribe was populated predominantly by Lower Chehalis-speaking peoples. The southern end of the bay, near present-day Bay

Center and southward, was inhabited by Willapa Chinook peoples. The original territory of the Shoalwater Bay Tribe extended from current reservation land to Westport and east up the Chehalis River to Satsop, Washington.

The National Park Service maintains a database of known cultural or archaeological sites.[70] Historic sites (eligible listed and unlisted) along the coast north and south of Grays Harbor and north of Willapa Bay within the project vicinity with publicly available records include the following:

- Grays Harbor Light Station – Westport, Grays Harbor County
- Hoquiam River Bridge – Hoquiam, Grays Harbor County
- Hoquiam's Castle – Hoquiam, Grays Harbor County
- Lake Quinault Lodge – Lake Quinault, Grays Harbor County
- Cape Disappointment Historic District, Ilwaco, Pacific County
- Klipsan Beach lifesaving Building, Pacific County
- Oysterville Historic District, Oysterville, Pacific County
- Willapa Bay Boathouse, Tokeland, Pacific County

Specific cultural resource information is confidential and sensitive. A records search and literature review would need to be conducted through Washington Information System for Architectural & Archaeological Records Data (Wisaard) 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, although a public records search may not produce much information.

The NOAA Office of Coast Survey charts known shipwrecks and other navigational obstructions through the Automated Wreck and Obstruction System. Shipwrecks near Grays Harbor include an unnamed vessel near the mouth of the Chehalis River that is always visible above the water surface and two submerged obstructions near Aberdeen.[71]

3.3.2.13 Tourism and Recreation

The southern Washington coast, including Grays Harbor and Willapa Bay, offer a variety of outdoor activities including fishing; kayaking; sailing and bay cruises; wildlife, bird, sea lion, and whale watching charter tours; bicycling; and many more activities. State parks in the project vicinity include Grayland Beach State Park, Twin Harbors State Park, Westport Light State Park, Ocean City State Park, Bottle Beach State Park, Oyhut State Park, Westhaven State Park, Leadbetter Point State Park, Pacific Pines State Park, Cape Disappointment State Park, Pacific Beach State Park, and Griffiths-Priday State Park. Local parks in Westport managed by the City include Kila Hana Camperland, Westport Dunes, Westport Jetty, Weatherwax Trail, and several RV parks. Local Aberdeen parks include Stuart Memorial Park, Sam Benn Memorial Park, Levee Street Boat Launch and Park, Makarenko Park, and Bishop Sports Park. The Wesport and Aberdeen city parks have a variety of amenities ranging from trails, vistas, picnic tables, child play areas, beach access, open space, barbeques, and restrooms. Local parks in and around Willapa Bay include Bruceport County Park and Campground, Bush Pioneer Park, Palix State Wildlife Recreation Area, Bone River Natural Area Preserve, and Niawiakum River Natural Area Preserve. Several state and local parks have amenities for tent camping and RV hookups.

3.3.2.14 Socioeconomics and Environmental Justice

Grays Harbor County

According to data from the Washington State Employment Security Department, the unemployment rate in Grays Harbor County, as of November 2021, was 5.1 percent, while that of Washington, as a whole, was 4.7 percent.[72] Total nonfarm employment in Grays Harbor County was 21,830 in 2020, a decrease of 5.4 percent from 2019. The 2019 U.S. Census reports median household income for Grays Harbor County at $61,026, which is approximately 22 percent lower than the median household income overall for Washington at $78,687. The poverty rate in Grays Harbor County is 9.8 percent, which is equal to the poverty rate for Washington overall.[73]

Grays Harbor County was reported by the U.S. Census Bureau to have 1,548 business establishments in 2019. The Retail Trade sector had the highest share of business establishments (16.8 percent), followed by the Accommodation and Food Services sector (14.4 percent), and the Health Care and Social Assistance sector (11.2 percent). The Retail Trade sector employs the highest percentage of the workforce in Grays Harbor County (18.3 percent). A group of four industries—Health Care and Social Assistance (17.6 percent), Accommodation and Food Services (15.2 percent), Manufacturing (13.2 percent), and Construction (5.5 percent)—employ the next higher percentages of the workforce.

The 2019 U.S. Census[74] reports the population of Grays Harbor County as 75,636. Approximately 20.5 percent of the population was under the age of 18 and 21.8 percent of the population was older than 65. Race and ethnic groups are reported as shown in Table 6.

Table 6 - Grays Harbor County Race/Ethnic Groups[75]

Race/Ethnic Group	Percent of Population
White alone	86.8%
Black or African American alone	0.3%
American Indian and Alaska Native alone	4.5%
Asian alone	1.2%
Native Hawaiian and Other Pacific Islander alone	0.1%
Two or More Races	2.3%
Hispanic or Latino	4.8%

Pacific County

According to data from the Washington State Employment Security Department, the unemployment rate in Pacific County, as of November 2021, was 5.2 percent, while that of Washington as a whole was 4.7 percent.[76] Total nonfarm employment in Pacific County was 5,410 in 2020, a decrease of 8.5 percent from 2019. The 2019 U.S. Census reports median household income for Pacific County at $46,733, which is approximately 40 percent lower than the median household income for Washington at $78,687. The poverty rate at for Pacific County is 16 percent, which is 6.2 percent higher than the poverty rate for Washington overall.[77]

Pacific County was reported by the U.S. Census to have 589 business establishments in 2019. The Accommodation and Food Services sector had the highest share of business establishments (19.6 percent), followed by the Retail Trade sector (13.3 percent) and the Construction sector (11.4 percent). The Accommodation and Food Services sector employs the highest percentage of the workforce in Pacific County (20.5 percent). A group of four industries—Manufacturing (17.8 percent), Health Care and Social Assistance (15.3 percent), Retail Trade (13.3 percent), and Agriculture, Forestry, Fishing and Hunting (7.5 percent)—employ the next higher percentages of the workforce.

The 2019 U.S. Census[78] reports the population of Pacific County as 23,365. Approximately 16.3 percent of the population was under the age of 18, and 30.3 percent of the population was older than 65. Race and ethnic groups are reported as shown in Table 6.

Table 7 - Pacific County Race/Ethnic Groups[79]

Race/Ethnic Group	Percent of Population
White alone	88.2%
Black or African American alone	0.2%
American Indian and Alaska Native alone	2.2%
Asian alone	2.1%
Native Hawaiian and Other Pacific Islander alone	0.1%
Two or More Races	2.2%
Hispanic or Latino	5.0%

3.3.2.15 Public Services, Infrastructure, and Utilities

Grays Harbor and Willapa Bay are accessible via air, sea, and road. Although the Seattle-Tacoma International Airport is the closest airport that provides commercial flights, airports for private flights are available in Grays Harbor County at Bowerman Airport in Hoquiam, Ocean Shores Municipal in Ocean Shores, Westport Municipal in Westport, and Copalis State in Copalis. Airports for private flights are available in Pacific County at Port of Ilwaco Airport in Ilwaco, and Willapa Harbor Airport in Raymond. The major roads connecting Grays Harbor and Willapa Bay to nearby communities are U.S. Routes 101 and 12, and Washington State Routes 109, 105, 6, 4, 103, and 107.

The Grays Harbor Transit operates out of Hoquiam and serves Hoquiam, Aberdeen, Westport, Tokeland and Ocean Shores. Pacific Transit serves Raymond, South Bend, Bay Center, Nemah, Naselle, Megler, Chinook, Ilwaco, Long Beach, Klipsan, Ocean Park, Surfside, Oysterville, and Nahcotta and connects to Aberdeen. The Puget Sound & Pacific Railroad provides a link to the national rail network via connections to the BNSF Railway and the Union Pacific Railroad as well as Port of Grays Harbor, with links to Aberdeen and Hoquiam.

The Port of Grays Harbor operates seven lines of business throughout Grays Harbor County, including four deep-water marine terminals with dual Class 1 rail service and available marine terminal uplands; the Westport Marina; a commercial seafood landing port; the Satsop Business Park with manufacturing and office between Interstate 5 and Grays Harbor; and other industrial properties. The Port of Grays Harbor

is the only deep-water port on the Washington coast. The Port of Grays Harbor terminals are complemented with large secure paved cargo yards, an on-dock rail system, and over 2.5 acres of on-dock covered storage. The Port of Grays Harbor's rail system services the entire port and owns and operates the Satsop Business Park that contains facilities for manufacturing, warehousing, and workforce training. Terminal 3 has a berthing distance of 600 feet (183 meters) with alongside depth of 20 feet (6.1 meters).[80] The Port of Willapa Harbor provides docking facilities and services for shipping logs and lumber in Raymond and supports commercial fishing and oystering in Tokeland and Bay Center. The Port facilities also include the Willapa Harbor Airport, the Dick Taylor Industrial Park, and the Stan Hatfield South Fork Industrial Park. The port currently has 31 industrial and commercial tenants and provides moorage in Raymond, Bay Center, and Tokeland.

The Aberdeen School District consists of four preschools, five elementary schools, one middle school, and three high schools. The Ocasta School District in Westport consists of one elementary school and one junior-senior high school. The North Beach School District in Ocean Shores consists of two elementary schools and one junior-senior high school. Grays Harbor College is the only college in Grays Harbor and offers a 2-year Associates Degree. Evergreen State College in Olympia is the nearest university. Pacific County is served by five school districts, including Naselle-Grays River Valley School District, Raymond School District, Willapa Valley School District, Ocean Beach School District, and the South Bend School District.

Grays Harbor Public Works provides water and sewer services to Grays Harbor residents. GHPUD provides telephone communications and electric power, which are often affected by storms. Public Utility District No. 2 of Pacific County provides electricity, water, and wholesale telecommunication services in Pacific County.

Public safety is provided by the Grays Harbor County Sheriff based out of Montesano, and the cities of Aberdeen, Hoquiam, and Ocean Shores are served by city police departments. The Grays Harbor Fire Department responds to fire and safety calls from fully staffed and unstaffed fire stations between fire districts 2 (Aberdeen), 7 (Copalis), 8 (Pacific Beach), and 10 (Aberdeen). The Pacific County Sheriff serves all unincorporated areas of Pacific County from offices in South Bend and Long Beach. The cities of Long Beach, Raymond, and South Bend are served by city police departments. Pacific County Fire Protection District 1 serves unincorporated areas of the Long Beach Peninsula, including the state parks, and the cities of Seaview, Klipsan, Ocean Park, Nahcotta, Oysterville, and Surfside. The cities of Long Beach, Raymond, and South Bend are served by city fire departments.

The USCG has a staffed facility in Westport. Local hospitals include the Grays Harbor Community Hospital and Harbor Regional Health Community Hospital in Aberdeen and urgent care clinics in Ocean Shores and Westport. Around Willapa Bay, hospitals include the Willapa Harbor hospital in South Bend and Ocean Beach Hospital & Medical Clinics in Ilwaco.

There is no offshore utility infrastructure (e.g., charted submarine cables) within the vicinity of Grays Harbor[81] or Willapa Bay.

3.3.2.16 Natural Hazards, Hazardous Materials, Offshore Dump Sites, Unexploded Ordinance and Artificial Reefs

The primary natural hazards that could affect Grays Harbor, Willapa Bay, Grays Harbor County, and Pacific County include coastal erosion, drought, earthquake, flood, landslide, tsunami, wildfire, and windstorms. Coastal erosion occurs throughout the year but is accelerated during the winter, when storms increase the rate of erosion. Winter windstorms can also cause heavy damage onshore to buildings, utilities, and transportation systems. Tsunamis can result from either local earthquake events or distant earthquake events. Historic tsunamis occurred in Grays Harbor and Willapa Bay in 1700 and 1872.[82]

The potential for earthquake hazard comes from known seismically active faults and adjacent offshore areas. The Grays Harbor fault zone is a 2.5-km-wide and approximately 27-km-long zone of reverse faults and back thrusts within a broad anticlinal fold.[83] If the multi-strand fault zone continues eastward along a prominent aeromagnetic anomaly, then it extends at least another 12 km beneath northern Grays Harbor for a combined length of 39 km. On other profiles, strands breach and offset the seafloor.[84] Earthquakes occur almost daily in Washington, but most are below magnitude 2.0 that people don't normally feel. The largest earthquake in recent history in Washington was on February 28, 2001, with the epicenter approximately 15 miles southwest of Tacoma.

Offshore natural hazards include the Cascadia Subduction Zone (CSZ), located off the coast of northwestern North America. The CSZ is a continent-scale interface between the Juan de Fuca and North American tectonic plates. An extensive regional record indicates that the CSZ has had dozens of megathrust earthquakes in the past, with magnitude greater than 8.0 (Richter scale) events occurring at approximately 250-year intervals, and magnitude 9.0 events at approximately 500-year intervals. The last earthquake greater than magnitude 8.0 in Cascadia happened in the year 1700, when an approximately magnitude 9.0 event ruptured the full length of the subduction zone. The only other historically recorded major event was the 1992 magnitude 7.2 Petrolia earthquake, which occurred just north of the Mendocino triple junction off the coast of California. While the lack of activity in the CSZ may be related to locking on the plate interface, the low number of observed events may be partially attributed to difficulty in monitoring.[85]

Rainfall and inclement weather occur seasonally from November through March. Several river and creek drainage systems, including Humptulips River, Chenois Creek, Grass Creek, Hoquiam River, Wishkah River, Chehalis River, Charley Creek, Newkah Creek, Chapipn Creek, Indian Creek, Stafford Creek, O'Leary Creek, Johns Creek, Barlow Creek, Dempsey Creek, and Elk River flow into Grays Harbor.

In the Willapa Bay subbasin, several river and creek drainage systems flow into Willapa Bay, including Naselle River, South Fork Willapa River, North River, Willapa River, Palix Creek, Riverdale Creek, and Wilson Creek, among others. Flooding could occur when storms bring rainfall that exceeds the conveyance capacity of the streams and stormwater infrastructure throughout the Grays Harbor and Willapa Bay areas. Potential flood hazard areas within Grays Harbor include State Route 105 and low-lying sections of Hoquiam and Aberdeen. Potential flood hazard areas within Pacific County include low -lying sections of U.S. 101 around Willapa Bay, coastal and low-lying areas of the Long Beach Peninsula and low-lying sections of South Bend and Raymond.

Wildfire is a potential hazard in Grays Harbor and Pacific County residential, industrial, commercial, harbor front, and wildland areas. Fires are fanned by strong, dry, east winds in the late summer and early fall,

and influenced by topography in areas with sufficient fuel and lack of moisture. Although there have not been any recent wildfires in the coastal region near Grays Harbor and Willapa Bay, wildfire smoke has impaired air quality in recent years as wildfires around British Columbia, Washington, Oregon, and California increase in size and severity.

Potential manmade hazards include hazardous material sites registered in and around area cities under the U.S. EPA reporting requirements or under Washington State Model Toxics Control Act requirements. The identified sites include multiple toxic release sites, hazardous waste sites, water discharges, and brownfields around Grays Harbor and Willapa Bay.[86]

3.4 General Description of Objectives and Facilities

3.4.1 Objectives

The mission of the Project is to deliver offshore wind energy to power economically and environmentally resilient coastal communities for current and future generations. The proposed 2,000-MW nameplate capacity of the Project has a potential to provide clean, greenhouse gas-free energy to approximately 400,000 households in western Washington and significantly assist the State of Washington in meeting CETA targets. Since the wind resource off the Washington coast peaks in the winter, it corresponds well to the winter peaking electricity demand in western Washington.

The Project schedule coincides with the Washington state market demand for new renewable energy sources as the result of the CETA, which requires all electric utilities in Washington to transition to greenhouse gas–neutral electricity by 2030 and to 100 percent renewable or non-emitting electricity by 2045.

3.4.2 Offshore Production Facilities and Substations

The Project is proposed in a location with a high wind resource, with an average speed of 17.9 to 19 knots (8 to 8.5 meters/second).

The Project will consist of floating offshore wind units, each comprised of a floating foundation and an offshore WTG. The rated capacity of the WTG is expected to be between 10 and 20 MW, which may be limited by agreement with DoD. Today, several WTG suppliers, including Vestas, Siemens, and General Electric, already have commercially available large, greater-than-10-MW WTGs. A number of floating support structures (for example, Principle Power's WindFloat and BW Ideol) are already available for commercial use (Figure 7 and Figure 8, respectively). Both the WindFloat and the BW Ideol floating support structures represent possible candidates for the deployment in the Project. As the market for floating offshore wind technology evolves rapidly, Trident will continue to evaluate available options for final technology selection at the time of detailed project design.

Figure 7 - Principle Power's WindFloat

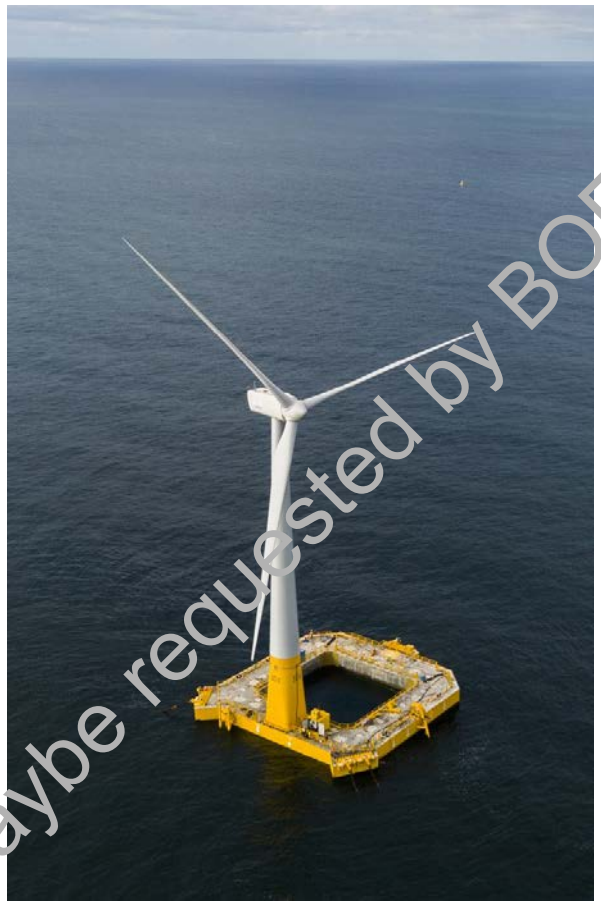

Figure 8 - BW Ideol

Both the floating foundation and the WTG supplier will be competitively selected. The final WTG rated capacity will determine the exact number of units for the Project. For a 2,000-MW project, it is expected that between 100 to 200 units will be deployed. The final number of units will be directly proportional to the capacity of the selected WTG. Each unit will be moored to the ocean floor using conventional anchors. Mooring lines will consist of a combination of chains, polyester lines, steel wires, shackles, fairleads, and/or chain stoppers. Individual units will be electrically interconnected with inter-array cables. Each unit is planned to be spaced approximately 1.15 miles (2,000 meters; 1 nm) apart, as may be required by the USCG. The site layout will be optimized and finalized as the Project develops. Energy produced from all units will be brought to an offshore substation via inter-array cables and then transmitted to shore via one or more (for redundancy purposes) export cable(s).

3.4.3 Power Transmission and Grid Interconnection

The subsea export cable(s) will be used to export electricity to shore. The export cable shore landing is anticipated to be either (1) near the Quinault Beach Resort and Casino, with an onshore connection to the GHPUD substation at Hogan's Corner; or (2) south of Westport, with an onshore connection to the GHPUD substation at State Route 105 and Montesano Street South, as further described in Section 3.4.4 below.

The design of the offshore cable infrastructure and connections, cable protection systems, and subsea connections will be developed during the Project's design phase because these systems will require specific input from the site characterization and the Project's projected operational characteristics.

The offshore grid will be designed based on the metocean, geophysical, geotechnical data collected during site assessment and will be included in the COP. Due to the water depth of 1,970 feet to 4,300 feet (600 to 1,300 meters, or 325 to 710 fathoms), it may not be practical to route cables to the ocean floor. Details of the offshore grid will be developed during the design phase.

Trident will perform the offshore interconnection and load study based on cable specifications and the site requirements. The study will concentrate on the following:

- Interconnection between export cable and the floating substation
- Interconnection between the inter-array cable(s) and the floating substation
- Interconnection at each unit

This work will be performed during development of the COP and result in the cables specifications that will be used during the design phase. Burial of the cable will also be studied during the COP development and the Project design phase. The study will be based on the subsea conditions. In cases where sensitive or hard-bottom habitat is identified, Trident has the flexibility to route around these areas.

Trident will conduct further analysis to determine the most efficient export cable route and cable landing, considering all associated impacts on the Project, the environment, and relevant stakeholders.

3.4.4 Onshore Infrastructure

At the onshore connection points mentioned above in Section 3.4.3, interconnection to the GHPUD substation is expected to occur over existing utility poles, or trenched, between the cable landing site and the substation along existing roadways. Delivery of electricity to the GHPUD substation will require further study and possible upgrades. Trident expects to secure the necessary interconnection rights from the GHPUD during the development process.

The Port of Grays Harbor has substantial onshore infrastructure as described above in Section 3.3.2.15. It is the only deep-water port on the Washington coast, and Terminal 3 has a berthing distance of 600 feet (183 meters) with alongside depth of 20 feet (6.1 meters). The Port of Grays Harbor terminals are complemented with large, secure paved cargo yards; an on-dock rail system; and more than 2.5 acres of on-dock covered storage.

A detailed analysis of the actual location for the fabrication, assembly, and marshaling of the offshore wind units will be conducted during COP development. Trident has established open channels of communications with the Port of Grays Harbor and plans to continue a close working relationship with an overarching objective to integrate the Project with the local marine businesses and infrastructure.

3.5 General Schedule of Proposed Activities

The Project process and associated timeline is shown in Figure 9. The projected timeline dates, based on BOEM regulations relative to the permitting activities, are depicted in Table 8.

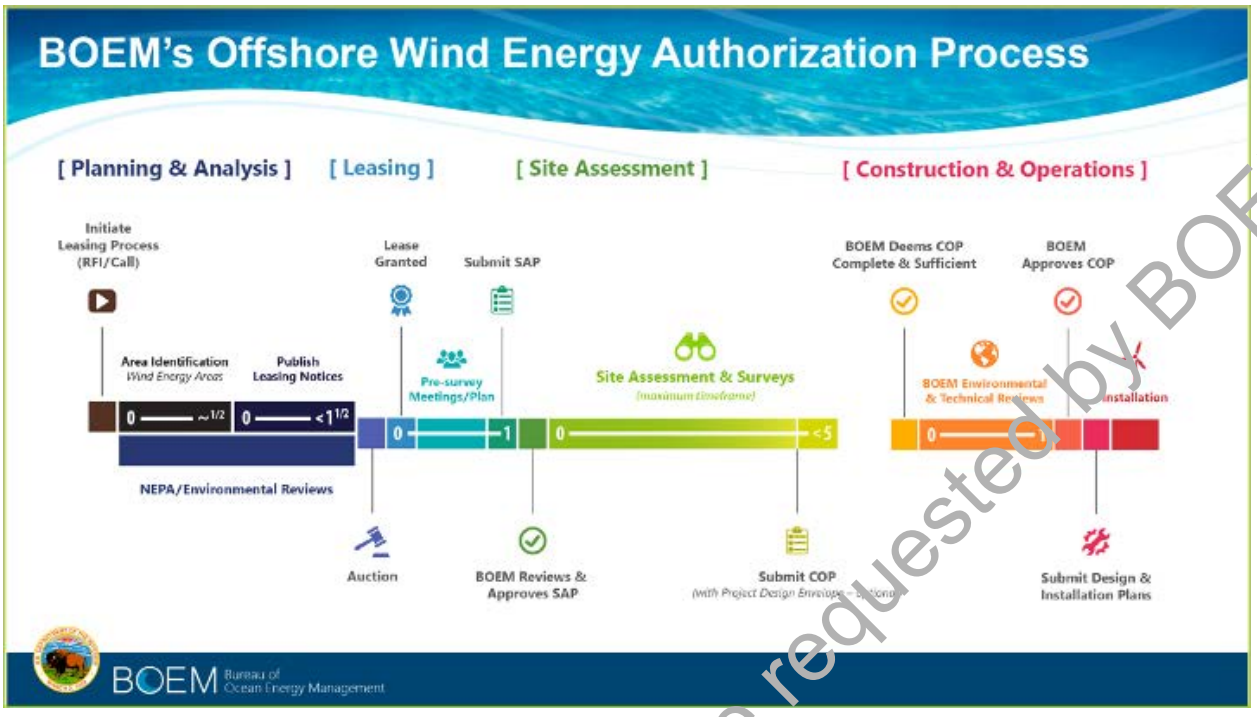

Figure 9 - Timeline for Permitting Activities

Trident anticipates the commercial operations date (COD) for the Project in 2030, as indicated on the schedule presented in Table 7:

Table 8 - Preliminary Schedule for the Project

Projected Project Milestone	Date
Lease Award	2023
Submission of SAP to BOEM	2024
Approval of SAP by BOEM	2024
Submission of COP to BOEM	2026
Approval of COP by BOEM	2027
Offtake and Interconnection Agreements	2026
Financial Investment Decision and Financial Close	2027
Start of Construction, Transport & Installation	2028
Commercial Operation Date	**2030**

Trident considers this to be a realistic yet cautious estimate and is motivated to accelerate the development and delivery of the Project. There are several external factors that impact the Project schedule. Such factors include, but are not limited to, the following:

- Efficient permitting process
- Political support at federal, state, local and tribal levels
- Stakeholder support for the Project (e.g., local non-tribal fisheries and Grays Harbor and Willapa Bay communities)

- Availability of routes to market and commercially attractive offtake opportunities
- Availability of lender's appetite and commercially priced project financing
- Readiness and availability of adequate local supply chain, workforce, and port infrastructure

For the Project to provide timely and meaningful contribution toward CETA, Trident plans to accelerate project development and construction activities to the largest extent possible. Such actions could include but are not limited to the following:

- Active engagement with federal, state, and municipal agencies and key stakeholders, including Tribes, Grays Harbor County, Pacific County, the local commercial and recreational fishing industries, and environmental organizations
- Comprehensive consultation with BOEM throughout the Project lifecycle, starting at the very beginning (i.e., refined requirements for SAP and COP requirements)
- Initiation of relevant market surveys and stakeholder consultations early in the Project development phase to improve offtake, interconnection, and financing-related process cycles
- Introduction of comprehensive lessons learned from operating offshore wind farms (as further described in Section 4.2) to SAP and COP processes
- Benefiting from in-house experience when preparing the best suitable design basis and early-stage involvement of major international and upcoming local suppliers
- Continued monitoring and improvement of the levelized cost of energy through early involvement of the operations and maintenance team
- Development and support of the local supply chain in a rational and economical way

3.5.1 Phase 1: Site Assessment Plan – Development/Survey

Subject to BOEM determining that the proposed lease area is not subject to a competitive interest in early 2023, Trident will immediately initiate development of the SAP to define the surveys and studies to be conducted as well as to collect required supporting data to establish a baseline for the follow-on environmental monitoring and to comply with NEPA. At the same time, Trident will start preparations for the competitive process to select the floating support structure. Site-specific data are necessary for the offshore wind farm design and installation.

In addition, collected data regarding marine flora and fauna establish the baseline for future analysis and monitoring of potential environmental impacts from the Project. The SAP will undergo a public scoping and commenting period prior to its submittal to BOEM for approval. The Pre-Front-End Engineering Design (Pre-FEED) will be conducted during the SAP development process and will result in a preliminary level offshore wind farm layout. Furthermore, early in the process, Trident will engage in the interconnection request process to secure the interconnection rights and to begin to negotiate access to the cable landing site as well as other such agreements as may be necessary to have unimpeded access the grid system.

Trident anticipates submission of the SAP in early 2024, with the approval to follow at the end of 2024.

3.5.2 Phase 2: Construction & Operation Plan

Following BOEM's approval of the SAP, Trident will proceed with the site characterization outlined in the SAP. In parallel, Trident will initiate development of the COP and location selection for the fabrication, final assembly, and marshaling for the construction period. It is expected that the SAP implementation will span over a 12 to 24-month period. At the completion of site assessment, adequate data will be available to initiate FEED, supplier selection, and contract for the sale of energy from the Project. The COP will include the results of site characterization surveys and describe all the activities associated with installation and operation of the wind farm, maintenance, and decommissioning. The activities associated with installing, operating, and removing the project facilities will be integrated with the continuous analysis of potential environmental effects, ensuring that the federal and state permitting processes accurately reflect the activities and potential risks.

Trident anticipates submission of the COP in early 2026, with the approval to follow in 2027.

3.5.3 Phase 3: Construction, Transport, and Installation

Following approval of the COP as well as the securing of interconnection and offtake contracts for the Project, Trident will initiate detailed discussions with project finance lenders. The financing process is expected to take approximately 6 to 12 months. In parallel, Trident will coordinate their internal governance and approval processes to take the Project to the final investment decision stage. Construction, transport, and installation are planned to take place when all permits have been secured and the overall project financing has been arranged.

Trident anticipates the start of construction, transport, and installation activities in early 2028, following the final investment decision at the end of 2027.

3.5.4 Phase 4: Commercial Operations

The overall construction period, from components fabrication to full commissioning, is anticipated to take 3 years. Trident is projecting the commercial operation date for the project in 2030. While Trident will conduct further analysis as part of the development process, there is both a strong motivation and commercial logic to operate the Project out of the immediate Grays Harbor area. This might also entail the operational service and crew hub.

The Project is expected to operate for 25+ years, with a decommissioning or repowering to occur post-2055.

3.6 Conformance with State and Local Energy Planning Initiatives

The Washington state legislature has adopted several laws designed to reduce greenhouse gas emissions from all facets of society, including energy generation.

- On May 7, 2019, CETA was signed into law, which commits Washington to an electricity supply free of greenhouse gas emissions by 2045. CETA applies to all electric utilities serving retail customers in Washington and sets specific milestones to reach the required 100 percent clean electricity supply. The first milestone is in 2022, when each utility must prepare and publish a clean energy implementation plan with its own targets for energy efficiency and renewable

energy. By 2025, utilities must eliminate coal-fired electricity from their state portfolios. The first 100 percent clean standard applies in 2030. The 2030 standard is greenhouse gas–neutral, which means utilities have flexibility to use limited amounts of electricity from natural gas if it is offset by other actions. By 2045, utilities must supply Washington customers with electricity that is 100 percent renewable or non-emitting, with no provision for offsets.

- In 2020, the legislature enacted statewide greenhouse gas emissions limits, thereby requiring Washington to reduce emissions to 45 percent below 1990 levels by 2030, 70 percent below 1990 levels by 2040, and 95 percent below 1990 levels by 2050. The 2020 legislation did not authorize any new regulations to achieve the limits. The Climate Commitment Act directs Ecology to establish a cap on greenhouse gas emissions by determining the proportionate share of the state's total greenhouse gas emissions emitted by covered entities, which includes utilities with at least 25,000 metric tons of annual greenhouse gas emissions.

In addition, the 2021 State Energy Strategy[87] provides a roadmap for meeting the state's greenhouse gas emission limits enacted by the Climate Commitment Act. According to the strategy, electricity, at 16 percent of the state's emissions, must be 100 percent clean by 2030 and by 2050 the state must roughly double its output, while continuing to provide reliable power. The strategy calls for these broad actions:

- Invest in new transmission capacity and renewable generation, coordinating with other states.
- Develop distributed energy resources with smart grid capabilities and in consumer equipment to ensure reliability and flexibility.
- Strengthen market mechanisms to ensure resource adequacy and efficient electricity markets.

The following two Washington authorities are adopting rules to implement CETA:

- The Utilities and Transportation Commission (UTC) regulates the rates and service of investor-owned utilities, as more than 60 electric utilities must comply with CETA.
- Department of Commerce will build on its role in leading energy policy development and in the existing clean energy law, the Energy Independence Act, also known as I-937, by:
  - Assessing energy burden and energy assistance (Sec. 12)
  - Engaging stakeholders on state energy strategy and programs (Sec. 22 and 23)
  - Establishing reporting requirements for utilities (Sec. 10)
  - Along with the UTC, adopting cost methodology rules (Sec. 6)
  - Along with the UTC, improving wholesale market mechanisms (Sec. 13)
  - Monitoring the impact of CETA on electric reliability and rates (Sec. 8)

Other state agencies involved include the State Auditor and the departments of Ecology and Health.

Offshore wind could contribute essential infrastructure toward meeting Washington's clean electricity objectives. Of the approximately 94,000 gigawatt hours (GWh) generated in Washington in 2019, approximately 64 percent was from non-emitting sources, while 36 percent was from greenhouse gas-emitting sources, or approximately 34,000 GWh.[88] The milestones established by CETA require all sources of renewable energy, including offshore wind, to be optimized.

4 DOCUMENTATION ON LESSEE QUALIFICATIONS

4.1 Legal Qualifications

Trident Winds, Inc. is headquartered in Seattle, Washington, and is organized and authorized to conduct business under the laws of the State of Washington.

Trident is authorized under its by-laws to hold and operate leases, right-of-way grants, and right-of-use and easement grants for activities that generate, or support generation, transportation, or transmission of energy from sources other than oil and gas, on the OCS, and right-of-use and easement grants for the alternate use of OCS facilities for energy or marine-related purposes.

BOEM assigned Trident Company Number 15055 on January 28, 2016, and recognizes Trident as legally qualified to acquire and hold a renewable energy lease or grant on the OCS. On February 1, 2022, Trident provided BOEM an update regarding its qualifications.

4.2 Technical Qualifications

Trident is a strong industry participant that is fully committed to supporting and enabling the development of the Project. As such Trident can draw from the experience and capabilities that its team brings to the Project. The technical experience of the Trident team spans industries, including, but not limited to floating offshore wind technology development, offshore wind project development, construction management, operation and maintenance, advance manufacturing, development, and energy sales. The proposed Project will leverage the collective know-how of the team through all phases of the project life cycle.

4.2.1 Project Participants

Trident Winds, and prospective partners and project participants who have expressed an interest in the Project (listed below in alphabetical order) are committed to the success of the Project. Individual organizational staffing levels and resources will be allocated to meet the development process needs in accordance with the Project schedule. More detailed information on Trident's technical experience and experience with similar projects is provided in Section 4.2.2 and 4.2.3, respectively, below.

4.2.1.1 Trident Winds (www.tridentwinds.com)

Trident Winds was founded in 2015 with a focus on the deep-water offshore wind project development. Trident will lead the Project through project management and subcontracting to the competitively selected vendors for all project phases.

4.2.1.2 Green Giraffe (www.green-giraffe.eu)

Green Giraffe is a specialist financial advisory boutique focused on renewable energy, with a specific focus on offshore wind financing, including floating offshore wind. Launched in 2010 and with offices in Boston, Cape Town, Hamburg, London, Madrid, Paris, Singapore, and Utrecht, Green Giraffe offers bespoke financial advice, market intelligence, and development services in all renewable technologies.

Green Giraffe has a strong presence in the European market, with an unmatched market share on European offshore greenfield financings and a proven track record on more than 60 projects worldwide. Green Giraffe has arranged more than €20 billion (EUR) for offshore wind and other renewable energy projects representing greater than 25 GW of capacity across the globe. Green Giraffe has successfully raised development equity for several floating offshore wind projects, making them the most reputable and experienced financial advisor in the floating offshore wind sector. In the U.S. market, Green Giraffe assisted Deepwater Wind in procuring non-recourse financing for the 30-MW Block Island offshore wind project off the coast of Rhode Island.

4.2.1.3 Mott MacDonald Group (www.mottmac.com)

The Mott MacDonald Group was formed in 1989 with the merger of two long-established and well-known international engineering consultancies: Mott, Hay & Anderson, renowned for its contribution to transportation engineering, and Sir M MacDonald & Partners, distinguished by a long tradition of water-related projects.

This landmark union began their progress toward the dynamic and continually evolving organization they are today. Mott MacDonald now operates from 180 principal offices in 50 countries across 12 core sectors: buildings, communications, education, environment, health, industry, international development, oil and gas, power, transport, urban development, and water.

4.2.1.4 Herrera Environmental Consultants (www.herreranc.com)

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.

4.2.1.5 National Renewable Energy Lab (www.nrel.gov)

NREL is the only national laboratory solely dedicated to advancing renewable energy and energy efficiency technologies from concept to commercial application. NREL has more than 20 years of experience in the wind industry relative to wind turbine design, power prediction, and wind resource assessment. NREL's participation in the proposed Project offers access to the extensive knowledge base that will be used in the development of the Project. NREL is participating in the Project wind resource characterization, wake/performance modeling, and techno economic analysis.

4.2.1.6 Pacific Northwest National Laboratory (www.pnnl.gov)

Pacific Northwest National Laboratory is one of 10 Department of Energy national laboratories managed by Department of Energy's Office of Science. Pacific Northwest National Laboratory leads the identification and risk-based assessment of environmental effects of ocean energy development and offers significant resources in the study of atmospheric sciences. Pacific Northwest National Laboratory will participate in permitting activities with a specific focus on the marine flora, fauna, and birds through its Marine Science Lab.

Other Project participants bring expensive experience in resource analysis, project development, energy infrastructure asset management, and transmission and electrical services.

4.2.1.7 Strategies 360 (www.strategies360.com)

With an established presence in the western United States, Washington, D.C., Canada, and Indonesia, Strategies 360 is the largest communications and public affairs agency on the West Coast by footprint, boasting 22 offices and more than 180 professionals. With an innovative team operating from the first-of-its kind hub and spoke model, Strategies 360 offers a full suite of integrated communications, research, government relations, and public affairs services with local expertise.

Ron Dotzauer is the Founder & CEO of Strategies 360. Strategies 360's model was inspired by Ron's more than 40-year career in politics, which started in 1974 when he became the youngest elected county official in the State of Washington. Since then, Ron has managed the successful campaigns of a governor, two U.S. Senators, and operated a regional public affairs firm.

4.2.2 Trident Winds Technical Experience

Trident Winds, established in 2015, has a track record in permitting in the marine environment, developing deep-water offshore wind technology and projects, and project financing. Trident is a Washington state corporation, with its founder and CEO, Ms. Alla Weinstein, and Green Tower B.V as shareholders.

Trident has the technical capability to undertake and implement an offshore wind project through to completion, including:

- Covering all disciplines across the project life cycle with resources from early-stage development (permitting, technical design, procurement), throughout project execution, to operations and maintenance services (including turbine service).
- Being a well-established industry participant with a proven relationship with the leading industrial suppliers and service providers in the offshore wind industry.
- Attaching great importance to occupational safety and health protection within the company and in cooperation with its service providers. Trident draws on extensive experience in offshore wind facilities and infrastructure, which are accompanied at every stage by qualified health and safety experts.

Ms. Weinstein brings extensive experience in successful multijurisdictional permitting of a wave energy project in Makah Bay, Washington, developing a commercially viable floating offshore wind technology while serving as a CEO of Principle Power Inc., and being the first to submit an Unsolicited Lease Request on the West Coast. She has founded and financed two marine renewables companies: AquaEnergy Group, LTD, which was the first in the U.S. to receive a FERC permit for the installation of a hydrokinetic project in Makah Bay, within the Olympic Coast National Marine Sanctuary, and Principle Power Inc., the developer of the WindFloat floating support structures technology (http://principlepowerinc.com).

While CEO and President of Principle Power, the company raised more than $35 million for the engineering design, fabrication, and installation of its prototype WindFloat off the coast of Portugal. She

was the project manager for the prototype installation and negotiated and awarded four contracts for the WindFloat prototype implementation:

- A turbine supply contract, including engineering, procurement, installation with Vestas
- A turbine operation and maintenance contract with Vestas
- A Turnkey contract for the WindFloat system, including hull, mooring and electrical cable design, procurement, fabrication, and installation
- A WindFloat operation and maintenance contract

Green Tower B.V. is an affiliate of Green Giraffe, a specialist financial advisory boutique focused on renewable energy with a specific focus on offshore wind financing, including floating offshore wind. Through Green Tower B.V., Green Giraffe owns a 20 percent interest in Trident. In addition to its ownership interest in Trident, Green Giraffe acts as Trident's strategic and financial advisor.

Randall Male, the leader of Green Giraffe's North American business and Managing Principal of Green Giraffe's U.S.-registered broker dealer, Green Giraffe Securities, LLC, brings extensive experience in onshore and offshore wind project development and financial advisory. He has been exclusively engaged in the renewable energy industry for more than 15 years as both an active project developer, financier, and strategic advisor. Mr. Male also serves as a Director on Trident's board.

Mr. Male has arranged financing for floating offshore wind projects in California, Hawaii, and Japan. He has also advised on the development of offshore wind projects along both U.S. coasts and in the Great Lakes.

4.2.3 Experience with Similar Projects

Trident has extensive experience with similar projects, most notably the Castle Wind project in California. The site location that was identified and requested in the unsolicited lease request submitted by Trident in January 2016 became the base for the now designated Morro Bay Wind Energy Area, effectively extending the originally proposed area from the original 3,609 feet (601 fathoms or 1,100 meters) to 4,265 feet (711 fathoms or 1,300 meters) water depth on the west side and expanding it to 376 square miles. The Morro Bay Wind Energy Area could now see development of approximately 3,000 MW of offshore wind generation. Castle Wind is the industry leader, as recognized by the local stakeholders.

Trident is responsible for all project management, finance, legal, procurement, and governance activities for Castle Wind and has been conducting an extensive stakeholder engagement during the last 5 years.

Trident, through Castle Wind, completed an economic benefits study for the City of Morro Bay, signed a legally binding community benefits agreement with the City, and signed a first-of-its-kind legally binding mutual benefits agreement with the local fishermen's organizations. Furthermore, Castle Wind signed a memorandum of understanding with 3CE (Central Coast Community Energy) to enter a long-term power purchase agreement for the energy delivery from the project.

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ANNEX A OUTREACH AND CONSULTATION HISTORY

Trident's stakeholder outreach and consultation to-date has involved the following entities and individuals:

Organization	Title
Washington Governor's Office	Governor
Hoh Tribe	
Quileute Tribe	
Shoalwater Tribe	
Chehalis Tribe	
Quinault Indian Nation	
Representative Kilmer's office	Legislative Director
Senator Cantwell's Office	Legislative Director
Senator Murray's Office	Legislative Director
Grays Harbor County Commissioner #3	Commissioner
Grays Harbor County Commissioner #2	Commissioner
Grays Harbor County Commissioner #1	Commissioner
Grays Harbor PUD	General Manager
24th District Senator	Senator
24th District Rep. Pos 1	Representative
24th District Rep. Pos 2	Representative
19th District Senator	Senator
19th District Rep. Pos 1	Representative
19th District Rep. Pos 2	Representative
Port of Grays Harbor	Executive Director
City of Ocean Shores, WCMAC Chair	Mayor
City of Westport	Mayor
City of Hoquiam	Mayor
City of Aberdeen	Mayor
Dept of Ecology	
Washington Department of Fish and Wildlife	
Beacon Charters	
Coalition of Coastal Fisheries and the Columbia River Crab Fisherman's Association	
Friends of Grays Harbor	
Grays Harbor Audubon Society	
Grays Harbor Marine Resources Committee and Member of WCMAC	
Maritime Blue Cluster Alliance	
Midwater Trawlers Cooperative	
North Pacific Marine Coast Resource Committee	
Northern Oyster Company	
Northwest Energy Coalition	
Northwest Indian Fish Commission	
Olympic National Resource Center	

Organization	Title
Pacific Fisheries Management Council	
Pacific Northwest National Laboratory	
Pacific Seafoods	
Pacific Whiting Conservation Cooperative	
Surfrider Foundation	
Twin Harbors Waterkeepers	
United Catcher Boats	
Washington Dungeness Crab Fishermen's Association	
Washington Energy Facility Site Evaluation Council	
Washington Maritime Federation	
Washington Public Ports Association	
West Coast Seafood Processors/Ocean Gold Seafoods	
Westport Charter Boat Association	

ANNEX B LETTERS OF VENDOR SUPPORT

Contractor/consultant/vendor letters of support are contained in this section.

U.S. Department of the Interior
Bureau of Ocean Energy Management
760 Paseo Camarillo
Suite 102
Camarillo, CA 93010

22 March 2021

RE: Trident Winds' Olympic Wind Offshore Wind Project

To Whom it may concern,

Green Giraffe (**Green Giraffe**) is pleased to present this letter of support for Trident Winds' Olympic Wind offshore wind project located off the coast of Washington state.

Green Giraffe is a global renewable energy financial advisory firm with a particular focus on offshore wind. Since our founding in 2010, we have arranged over EUR 30 billion of funding for more than 200 renewable energy projects representing in excess of 100 GW globally. Green Giraffe currently operates through offices in eight countries around the world, including the United States. Green Giraffe is both a minority owner of Trident Winds and acts as Trident Winds' financial advisor and investment banker. We have been actively involved in advising and arranging financing for Trident since 2017.

We are very familiar with the Olympic Wind project and the work Trident has undertaken to develop the project to this point. Based upon our experience arranging financing for development stage offshore wind projects around the world and our informed view of the Olympic Wind project, we have a high degree of confidence we will successfully arrange financing required for the further development, construction and operation of the project as and when needed.

Respectfully,

Randall Male

Executive Representative

ALWAYS SAFE. ALWAYS READY.

FOSS

23 March 2022

Doug Boren, Regional Director
BOEM
760 Paseo Camarillo Ste. 102
Camarillo CA 93010
United States

Re: Letter of Support – Trident Wind Offshore Wind Project (Olympic Wind)

Dear Mr. Boren,

Foss Maritime Company would like to express our support of the proposed 1000 MW offshore wind project located offshore Grays Harbor, Washington, and the related unsolicited lease application by Trident Wind.

We believe this is a serious offshore floating energy project with the potential to become a vital component of the infrastructure needed to meet our ambitious renewable energy goals here in the Pacific Northwest.

Our 132 year old company provides marine support for complex construction projects overseas as well as in harbors throughout North America. Our offshore wind team is actively developing technical solutions for this new industry in the United States, specifically the transportation and installation of offshore wind components on the East Coast. With a diverse and flexible fleet of tugs and barge and exceptional project management and marine engineering team, we help customers handle the complicated logistics required for significant construction endeavors.

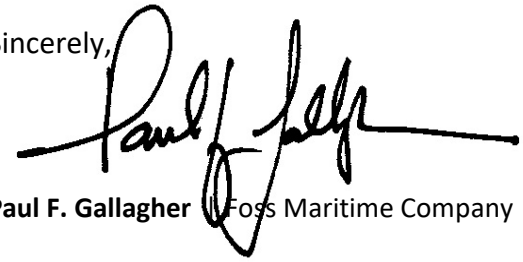
Our company has formed a technical team and have been working extensively on developing solutions for the offshore wind industry in the United States, specifically on the transportation and installation of offshore wind components. In addition to developing solutions for the installation of wind farms, Foss has had ongoing discussion on how to best support Trident Wind on maximizing job creation, minimizing vessel navigation conflicts and supporting supply chain growth for the overall U.S. offshore wind market.

Foss Maritime Company
450 Alaskan Way S., Suite 706
Seattle, WA 98104
T: 206.281.3800
F: 206.281.4702
www.foss.com

Should Trident Wind be successful in securing the permits and necessary approvals, Foss Maritime confirms its intent to utilize its experience in the offshore industry in the coastal waters of the Pacific Northwest to advise and support Trident Wind in the technical feasibility study. Specifically, the marine operations needed to transport floating foundations to the offshore site, and on the assessment of local supply chain and infrastructure required for foundation fabrication and marshalling services. These services will be executed based on a more detailed scope of work and a budget estimate, which will be agreed to prior to starting the work assignment.

Should you have any questions, please feel free to contact me at (907) 317-7729 or by e-mail at pgallagher@foss.com.

Sincerely,



Paul F. Gallagher | Foss Maritime Company | Vice President| +1 907 317 7729 | pgallagher@foss.com

Attachment:

Brochure

HARBOR MARINE GROUP

FOSS

SOLVING ENGINEERING AND MARINE TRANSPORTATION CHALLENGES

Harbor Marine Group is the professional engineering and marine consulting division of Foss Maritime Company, serving customers locally and abroad with professional engineering, technical services, and complete project management.

From concept to delivery, Harbor Marine Group's client-focused approach and proven track record takes marine transportation projects from the drawing board to the shipyard—and from there, around the world.

FULL SERVICE ENGINEERING AND PROJECT MANAGEMENT

Our team of naval architects, marine engineers, mechanical engineers, project managers and technical specialists can handle every aspect of developing and executing any type of marine transportation project.

The Harbor Marine Group team provides professional services for tug and barge owners, passenger vessel operators, construction contractors, global heavy lift operators and many other sectors of the marine community.

Harbor Marine Group
Division of Foss Maritime Company
450 Alaskan Way South, Suite 706
Seattle, WA 98104

CONTACT: Dan Cole, P.E.
dcole@foss.com
TEL (206) 437-8820
TOLL FREE (800) 426-2885

CONTACT: Courtney Bradbury, P.E.
cbradbury@foss.com
TEL (206) 427-7272

DELIVERING ENGINEERING SOLUTIONS. EMBRACING NEW TECHNOLOGY.

Harbor Marine Group combines its strong background in traditional marine experience with new technologies and business methods to produce the highest-quality engineering services available. Our services include:

Naval Architecture

- Specialized Floating Structures Design and Analysis
- Structural Calculations & Finite Element Analysis
- USCG, ABS and other Classification Society Design Review and Submittals
- Heavy Cargo Transportation Planning, Engineering and Design
  - **Seafastening Calculations and Detail Design**
  - **Deck Strength Calculation**
  - **Loadout and Offload Ballasting and Longitudinal Strength**
  - **Mooring System Design**

Project Management

- Construction and Production Management
- Owner's Representation
- Shipyard Project Management
- Contract Specifications
- Turnkey vessel acquisition programs from initial design selection through construction and delivery

Marine Engineering

- Vapor Recovery Systems
- Steering Systems
- Shafting Systems
- Electrical Load Analysis
- Piping System Schematics
- Hydraulic Systems
- System Conversions and Modifications

High Precision 3D LiDAR and Optical Scanning

- Structure, Piping, Arrangement As-Built Models

Hydrogen
WASHINGTON GREEN HYDROGEN ALLIANCE

March 23rd
Bureau of Ocean Energy Management
Doug Boren, Regional Director
760 Paseo Camarillo Ste. 102
Camarillo CA 93010

RE: Letter of Support for Olympic Wind Project

To Whom It May Concern:

The Washington Green Hydrogen Alliance is pleased to provide this letter of support for the proposed Olympic Wind project, a 1,000 MW wind development located 40 miles off the Pacific coast city of Westport, Grays Harbor, WA. This project shows great promise toward the state's aggressive goals to decarbonize and offer a reliable renewable energy potential source in WA State.

The Washington Green Hydrogen Alliance (WGHA) works to grow Washington state's green hydrogen industry and ensure families and businesses can benefit from an affordable, zero-emission alternative fuel source made in Washington State. Founded in 2021, the WGHA works with its members across the state's green hydrogen industry, including renewable energy project developers, aerospace, marine, vehicle manufacturers, utilities, ports, transit agencies, and zero-emission vehicle advocates to ensure that Washington State is a green hydrogen leader.

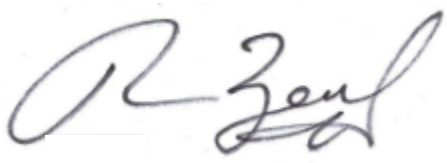
Recently, the Washington legislature enacted the Clean Energy Transformation Act to incentivize renewable energy production from wind and solar to transition the Washington economy toward 100% non-fossil electricity production by 2040. Projects like Olympic Wind are essential to meet our state's commitment to decarbonize our state's electricity grid fully and completely. This project would also be of enormous benefit to our state goal of being the leading producer in the US of electrolytic hydrogen. Green hydrogen from renewable electricity is an essential component of our state strategy to create thousands of good-paying jobs and transition our economy away from fossil fuels.

In 2021, the state enacted the Climate Commitment Act, which established a cap on emissions and a trading scheme designed to decarbonize industrial emissions. The state also enacted the Clean Fuel Standard designed to decarbonize Washington transportation emissions fully. All of these groundbreaking policies' success is highly dependent on producing historic amounts of renewable electricity in Washington. These renewables will be used to electrify our transportation system, transition building heat from natural gas to electricity, and eliminate fossil energy in our state's industrial base.

This project can contribute to the climate goals already set in place and have relevance to the support of the emerging hydrogen production market taking place around the country. The Olympic Wind project will be essential to meeting the state's clean energy goals and our national and planet goals of meeting the Paris Accord targets to reduce greenhouse gases and reduce the impacts of climate change.

Sincerely,

Tim Zenk



MOTT MACDONALD

US Department of the Interior
Bureau of Ocean Energy Management
760 Paseo Camarillo
Suite 102
Camarillo, CA 90310

March 16, 2022

To Whom It May Concern

Mott MacDonald
1601 5th Avenue
Suite 800
Seattle
WA 98101
United States of America

T +1 (206) 838 2886
mottmac.com

Mott MacDonald is pleased to provide this letter to state our ability and interest to support Trident Winds LLC in development of the Olympic Wind offshore wind project, proposed to be offshore of Grays Harbor, WA.

Mott MacDonald is a multi-disciplinary engineering, management, and development consulting firm with over 16,000 employees worldwide. Our services include civil engineering, electrical engineering, geotechnical engineering, structural engineering, coastal engineering, environmental permitting, tunnels, power and transmission, and others.

We have delivered landmark energy projects including major transmission infrastructure and more than 100 GW of renewable energy projects in 60+ countries worldwide. In addition, we have worked on more than half the offshore wind farms globally, including the two currently operating in the United States.

We have provided engineering services to Trident Winds LLC to support the Olympic Wind project, including civil, structural, coastal, trenchless and geotechnical engineering. We anticipate continuing to provide these services, and others, to support the project development and operations.

We affirm our interest in supporting this project and confirm Trident Winds LLC has access to our qualified and experienced team of engineering, management, and planning professionals.

Regards,

Conrad Fawcett
Vice-President
206-495-8137
Conrad.fawcett@mottmac.com

Aaron Porter
Principal Project Manager
425-977-2585
aaron.porter@mottmac.com

March 15, 2022

US Department of the Interior
Bureau of Ocean Energy Management
760 Paseo Camarillo
Suite 102
Camarillo, CA 90310

Subject: Letter of Support for the Trident Wind Olympic Wind Project

Dear BOEM Regional Director:

On behalf of Herrera Environmental Consultants, Inc. (Herrera), I am writing to support Trident Winds, LLC, and their submission of interest to the Bureau of Ocean Energy Management (BOEM). Trident Wind's submission affirms their commercial interest in developing the Olympic Wind offshore wind project offshore of Grays Harbor, Washington. This project represents an outstanding opportunity to contribute to the U.S. as a leader in offshore renewable energy development, meet Washington's greenhouse gas emission reduction goals, and accelerate coastal economic redevelopment through an emergent offshore wind industry.

Herrera is a recognized leader in environmental management throughout the western United States and is thoroughly experienced with marine environmental compliance issues in Washington. From our offices in Seattle and throughout the Pacific Northwest, our interdisciplinary staff of over 100 scientists, engineers, planners, and regulatory specialists provide objective and scientifically defensible and realistic solutions to address key challenges facing ocean energy development.

We have provided these services to Trident Winds LLC to support the Olympic Wind project, and I can confirm that our qualified local staff are available to assist with facility siting, environmental impact analysis, and regulatory compliance and permitting going forward.

We look forward to continuing our engagement and collaborative efforts with Trident Winds to make future offshore wind power projects successful.

Sincerely,

Herrera Environmental Consultants, Inc.

Philip C. Coughlan
Vice President

2200 Sixth Avenue | Suite 1100 | Seattle, Washington | 98121 | p 206 441 9080 | f 206 441 9108
SEATTLE, WA | PORTLAND, OR | MISSOULA, MT | OLYMPIA, WA | BELLINGHAM, WA