

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Oregon State University

Project No. 14616-001

ORDER ISSUING ORIGINAL LICENSE

(Issued March 1, 2021)

INTRODUCTION

1. On May 31, 2019, Oregon State University (OSU) filed an application¹ for an original license, pursuant to Part I of the Federal Power Act (FPA),² to construct, operate, and maintain the proposed PacWave South Hydrokinetic Project No. 14616 (PacWave South or Project), a wave energy test facility.³ The 20-megawatt (MW) project will consist of both marine (offshore) and terrestrial (onshore) components. The marine components of the project will be located on the Outer Continental Shelf (OCS) in the Pacific Ocean, approximately 6 nautical miles off the coast of Newport, Oregon, and in Oregon territorial waters. The project will occupy an area of approximately 5,238.6 acres on the OCS, administered through a March 1, 2021 lease by the Bureau of Ocean Energy Management (BOEM) within the U.S. Department of the Interior (Interior).⁴ The terrestrial components will be located on state- and privately-owned land in Lincoln County, Oregon.

2. As discussed below, this order issues an original license for the PacWave South Project.

¹ OSU's application includes an applicant-prepared environmental assessment (APEA) with appendices composed of various proposed plans and measures for the protection of environmental resources.

² 16 U.S.C. §§ 791(a)-825(r).

³ OSU amended its application on August 28, 2019.

⁴ The OCS is considered a navigable waterway and reservation of the United States. *Pacific Gas & Electric Co.*, 125 FERC ¶ 61,045 (2008). Therefore, the project is required to be licensed under section 23(b)(1) of the FPA. 16 U.S.C. § 817.

BACKGROUND

3. On August 29, 2019, the Commission issued a public notice, which was published in the *Federal Register*, accepting the application for filing, indicating that the application was ready for environmental analysis, and establishing September 30, 2019, as the deadline for filing motions to intervene, protests, comments, recommendations, terms and conditions, and prescriptions.⁵ Interior, on behalf of the U.S. Fish and Wildlife Service (FWS), and the Oregon Department of Fish and Wildlife (Oregon DFW) and the Oregon Parks and Recreation Department (Oregon PRD) filed comments and recommendations. Interior, on behalf of FWS, and Oregon DFW filed timely notices of intervention on September 26, 2019, and September 30, 2019, respectively.⁶ On November 11, 2019, the National Marine Fisheries Service (NMFS) filed a late motion to intervene, which was granted by Secretary's Notice.⁷ None of the interveners oppose the project. OSU filed reply comments on October 15, 2019.

4. Commission staff issued an environmental assessment (EA) on April 23, 2020, analyzing the effects of the proposed project and alternatives to it. Oregon DFW, FWS, and OSU filed comments on the EA.

5. The interventions, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue the license.

PROJECT DESCRIPTION AND OPERATION

A. Project Area

6. The Pacific Ocean along the Central Oregon coast where project components will be deployed is a high wave-energy, dynamic, ocean environment ranging in depth from 65 to 79 meters. General marine habitat features include surf zone, soft bottom subtidal, intermittent hard bottom, and open water pelagic. The Pacific Ocean supports diverse assemblages of marine species and offers important economic and recreational opportunities for the surrounding communities.

7. The Central Oregon coastline in the project area consists of extensive sandy beach that varies from unvegetated intertidal areas to partially vegetated sand dunes

⁵ 84 Fed. Reg. 47,283 (September 9, 2019).

⁶ Under Rule 214(a) of the Commission's Rules of Practice and Procedure, Interior and Oregon DFW became parties to the proceeding upon the timely filing of their notices of intervention. 18 C.F.R. § 385.214(a) (2020).

⁷ Secretary's December 5, 2019 Notice Granting Late Intervention.

interspersed with marine tidal wetlands. Developed features in the project area include Highway 101 and the Driftwood Beach State Recreation Site (Driftwood), which consists of a parking lot located west of the highway that provides beach access.

8. Terrestrial features in the project area include mainly low mountains of the Coast Range, covered in Douglas fir and Sitka spruce. The surrounding forest is fairly fragmented due to housing developments and timber harvesting.

B. Project Description and Proposed Facilities

9. OSU proposes to develop the PacWave South Project in order to provide a venue for clients to test technologies that generate electricity using wave energy converters (WECs) anchored to the seafloor. Specifically the PacWave South Project would: (1) serve as a facility to allow clients to test the operation of grid-connected WEC devices; (2) refine the deployment, recovery, operations, and maintenance procedures for WEC devices; (3) collect interconnection and grid synchronization data; (4) gather information about environmental, economic, and socioeconomic effects; and (5) provide a source of hydroelectric power. OSU would oversee and manage all activities, and clients deploying WECs at PacWave South would be subject to test center protocols and procedures.

10. The PacWave South project would consist of: (1) four offshore test berths containing a maximum of 20 WEC devices with a maximum total installed capacity of 20 MW; (2) various anchoring systems including gravity-based anchors, suction anchors, plate anchors, and drag embedment anchors, constructed with steel, concrete, or a mixture of steel and concrete; (3) mooring systems (such as single- or three-point moorings) consisting of chain, steel cables, or synthetic materials; (4) mooring infrastructure that includes surface buoys, subsurface floats, and chain, wire or rope, as catenary, tendon or bridle lines; (5) subsea connectors; (6) five buried subsea transmission cables, averaging 8.3 nautical miles long, converging in five nearshore conduits; (7) five approximately 10-foot by 10-foot by 10-foot onshore cable landing vaults or beach manholes that will be buried at Driftwood; (8) five or fifteen 0.4-mile-long buried terrestrial transmission lines (carried in one to three conduits) connecting to a utility connection and monitoring facility (UCMF); (9) five or fifteen 0.1-mile-long buried terrestrial transmission lines (carried in one to three conduits) to grid-interconnection at the Central Lincoln People's Utility District (CLPUD) system; (10) an access road to the UCMF site; and (11) appurtenant facilities.

C. Proposed Project Construction and Installation

11. OSU will use horizontal directional drilling (HDD) to install the subsea cables from Driftwood under the beach, intertidal, and nearshore areas to approximately 0.6 mile offshore. From there to the WEC test site 6 miles offshore, OSU will use a jet

plow (or a similar technique)⁸ to bury the subsea cables at a depth of 1-2 meters, to the maximum extent practicable. Exposed segments of the cable that cannot be buried or persistently become unburied will be protected with split pipe, concrete mattresses, or other cable protection systems. OSU will use HDD to install a maximum of three conduits to carry the onshore transmission lines underground from the concrete vaults at Driftwood to the UCMF site, and from the UCMF site to the grid-interconnection with CLPUD's system.

12. Power generated by the project will be transmitted from the UCMF site via a new 0.1-mile-long, 12.47-kilovolt (kV) buried transmission line that will connect to an existing 12.47-kV line located on the west side of Highway 101.

13. A more detailed project description is contained in Ordering Paragraph (B)(2).

D. Proposed Project Operation

14. OSU proposes to oversee each stage of WEC testing: (1) deployment; (2) testing plans, protocols, and procedures; (3) WEC performance monitoring; (4) environmental monitoring; (5) demobilization; and (6) removal. Routine work will be carried out during normal facility working hours, weather permitting, and with consideration for the safety and protection of personnel, the general public, and the environment.

15. Up to 6 WECs will be deployed during initial deployment and a maximum of 20 WECs will be deployed for the full build-out, with a maximum total capacity of 20 MW. However, the number of WECs deployed will fluctuate over the license term based on clients' needs.

16. Project components will be fabricated at land-based facilities prior to being installed at the WEC test site. The primary staging areas for the project will be located around the Port of Newport, the Port of Toledo, or other private facilities. The WECs, mooring and anchor systems, navigational buoys, and monitoring equipment will be staged at mobilization sites for vessel transport to the WEC test site for installation.

17. Because the project will serve as a WEC test facility, a variety of WECs, supporting infrastructure and instrumentation, and associated anchor and mooring systems will be deployed and recovered throughout the license term.

18. Onshore monitoring of project facilities will be conducted on a continuous basis via a supervisory control and data acquisition (SCADA) system located at the UCMF site. A system operator will be responsible for monitoring the sensor and alarm systems and identifying when a potential unexpected event or system failure occurs. The system

⁸ This technique uses a plowshare and high-pressure water jets to fluidize a trench in the seafloor to simultaneously lay and embed subsea cables.

operator will be the first point of contact for notification by operations and maintenance personnel, regulatory agencies, and the general public of a potential incident. Emergency call-out arrangements and assistance will be in place to respond to major incidents.

E. Project Boundary

19. The proposed project boundary encompasses approximately 6,872.3 acres of onshore and offshore areas. The marine project boundary encompasses approximately 1,695 acres for the WEC test facility and 3,543.6 acres for the subsea transmission cables in the OCS, and 1,616.1 acres for the subsea transmission cables in Oregon state waters. The terrestrial project boundary encompasses about 17.5 acres, including 9.5 acres of land administered by Oregon PRD (at and adjacent to the Driftwood site), 0.6 acre of land administered by the Oregon Department of Transportation (Oregon DOT) as highway (Highway 101) and highway right-of-way, 2.9 acres of residential, privately owned land, and 4.5 acres owned by OSU at the UCMF site.

20. The BOEM research lease area includes 12 Aliquots⁹ (1/16th portions of OCS Blocks), lying within Official Protraction Diagram¹⁰ Newport Valley NL10-10. OCS Lease Blocks and Aliquots for the project area include OCS Block 6481: Aliquots F, G, H, J, K, L, N, O, and P; and OCS Block 6531: Aliquots B, C, and D. The associated BOEM project easements consist of an area 100 feet to either side of the centerline of each of the five subsea cables. The 200-foot wide cable corridor lies within 16 Aliquots that are within Official Protraction Diagram Newport Valley NL 10-10 and Salem NL 10-11 and include OCS Blocks 6531, 6501, 6581, 6551.

F. Proposed Environmental Measures

Construction- and Installation-Related Measures

21. To protect wetlands, upland vegetation, and associated native wildlife and plant species, OSU proposes to implement a Habitat Mitigation Plan for terrestrial resources, that includes provisions for: (1) conducting most ground-disturbing construction activities and staging within previously disturbed areas; (2) avoiding or minimizing impacts to streams, wetlands, upland habitat, forest habitat, and snags and legacy trees during construction; (3) developing a revegetation plan to use native species in areas disturbed during construction; (4) monitoring revegetation success; (5) developing measures to limit the introduction or spread of invasive species; (6) developing a sediment and erosion control plan to minimize effects of project construction, operation,

⁹ An Aliquot is an area (1,200 meters by 1,200 meters) of submerged lands on the OCS that can be leased from BOEM for renewable energy purposes.

¹⁰ An Official Protraction Diagram is a type of 1:250,000-scale map that depicts areas of submerged lands on the OCS that can be leased from BOEM.

and maintenance activities on sediment and soils; and (7) developing a storm water management plan for onshore construction activities with spill prevention, response actions, and control protocols, and provisions to maintain existing drainage patterns and prevent contamination of streams with hazardous materials.

22. To minimize the adverse effects of an inadvertent return of drilling fluids,¹¹ OSU proposes to develop HDD contingency measures with provisions for monitoring, containment, response, and notification procedures.

23. To avoid or minimize adverse effects to hard substrate habitat, OSU proposes to develop a vessel anchoring plan that establishes protocols to avoid anchoring in known rocky reef or hard substrate habitats, to the maximum extent practicable, and to combine onsite activities to minimize the use of anchors within the project area wherever practicable. This measure would also be implemented during project operation.

24. To protect sensitive rocky reef habitat and avoid or reduce potential effects to marine sediments, OSU proposes to avoid crossing areas with hard substrate when installing the subsea cable, to the maximum extent practicable, and minimize the time that the seafloor is disturbed and sediment is dispersed by completing cable laying and other construction activities within one construction season, to the extent practicable, during appropriate weather-related construction windows.

25. To minimize disturbance of marine bottom sediment and habitat, OSU proposes to minimize the frequency of anchor installation/removal cycles and reuse installed anchors when possible and avoid grounding of project components on the bottom substrate during transport. These measures would also be implemented during project operation.

26. To protect water quality, OSU proposes to: (1) follow industry best practices and guidelines for antifouling applications (e.g., use only agents free of the biocide tributyltin on project structures such as marker buoys, subsurface floats, and WECs); (2) minimize storage and staging of WECs outside of existing dock, port, or other marine industrial facilities; and (3) require all project-chartered or -contracted vessels to comply with current federal and state laws and regulations regarding aquatic invasive species prevention and control. These measures would also be implemented during project operation.

27. To minimize electromagnetic field (EMF) emissions from the project, OSU proposes to utilize shielding on subsea cables, umbilicals, and other electrical infrastructure, to the maximum extent practicable.

¹¹ An inadvertent return occurs when the non-toxic slurry and drilling fluids that are used under pressure in HDD are forced to the surface.

28. To minimize effects on marine mammals from sound produced by Dynamic Positioning Vessels (DPVs) used to install project facilities OSU proposes to: (1) avoid the use of DPVs during Phase B gray whale migration (April 1-June 15) to the maximum extent practicable; and (2) implement actions and protocols necessary to maintain an appropriate acoustic zone of influence in accordance with NMFS's published harassment threshold of 120 decibels during DPV operations including posting marine mammal observers during daylight hours, conducting start-up during daylight hours, and implementing ramp-up procedures.

29. To minimize potential vessel impacts to marine mammals and sea turtles, OSU proposes to require vessels in transit to/from the project site to avoid close contact with marine mammals and sea turtles and adhere to NMFS's "Be Whale Wise" guidelines, which include: (1) slowing down and operating vessels at a no-wake speed; (2) staying out of the path of the whale's direction of travel; (3) not putting vessels between whales, especially mothers and calves; and (4) not chasing or harassing whales, and not approaching the animals head-on, from directly behind them, or from the side, and instead, gradually steering vessels to be parallel to the animals from the side and staying at least 100 yards away. These measures would also be implemented during project operation.

30. To minimize effects of construction on species of landbirds and bats and their habitat, OSU proposes to implement the following provisions from a Bird Bat Conservation Strategy Plan (BBCS Plan): (1) conduct surveys and implement protective measures for active nests found during surveys; (2) remove potential nest substrates (e.g., bushes, trees) if construction is initiated prior to the start of the nesting season; (3) follow National Bald Eagle Management Guidelines for nesting eagles; and (4) conduct preconstruction surveys for bat roosts and implement protective measures for any identified bat roosts.

31. To minimize effects of construction on the federally endangered western snowy plover and its habitat, OSU proposes to implement the following provisions from the BBCS Plan: (1) limit HDD construction equipment and activities to the Driftwood parking lot, at least 164 feet from plover habitat; (2) use shielded lighting to direct light away from plover habitat and animal-proof receptacles and related signage to minimize attraction of nest predators; (3) conduct surveys during the nesting season prior to HDD operation; and (4) implement monitoring and protective measures to minimize noise and disturbance to plover nests identified during surveys.

32. To prevent and minimize the release of hazardous materials, OSU proposes to implement an Emergency Response and Recovery Plan with spill prevention, response actions, and control protocols for offshore activities, including provisions for recording types and amounts of hazardous fluids contained in WECs and other project components and requiring all vessel operators to comply with the plan during installation and

maintenance of offshore project components. This measure would also be implemented during project operation.

33. To minimize the impacts of a fish and wildlife emergency, OSU proposes to notify agencies with regulatory authority as soon as possible in the event fish or wildlife are killed, harmed, or endangered by project facilities or operations in a manner that was not anticipated, and take action to promptly minimize the impacts, based on guidance from those agencies. This measure would also be implemented during project operation.

34. To minimize the risk to navigation safety, OSU proposes to implement a Navigation Safety Risk Assessment, which includes measures to: (1) install subsurface floats at sufficient depth to avoid potential vessel strike; (2) mark project structures with appropriate navigation aids, as required by the U.S. Coast Guard (USCG); (3) conduct outreach to inform mariners of project structures and activities to be avoided in the area (e.g., notice to mariners, flyers posted at marinas and docks); and (4) work cooperatively with commercial, charter, and recreational fishing entities and interests to avoid and minimize potential space-use conflicts with commercial and recreational interests during construction and operation. These measures would also be implemented during project operation).

35. To minimize impacts to public access and use of the Driftwood site and to maintain public safety during construction, OSU proposes to: (1) use construction fencing to isolate work areas from park lands to provide safe access for visitors to the beach and to recreational facilities unaffected by construction activities; (2) maintain pedestrian public beach access at Driftwood during construction activities, to the extent safe and practicable; and (3) conduct ground-disturbing construction activities and staging within previously disturbed areas, if possible.

36. To enhance recreational use, OSU proposes to develop a plan to design and install an interpretive display at Driftwood describing the project.

37. Should historic properties be identified in the future, OSU proposes to modify the project to exclude the historic property from the project's area of potential effects (i.e., avoid any potential project effects to the historic property) or develop a historic properties management plan (HPMP) to resolve any potential adverse effects to historic properties (measure to also be implemented during project construction).

38. To ensure the project site is restored, OSU proposes to develop a decommissioning plan near the end of the license term that would include provisions for removing project facilities and restoring the site, and to implement the plan when the project is decommissioned.

Operation-Related Measures

39. To guide the implementation of monitoring and mitigation measures and to identify additional monitoring or mitigation measures that may be required to address unanticipated effects to marine resources, OSU proposes to implement an Adaptive Management Framework in consultation and coordination with an Adaptive Management Committee.¹²
40. To provide a long-term evaluation of past and proposed future project operations related to environmental effects, mitigative measures, and monitoring, OSU proposes to file a report every 5 years that characterizes the prior 5 years of WEC deployments and associated project activities and describe the next 5 years of planned deployments and activities.
41. To monitor project-related EMF emissions on marine resources, OSU proposes to implement the EMF Monitoring Plan.
42. To monitor effects on benthic habitat from project anchoring systems, WECs, and other equipment during operation and maintenance activities, OSU proposes to implement the Benthic Sediments Monitoring Plan.
43. To minimize the risk of marine species (mammals, turtles, and seabirds) and fishing gear becoming entangled or colliding with project components, OSU proposes to: (1) ensure that WEC cables and moorings are designed and maintained in configurations that minimize the potential of marine mammal or sea turtle entrapment or entanglement; (2) implement observations, monitoring, and protocols for entangled fishing gear; and (3) implement rescue protocols for marine mammal or sea turtle strandings, entanglements, impingements, injuries, and mortalities.
44. To monitor behavioral changes to pelagic¹³ and demersal¹⁴ fish and invertebrates (particularly Dungeness crab) that might be attracted to or affected by project components and mitigate any unanticipated adverse effects on marine aquatic resources, OSU proposes to implement the Organism Interactions Monitoring Plan.
45. To monitor project-related acoustic emissions, OSU proposes to implement an Acoustics Monitoring Plan, which includes provisions for quantifying sound levels of project facilities and notifying NMFS if sound attributed to the WECs or mooring systems exceeds the protective sound criteria.

¹² The Adaptive Management Committee will comprise representatives from OSU, BOEM, NMFS, FWS, and Oregon DFW.

¹³ Pelagic fish inhabit the water column.

¹⁴ Demersal fish inhabit the seabed.

46. To minimize the potential for the WECs or the moorings systems to produce sound in excess of NMFS's published harassment threshold, which could injure marine mammals or alter their behavior, OSU proposes to require its WEC testing clients to: (1) maintain equipment in good working order to minimize sound due to faulty or poorly maintained equipment; (2) repair or modify the operation of the WEC or mooring system components to minimize sound levels (e.g., modify controls to change the motion of the WEC); and (3) cease operating WECs, if doing so will temporarily halt sound threshold exceedances.

47. To minimize pinniped (sea lions or seals) haulout¹⁵ on project structures, OSU proposes to implement NMFS's reporting and haulout protocols if pinnipeds are observed to be hauled out on project structures.

48. To minimize attraction and disturbance associated with lighting on project structures and vessels, and perching and nesting of marine birds on project structures, OSU proposes to implement the following provisions from the BBCS Plan: (1) conduct surveys and develop measures in consultation with FWS to discourage birds from perching and nesting on project structures, if necessary; (2) minimize project lighting by using low-intensity flashing lights, bird-friendly wavelengths, and shielded lighting to minimize attraction; (3) follow FWS's guidance for vessel operators to take appropriate actions in the event of a seabird fallout;¹⁶ and (4) require vessel operators to maintain a minimum distance of 500 feet from seabird nest colonies.

SUMMARY OF LICENSE REQUIREMENTS

49. This license, which authorizes the installation of up to 20.0 MW of new renewable energy generation capacity, requires most of the proposed measures noted above, the conditions included in the Oregon Department of Environmental Quality's (Oregon DEQ) water quality certification (Appendix A), the conditions included in BOEM's lease (Appendix B), the incidental take terms and conditions of the biological opinion (BO) submitted by NMFS (Appendix C), and the staff-recommended measures described below. Combined, these measures will protect marine resources, water quality, fish,

¹⁵ Haulout is a pinniped behavior that involves leaving the water to rest on a dry surface.

¹⁶ Fallout can occur when seabirds that normally use natural light (e.g., moonlight) to navigate out to sea become disoriented by artificial lighting causing them to repetitively circle lights and collide with structures, which results in exhausted and injured seabirds "falling out" of the sky making them potentially vulnerable to other threats.

terrestrial habitat, wildlife, recreation, threatened and endangered species, and cultural resources at the project.

50. To minimize environmental effects associated with HDD during installation of the subsea cables and transmission lines, the license requires OSU to develop an HDD plan that incorporates the Commission's HDD Plan Guidance (FERC 2019. *Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans*), the Commission's criteria for HDD crossings beneath wetlands (FERC 2013. *Wetland and Waterbody Construction and Mitigation Procedures*), and additional measures recommended by staff to reduce the risks of construction complications and inadvertent return.

51. To protect upland vegetation and associated native wildlife and plant species, the license requires OSU to revise the Habitat Mitigation Plan to include measures to limit the introduction or spread of invasive species during construction and to develop a revegetation plan with provisions for: (1) using native species, including kinnikinnick where appropriate, to establish forest habitat in adjacent areas along the north side of the UCMF access road (NW Wenger Lane); (2) transplanting or relocating kinnikinnick plants prior to construction; (3) replanting kinnikinnick plants after construction; and (4) removing encroaching disturbed/shore pine forest to enhance kinnikinnick growth and survival.

52. To ensure that sufficient acoustic data is collected to support analysis and completion of monitoring objectives, the license requires OSU to revise the Acoustic Monitoring Plan to include provisions for: (1) evaluating whether the collected data is sufficient to meet the objectives of the plan; and (2) including recommendations in the annual report to modify the plan, if necessary, during the next sampling period.

53. To protect birds, including federally listed bird species, the license requires OSU to revise the BBCS Plan to include provisions for: (1) defining what constitutes suitable nesting habitat for the threatened western snowy plover; (2) consultation regarding the placement of any protective structures (e.g., sound barriers) and signage; and (3) incorporating the modified measures provided in the revised biological assessment (BA) filed by OSU on August 27, 2019.

54. To mitigate impacts to recreational use and ensure adequate signage is posted to inform motorists in advance of any temporary closure of the State Highway Rest Area located at the at the Driftwood site, the license requires OSU to notify Oregon DOT at least 3 months in advance of any construction-related closures of the Driftwood site that would be 90 days in duration or longer.

55. In the event any previously unidentified cultural resources are discovered during project construction or operation, the license requires OSU to consult with the Oregon State Historic Preservation Office (Oregon SHPO) to determine if there is a need for any

cultural resource studies or measures. If a discovered cultural resource is determined to be eligible for the National Register of Historic Places (National Register), OSU will be required to develop an HPMP in consultation with the Oregon SHPO and file it with the Commission for approval. OSU must not resume marine or land-clearing activities in the vicinity of the discovered cultural resource until informed by the Commission that the requirements involving the needs for determining, protecting, or avoiding the discovered cultural resource have been met.

WATER QUALITY CERTIFICATION

56. Under section 401(a)(1) of the Clean Water Act (CWA), the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year.¹⁷ Section 401(d) of the CWA provides that the water quality certification shall become a condition of any federal license that authorizes construction or operation of the project.¹⁸

57. On April 17, 2020, OSU applied to Oregon DEQ for certification for the PacWave South Project, which Oregon DEQ received on the same day. On June 11, 2020, Oregon DEQ issued certification for the PacWave South Project.¹⁹ The certification includes 16 conditions, which are set forth in Appendix A of this order and incorporated into the license by Ordering Paragraph (D).

58. Certification conditions 1-7 and 14-16 are administrative in nature and are not discussed further. The remaining six conditions are consistent with OSU's proposal and require OSU to: (1) develop an erosion and sediment control plan; (2) implement spill prevention provisions to avoid discharges impacting water quality; (3) implement hazardous spill and incident reporting; (4) implement vegetation protection and site restoration; (5) implement wetland, riparian, and water quality protection; and (6) develop an adaptive management plan to mitigate any adverse effects on water quality caused by project-related activities. Article 401 of this license requires the licensee to implement or file, for Commission approval, plans required by the certification conditions.

¹⁷ 33 U.S.C. § 1341(a)(1).

¹⁸ *Id.* § 1341(d).

¹⁹ OSU's June 12, 2020 Filing (providing Oregon DEQ's 401 water quality certification).

COASTAL ZONE MANAGEMENT ACT

59. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification.²⁰

60. On June 26, 2020, the Oregon Department of Land Conservation Development (Oregon DLCD) issued OSU the final determination of consistency with the Oregon Coastal Management Program.²¹ The determination is conditioned on OSU complying with six general conditions and eight special, project-specific conditions, three of which are administrative in nature. The five special, project-specific conditions require OSU to provide as-built digital drawings of the alignment, depth, and location of the conduit and cable route and the following information prior to initiating construction: (1) a final revegetation and restoration plan; (2) information and data outlined in Oregon DLCD's May 1, 2020 information request to OSU, which should be incorporated into a revised Habitat Mitigation Plan; (3) a final Habitat Mitigation Plan; and (4) a final HDD plan with contingency measures. There is no conflict between the license and Oregon DLCD's consistency determination.

SECTION 4(e) FINDINGS AND CONDITIONS

61. Section 4(e) of the FPA²² provides that the Commission can issue a license for a project located within a federal reservation only if it finds that the license will not interfere or be inconsistent with the purpose for which such reservation was created or acquired. As noted above, the PacWave South Project would occupy submerged lands on the OCS.

62. Staff has reviewed the Outer Continental Shelf Lands Act,²³ which established that it is the "policy of the United States that [] the subsoil and seabed of the outer Continental Shelf appertain to the United States and are subject to its jurisdiction, control, and power

²⁰ 16 U.S.C. § 1456(c)(3)(A).

²¹ OSU's June 29, 2020 Filing (providing Oregon DLCD's consistency determination).

²² 16 U.S.C. § 797(e).

²³ 43 U.S.C. §§ 1331-1356.

of disposition as provided in [the Act].”²⁴ There is no evidence or allegation in this proceeding to indicate that licensing the PacWave South Project would interfere with the purposes of the OCS. Therefore, this license, as conditioned, will not interfere or be inconsistent with the purposes for which the federal reservation of the OCS was created.

63. FPA section 4(e) further requires that Commission licenses for projects located within federal reservations include conditions that the Secretary of the Department under whose supervision the reservation falls shall deem necessary for the adequate protection and utilization of such reservation. Development of the OCS is administered by Interior.

64. The Commission and Interior entered into a memorandum of understanding (MOU) that defines the coordination between the agencies for authorizing hydrokinetic projects on the OCS.²⁵ The MOU provides that “[t]he Commission will include in any license [] issued for such projects a requirement to comply with all terms and conditions of any OCS lease, easement, and right-of-way.”²⁶

65. BOEM issued its lease for the PacWave South Project on February 16, 2021, which is effective March 1, 2021 and includes 21 general conditions, which are largely administrative in nature. Additionally, the lease includes Addendum A, which describes the leased area, Addendum B, which specifies the amount of financial insurance OSU must provide to meet all lease obligations, and Addendum C, which includes lease-specific terms and conditions related to national security and military operations, archaeological requirements, and reporting and research site access requirements. The lease and its addendums require OSU to: (1) provide and maintain at all times a surety bond or other form of financial assurance; (2) remove or decommission all facility and clear the seafloor of all obstructions within two years following lease termination, in accordance with the Commission license and any subsequent Commission approval; (3) comply with certain requirements pertaining to national security and military operations; (4) ensure that vessel operators, employees, and contractors are briefed on marine trash and debris awareness and elimination; (5) consult with BOEM before conducting any seafloor disturbing activities not authorized by the Commission license; and (6) include BOEM on the distribution of all plans, status reports, monitoring reports, annual reports, incident reports, and other reports required under the Commission license for activities on the OCS.

²⁴ *Id.* § 1332(1).

²⁵ Memorandum of Understanding Between the U.S. Department of the Interior and Federal Energy Regulatory Commission, April 9, 2009.

²⁶ *Id.* at II.F.

66. BOEM's lease conditions, including the addendums to the lease, are set forth in Appendix B of this order and incorporated into the license by Ordering Paragraph (E).

SECTION 18 FISHWAY PRESCRIPTIONS

67. Section 18 of the FPA provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.²⁷

68. On September 26, 2019, the Secretary of the Interior requested that the Commission reserve authority to prescribe fishways. Consistent with Commission policy, Article 426 of this license reserves the Commission's authority to require fishways that may be prescribed by Interior for the PacWave South Project.

ESSENTIAL FISH HABITAT

69. Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Magnuson-Stevens Act.²⁸ Under section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for actions that would adversely affect EFH.²⁹ Under section 305(b)(4)(B) of the Magnuson-Stevens Act, an agency must, within 30 days after receiving recommended conservation measures from NMFS or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on EFH.³⁰

70. On September 17, 2019, Commission staff requested initiation of consultation under the Endangered Species Act (ESA) and section 305(b) of the Magnuson-Stevens Act. Commission staff informed NMFS of its conclusion that project construction and

²⁷ 16 U.S.C. § 811.

²⁸ *Id.* § 1855(b)(2).

²⁹ *Id.* § 1855(b)(4)(A).

³⁰ *Id.* § 1855(b)(4)(B). The measures recommended by the Secretary of Commerce are advisory, not prescriptive. However, if the federal agency does not agree with the recommendations of the Secretary of Commerce, the agency must explain its reasons for not following the recommendations.

operation would not adversely affect EFH designated for groundfish, coastal pelagic species, Pacific salmon, and highly migratory fish species because the anticipated direct or indirect physical, chemical, or biological alterations of the waters or substrate within the project site would be insignificant due to the project's small spatial scale.

71. On December 20, 2019, NMFS issued its BO and EFH response. NMFS adopted a subset of the terms and conditions in the incidental take statement of the BO as the EFH conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. NMFS concluded that construction and operation of the project would have adverse effects on designated EFH; however, these adverse effects would be avoided or minimized and EFH would be protected, provided that the EFH conservation recommendations are implemented.

72. As discussed below, this license includes all of the terms and conditions contained in the incidental take statement within NMFS's BO. Therefore, no further action under the Magnuson-Stevens Act is required.

THREATENED AND ENDANGERED SPECIES

73. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.³¹

74. In the BA, staff identified 41 federally listed species that may occur in the project area: marbled murrelet, western snowy plover, short-tailed albatross, northern spotted owl, leatherback sea turtle, green sea turtle, loggerhead sea turtle, olive ridley sea turtle – Pacific distinct population segment (DPS), killer whale – southern resident DPS, humpback whale – Central America DPS and Mexico DPS, blue whale, fin whale, sei whale, sperm whale, North Pacific right whale, western north Pacific gray whale DPS, eight chinook salmon evolutionarily significant units (ESUs), four coho salmon ESUs, nine steelhead DPSs, sockeye salmon – Snake River ESU, chum salmon Columbia River ESU, green sturgeon – southern DPS, and eulachon – southern DPS. In addition, critical habitat has been designated within the project area for the leatherback sea turtle, green sturgeon – southern DPS, and coho salmon – Oregon Coast ESU, and proposed for southern resident killer whale and humpback whale.

75. On September 17, 2019, Commission staff requested FWS concurrence that licensing the PacWave South Project is not likely to adversely affect the following four

³¹ 16 U.S.C. § 1536(a).

species: marbled murrelet, western snowy plover, northern spotted owl, and short-tailed albatross. FWS concurred with these findings by letter filed October 16, 2019.

76. On June 9, 2020, following issuance of the EA, FWS filed a letter stating that its concurrence with staff's determination was based on its understanding that OSU would adhere to agreed-upon measures to protect listed species described in the BA, including implementing a worker environmental awareness program and restricting project activities in the Driftwood parking lot to occur at least 164 feet from any potentially suitable western snowy plover habitat described in the BA. Although staff did not recommend these measures in the EA pursuant to sections 4(e) and 10(a) of the FPA,³² the license nevertheless includes these conditions pursuant to section 7 of the ESA. Article 415 requires OSU to revise the BBCS Plan to include these measures.

77. On September 17, 2019, Commission staff requested NMFS's concurrence that licensing the project is not likely to adversely affect the following 23 species or designated critical habitat for 3 species: nine steelhead DPSs, sockeye salmon – Snake River ESU, chum salmon – Columbia River ESU, blue whale, fin whale, humpback whale – Central America and Mexico DPSs, sei whale, southern resident killer whale, sperm whale, western North Pacific gray whale DPS, green sea turtle, olive Ridley sea turtle – Pacific DPS, loggerhead sea turtle, and leatherback sea turtle, and designated critical habitat for the green sturgeon – Southern DPS, coho salmon – Oregon Coast ESU, and leatherback sea turtle. Commission staff also concluded that the project would not destroy or adversely affect proposed critical habitat for the southern resident killer whale and humpback whale. Because Commission staff determined that licensing the project is likely to adversely affect eight Chinook salmon ESUs, four coho salmon ESUs, green sturgeon – Southern DPS, and eulachon – Southern DPS, Commission staff also requested formal consultation with NMFS on these 14 species.

78. On December 20, 2019, NMFS issued a BO concluding that the proposed action is not likely to jeopardize the 14 species on which staff requested formal consultation. NMFS also concurred with staff's not likely to adversely affect findings for the 23 species and the designated critical habitat for 3 species on which staff requested informal consultation. Further, NMFS concluded that the project would not adversely affect proposed critical habitat for the southern resident killer whale and humpback whale.

79. The BO includes an incidental take statement with four reasonable and prudent measures (as well as four terms and conditions to implement the measures) to minimize the take of eight Chinook salmon ESUs, four coho salmon ESUs, green sturgeon – Southern DPS, and eulachon – Southern DPS. The reasonable and prudent measures require that the licensee: (1) minimize behavior modification associated with underwater

³² EA at 327.

sound produced by the project; (2) minimize behavioral modification associated with EMF generated by the project; (3) minimize adverse effects of stormwater discharge associated with the UCMF and Driftwood sites; and (4) conduct monitoring sufficient to document the project does not exceed the parameters analyzed in the BO or the extent of take described in the incidental take statement, and report monitoring results to NMFS.

80. The terms and conditions, which implement the reasonable and prudent measures, require OSU to: (1) implement the Acoustic Monitoring and Mitigation Plan and associated mitigation measures as part of the Adaptive Management Framework; (2) implement the EMF Monitoring Plan and associated mitigation measure, as part of the Adaptive Management Framework; (3) develop a stormwater management plan, in consultation with NMFS, for the UCMF site and re-paving of the Driftwood parking lot; and (4) provide the following reports to NMFS: (a) annual reports on benthic sediments, organism interactions, acoustics, and EMF monitoring results; (b) annual reports on WEC installation and removal activities; (c) project completion report; and (d) emergency notification within 48 hours if certain monitoring criteria are exceeded. The terms and conditions are included in Appendix C and are made part of this license in Ordering Paragraph (F).

MARINE MAMMAL PROTECTION ACT

81. The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the “take” (defined under statute to include harassment) of marine mammals in U.S. waters and the high seas.³³ The MMPA includes a mechanism for allowing, upon request, the incidental taking of small numbers of marine mammals by U.S. citizens engaged in a specified activity within a specified geographical region.³⁴ Take authorization is granted through either a letter of authorization or conditions contained in an incidental harassment authorization.

82. On April 10, 2019, OSU requested a determination from NMFS that the project’s construction and operation was not expected to result in “take” under the MMPA. NMFS issued a letter on May 30, 2019, concluding that neither construction nor operation of the project is expected to result in take of marine mammals and that no incidental harassment authorization is therefore required.³⁵

³³ 16 U.S.C. §§ 1361-1423.

³⁴ *Id.* § 1371(a)(5). Any take of marine mammals listed as threatened or endangered under the ESA must be authorized under both the ESA and MMPA.

³⁵ *See* Appendix N of the APEA filed on May 31, 2019 by OSU as part of the Final License Application.

NATIONAL HISTORIC PRESERVATION ACT

83. Under section 106 of the National Historic Preservation Act (NHPA)³⁶ and its implementing regulations,³⁷ federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing on the National Register and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the SHPO to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

84. By letter dated December 17, 2019, the Oregon SHPO determined that no historic properties would be affected by the project.³⁸ In the EA, Commission staff analyzed the potential for the project to affect historic properties and, like the Oregon SHPO, concluded that no historic properties would be affected by the project.³⁹ Thus, no further action is required. Article 430 requires OSU to consult with the Oregon SHPO if any previously unidentified cultural resources are discovered during the license term.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

85. Section 10(j)(1) of the FPA⁴⁰ requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,⁴¹ to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

86. In response to the August 29, 2019 public notice that the project was ready for environmental analysis, Interior, on behalf of FWS, and Oregon DFW filed 20 different recommendations under section 10(j).⁴² Eight of the recommendations are outside the

³⁶ 54 U.S.C. § 306108.

³⁷ 36 C.F.R. Part 800.

³⁸ See Oregon SHPO Letter, dated December 17, 2019, filed by OSU on January 23, 2020.

³⁹ EA at 271.

⁴⁰ 16 U.S.C. § 803(j)(1).

⁴¹ *Id.* §§ 661 *et seq.*

⁴² Interior filed 11 section 10(j) recommendations on September 26, 2019, and

scope of section 10(j) of which one, Oregon DFW's recommendation to modify the BBCS Plan to include environmental awareness training for construction personnel, is discussed above in the Threatened and Endangered Species section, and the remaining seven are considered under the broad public interest standard of section 10(a)(1) of the FPA in the next section.

87. This license includes conditions consistent with 8 of the 12 recommendations that are within the scope of section 10(j). This includes recommendations to: (1) modify the BBCS Plan to include provisions for conducting surveys of suitable western snowy plover nesting habitat within 600 feet of the western edge of the Driftwood parking lot prior to any HDD during the nesting season and restricting project activities in the Driftwood parking lot to occur at least 164 feet from any potentially suitable western snowy plover habitat (Article 415); (2) implement the Benthic Sediments Monitoring Plan (Article 406); (3) implement the Organism Interaction Monitoring Plan (Article 407); (4) modify the Acoustics Monitoring Plan to reduce and address "self-noise" (Article 408); (5) implement the EMF Monitoring Plan (Article 409); (6) implement the Emergency Response and Recovery Plan (Article 427); (7) modify the Habitat Mitigation Plan to include provisions for developing a revegetation and restoration plan, using experts to assess and possibly survey kinnikinnick patches within the project area to identify suitable or occupied seaside hoary elfin butterfly habitat, defining "temporary impacts," and providing the total acreage of each habitat type in each habitat category considered for potential project impacts (Article 405); and (8) develop an HDD plan that limits the number of HDD bores to no more than three for installing the onshore transmission lines beneath wetland habitat (Article 402).

88. If the Commission believes that any section 10(j) recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.⁴³ If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of the FPA or other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources. Below, we discuss the recommendations that are within the scope of section 10(j) but are not included in the license.

89. Commission staff made an initial determination that four of the recommendations from FWS and Oregon DFW were inconsistent with the purpose and requirements of the FPA or other applicable laws. By letters issued April 29, 2020, staff advised FWS and

Oregon DFW filed 19 recommendations on September 30, 2019.

⁴³ 16 U.S.C. § 803(j)(2).

Oregon DFW of its preliminary determination and attempted to resolve the apparent inconsistencies. Oregon DFW and FWS filed response letters on June 5 and June 9, 2020, respectively, but did not request a meeting pursuant to section 10(j). In its response letter, Oregon DFW stated that based on additional information provided by OSU, no further actions are necessary regarding its recommendations for marine geological surveys and cable routing measures and to modify the BBCS Plan to include historical records and survey results. No resolution could be reached on the two remaining recommendations that are within the scope of 10(j), which are discussed below.

A. HDD Plan

90. OSU proposes to develop HDD contingency measures to minimize effects of inadvertent return. FWS recommends that OSU limit the number of HDD bore holes for onshore transmission lines beneath wetland habitat to no more than three. Oregon DFW recommends that OSU develop an HDD plan and provided 20 criteria to be included in the plan, including a recommendation that OSU use only a single, larger HDD bore hole to reduce the risk of inadvertent return and minimize adverse environmental effects.

91. In the EA,⁴⁴ staff recommended that OSU develop an HDD plan in consultation with a qualified HDD contractor, based on the Commission's HDD Plan Guidance⁴⁵ and Commission criteria for HDD crossings beneath wetlands,⁴⁶ and include all but one of Oregon DFW's recommended criteria. Staff did not recommend Oregon DFW's measure that OSU use only a single HDD bore hole. Staff explained that the current state of HDD with gas and oil pipeline installation⁴⁷ suggests that inadvertent return of drilling fluids has been more frequently associated with larger diameter borings, which require more reaming to enlarge the bore hole after the pilot boring hole is completed, than with smaller diameter borings. Therefore, staff concluded that Oregon DFW's recommendation to limit the installation of the terrestrial transmission lines to a single

⁴⁴ EA at 308-311.

⁴⁵ The Commission's guidance (FERC 2019. *Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans*) includes specific criteria for contingency planning.

⁴⁶ The Commission's guidance (FERC 2013. *Wetland and Waterbody Construction and Mitigation Procedures*) at section V.B.6.d requires a site-specific plan prior to beginning construction for all HDD crossings of wetlands and waterbodies.

⁴⁷ See Commission Staff's July 31, 2017 Letter filed in Docket No. CP15-93-000 providing third-party review of HDD activities associated with the Rover Pipeline Project (Accession No. 20170731-3034).

HDD bore hole is not technically necessary to reduce the likelihood of an inadvertent return. Therefore, consistent with FWS's recommendation, Article 402 of this license requires OSU to develop an HDD plan that includes a provision to limit the number of HDD bore holes to a maximum of three.

B. Estuarine Habitat Protection Measures

92. To minimize impacts on estuarine habitat, Oregon DFW recommends that OSU: (1) fabricate project components at existing, land-based facilities and ensure all coatings and paints fully cure prior to deployment into the estuary; and (2) restrict use of the estuary to commercial docks with dredged channels that are designed and permitted for dock use. FWS provided a nearly identical recommendation. OSU proposes to minimize storage and staging of WECs outside of existing dock, port, or other marine industrial facilities, and to ensure that any paints are fully cured before a buoy is deployed. In the EA, staff concluded that the concentrations of antifouling paints in the marine environment due the project are expected to be undetectable.⁴⁸ In addition, staff found that although Oregon DFW's and FWS's recommendations to minimize impacts on estuarine habitats would minimize effects on water quality and turbidity, the potential impacts on the estuary in Yaquina Bay are too attenuated from the Commission's authority over construction and operation of the project.⁴⁹ Therefore, this license does not include OSU's proposed measure or the recommendations from Oregon DFW and FWS regarding protection of estuarine habitat. However, this does not preclude OSU from implementing its proposed measure outside of the license.

93. For the above reasons, the license does not include Oregon DFW's recommendation for OSU to use a single HDD bore hole or Oregon DFW's and FWS's recommendations regarding the fabrication of project components and use of the estuary. In accordance with section 10(j)(2)(B) of the FPA, the other measures required by this license, as discussed above, will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by this project.

SECTION 10(a)(1) OF THE FPA

94. Section 10(a)(1) of the FPA requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection,

⁴⁸ EA at 93.

⁴⁹ EA at 317.

mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.⁵⁰

95. Below, we first discuss the Driftwood closure coordination measure recommended by Oregon PRD. Next, we discuss seven measures recommended by Oregon DFW and Interior pursuant to section 10(j) that, as noted above, are not within the scope of 10(j) because they are not specific fish and wildlife measures. These recommended measures include: (1) implementing the proposed Adaptive Management Framework; (2) preparing a report every 5 years that evaluates past and future project operations; (3) implementing the proposed Navigation Safety Risk Assessment; (4) developing a notification list of all parties that will receive the operations and maintenance reports; (5) modifying the proposed fish and wildlife emergency notification protocols; (6) implementing measures to control aquatic invasive species; and (7) preparing a decommissioning plan. The recommendations noted above are considered below under the broad public interest standard of section 10(a)(1) of the FPA.

A. Driftwood Beach State Recreation Site Closure Coordination

96. Oregon PRD recommends that OSU notify Oregon DOT at least 3 months prior to any closure of the Driftwood site that would last 90 days or longer. Oregon PRD also recommends that OSU coordinate with Oregon DOT to ensure adequate signage, informing motorists of any temporary closures, is posted in advance of the closure, and that OSU secure the proper permits from Oregon DOT to post signage within the highway right-of-way (Highway 101). In the EA, staff recommended that OSU notify Oregon DOT at least 3 months in advance of construction-related closures at Driftwood that would last 90 days in duration, or longer, and coordinate with Oregon DOT to ensure adequate signage is posted to inform motorists in advance of any closure.⁵¹ Consistent with the EA's recommendation, Article 429 of this license requires OSU to coordinate with and notify Oregon DOT before beginning construction of the project.

B. Adaptive Management

97. OSU proposes to use an Adaptive Management Framework within its environmental monitoring plans to inform implementation of monitoring and mitigation measures at the project's offshore facilities with emphasis on the WEC test site.

98. Pursuant to the Adaptive Management Framework, OSU, NMFS, FWS, BOEM and Oregon DFW, would participate on an Adaptive Management Committee. The Adaptive Management Committee would evaluate monitoring results and recommend

⁵⁰ 16 U.S.C. § 803(a)(1).

⁵¹ EA at 311.

changes to monitoring plans based upon OSU's proposed mitigation measures 1 (EMF), 2 (benthic), 3 (entanglement/collision), 4 (organism interaction) and 5 (sound). In addition, the Adaptive Management Committee would make decisions and recommendations on whether to adopt additional or modify existing mitigation measures to bring effects within the criteria identified in the existing measures. The Adaptive Management Framework also defines meeting protocols and dispute resolution procedures.

99. Oregon DFW and FWS recommend, and NMFS's incidental take statement requires, implementation of the Adaptive Management Framework. In the EA, staff determined that constructing and operating the project would likely only have minor adverse effects on environmental resources based on the scale and location of the project, its design features, and the proposed and staff recommended mitigation measures to minimize adverse effects.⁵² However, because the project would be the first multi-unit deployment of WEC devices in the United States, the EA found that monitoring and any additional mitigation that might be required would be best conducted or required under an adaptive management process.⁵³ Consistent with staff's recommendation in the EA, this license requires that the licensee implement the monitoring and mitigation plans and the adaptive management requirements of the Adaptive Management Framework (Article 411).

C. Five-Year Report

100. OSU proposes to file with the Commission a Five-Year Report that evaluates past and future project operations, beginning five years and six months after deployment of the first WEC at the project and recurring every 5 years thereafter. OSU would provide copies of the report to BOEM, NMFS, FWS, and Oregon DFW.

101. The Five-Year Report would consist of: (1) a review of all WEC deployments and associated project activities from the prior 5 years (not including the most recent six months), including a description of the types and number of WEC devices deployed, the frequency and duration of the WEC deployments, monitoring activities and results, and any adaptive management criteria or response actions that were applied or modified; and (2) a description of WEC deployment activities that are planned or that are reasonably foreseeable in the next 5 years including, to the extent known, the types and number of WEC devices likely to be deployed, and the likely duration of such deployments.

102. Oregon DFW and FWS recommend that OSU prepare and distribute a report every 5 years to the resource agencies. FWS further recommends that the reporting of monitoring

⁵² EA at 179.

⁵³ EA at 179.

activities and results, and any adaptive management criteria or response actions, include any and all activities relating to natural resources, including mitigation monitoring.

103. In the EA, staff concluded that the Five-Year Report would allow OSU and the resource agencies to discuss any adaptive management criteria or response actions that were applied or modified in the previous 5 years in accordance with any authorizations issued for the project, and would provide an opportunity for OSU to consult with the resource agencies on the long-term outlook that is planned for the project.⁵⁴ Consistent with the EA, this license requires that the licensee prepare and file the Five-Year Report with the Commission for informational purposes, and provide copies to BOEM, NMFS, FWS, and Oregon DFW (Article 424).

D. Navigation Safety Risk Assessment

104. OSU's Navigation Safety Risk Assessment, which was reviewed by the USCG, considered environmental factors, vessel fleet characteristics, routes, and waterway characteristics in the vicinity of the project, and acknowledged the potential for increased risk to navigation from the project; however, OSU's proposed measures to avoid, minimize, and mitigate impacts to navigation and commercial and recreational fishermen and crabbers substantially reduce that risk.

105. To protect commercial, charter, and recreational fishing and crabbing, OSU proposes provisions for: (1) marking project structures with appropriate navigation aids, as required by the USCG; (2) using "bird-friendly" low-intensity flashing lights; (3) installing subsurface floats at a sufficient depth to avoid potential vessel strike; (4) conducting outreach to inform mariners of project structures or activities to be avoided in the project area; and (5) working cooperatively with commercial, charter, and recreational fishing entities and interests to avoid and minimize potential space-use conflicts with commercial and recreational interests during project construction and operation.

106. Oregon DFW recommends that OSU implement the Navigation Safety Risk Assessment. Specifically, Oregon DFW recommends that surface marker buoys deployed at the project should be designed in accordance with USCG requirements and approved by the USCG, and that the markers should successfully and continuously mark the corners of the WEC deployment area for the life of the project (and mark other at-sea project components for the intended duration).

⁵⁴ EA at 180.

107. In the EA,⁵⁵ staff determined that, with implementation of the above provisions in the Navigation Safety Risk Assessment, the introduction of WECs and associated construction and service vessels in the project area would not significantly affect navigation safety and marine transportation. In addition, the EA⁵⁶ found that the overall impact on commercial and recreational fishing from the project is expected to be minor because of the small project footprint relative to the expanse of the surrounding open ocean. This license requires that the licensee implement the Navigation Safety Risk Assessment (Article 422).

E. Operations and Maintenance Plan

108. OSU proposes to implement an Operations and Maintenance Plan that includes provisions to conduct, weather permitting, quarterly inspections of all project facilities, provide routine maintenance as appropriate, and summarize inspection and maintenance activities in quarterly and annual reports. Oregon DFW recommends that OSU develop a notification list of all parties that will receive the operations and maintenance reports, and requests that it receive a copy of the annual reports. Consistent with OSU's proposal and Oregon DFW's recommendation, this license requires implementation of the Operations and Maintenance Plan. However, instead of developing a notification list, the licensee must file quarterly and annual reports with the Commission for informational purposes, and submit the quarterly and annual reports to the resource agencies on the Adaptive Management Committee that describe the monitoring and maintenance activities conducted at the project under this plan (Article 428).

F. Fish and Wildlife Emergency Notification

109. To minimize the impacts of a fish and wildlife emergency, OSU proposes to notify agencies with regulatory authority as soon as possible in the event fish or wildlife are killed, harmed, or endangered by project facilities or operations in a manner that was not anticipated,⁵⁷ and take action to promptly minimize the impacts, based on guidance from those agencies. OSU proposes to notify the agencies within 48 hours of any fish and wildlife emergency regarding the results of actions taken to minimize impacts to fish or wildlife and consult with the agencies regarding whether additional actions are necessary. FWS recommends that any occasion of a WEC moving outside of its operational

⁵⁵ EA at 277-278.

⁵⁶ EA at 276-277.

⁵⁷ In the EA, staff determined that constructing and operating the project would likely only have minor adverse effects (e.g. EMF, noise, collision and entanglement, etc.) on environmental resources.

boundary should constitute a fish or wildlife emergency triggering the notification procedures described above.

110. In the EA, staff concluded that OSU's proposal would give agencies the opportunity to visit the site within a reasonable amount of time to assess the effects and effectiveness of mitigation measures implemented during an emergency, and that such an assessment could prevent future emergencies from occurring.⁵⁸ Staff also determined that a WEC moving outside of its operational zone would only constitute a fish and wildlife emergency if the WEC were to break away from its mooring and move well beyond its operational zone.⁵⁹ In such a scenario, the free-floating device and trailing mooring lines would pose a threat to marine mammals (collision and entanglement) and other fish and wildlife (toxic fluid exposure) if the WEC were to ground into the nearshore bottom substrate or on the beach. Consistent with staff's recommendation in the EA, this license requires that the licensee implement the fish and wildlife emergency notification procedures) and include the Commission on any emergency notifications (Article 425).

G. Aquatic Invasive Species

111. OSU proposes to minimize the risk of transporting invasive species from other areas by informing vessel owners and WEC clients about aquatic invasive species management and practices to reduce the spread of invasive species, such as detection monitoring, incidental observations, and reporting. Vessels that would be under contract or chartered by OSU to work on the project would likely transit from other areas along the West Coast and potentially from areas outside of the U.S. to Yaquina Bay, creating opportunities to inadvertently introduce or spread aquatic invasive species. OSU proposes to require vessels that OSU charters or contracts with to work on the project to comply with all current federal and state laws and regulations regarding aquatic invasive species management.

112. OSU's proposal for managing aquatic invasive species is consistent with Oregon DFW's recommendation that OSU implement invasive species control for any vessel or device entering Yaquina Bay, and be applied to project vessels, WECs, and construction activities. In addition, OSU confirms that its proposal is consistent with state regulations that require if aquatic invasive species are found on or inside a watercraft, the owner or operator must provide Oregon DFW with an accurate history as to where the watercraft has been during the last 6 months, and include: (1) all waterbody(s) in which the watercraft has been moored or operated; (2) the length of time that the watercraft has

⁵⁸ EA at 161.

⁵⁹ EA at 161.

been out of water; (3) all locations where the watercraft has been stored; and (4) if previously inspected, the agency and individual which conducted the inspection.

113. In the EA, staff concluded that informing contracted or chartered vessel owners and WEC clients about aquatic invasive species management and practices to reduce the spread of invasive species in a manner consistent with current federal and state laws and regulations, such as detection monitoring, incidental observations, and reporting, would help minimize the risk of transporting invasive species from other areas and waterbodies.⁶⁰ Consistent with staff's recommendation in the EA, this license requires that the licensee implement its measures for managing aquatic invasive species to minimize their introduction or spread (Article 417).

H. Decommissioning Plan

114. OSU proposes to develop a decommissioning plan near the end of the license term that would include provisions for removing project facilities and restoring the site, and to implement the plan when the project is decommissioned. FWS recommends that the license require OSU to: (1) consult with FWS and other resource agencies at least three years prior to the expiration of the license term regarding removal and decommissioning, and (2) submit a draft plan for review and comment no later than two years before the expiration of any license term. Oregon DFW recommends that OSU develop a decommissioning plan with specific provisions in consultation with, and subject to approval by, Oregon DFW.

115. Because the proposed action under review is to authorize the construction, operation, and maintenance of the project, decommissioning is not relevant to the proposed action and the EA did not assess the environmental effects of decommissioning the project. Decommissioning can be accomplished in different ways depending on, among other things, the circumstances and conditions that exist at the time of decommissioning. For these reasons, the Commission does not speculate about possible decommissioning measures at the time of licensing, but rather waits until a licensee actually proposes to surrender a license and decommission a project. Therefore, this license does not require OSU to develop a decommissioning plan. If OSU ultimately proposes to surrender the project, the Commission would solicit comments on the proposal from the public and stakeholders.⁶¹

⁶⁰ EA at 129.

⁶¹ Where project works have been constructed on lands of the United States, a license surrender is conditioned on the licensee restoring the lands to a condition satisfactory to the Department having supervision over such lands. 18 C.F.R. § 6.2.

PROJECT BOUNDARY

116. Project boundaries enclose the project works that are to be licensed and include “those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources.”⁶²

117. As noted above, OSU’s proposed project boundary encompasses approximately 6,872.3 acres of onshore and offshore areas. The marine project boundary encompasses approximately 1,695 acres for the WEC test facility and 3,543.6 acres for the subsea transmission cables in the OCS, and 1,616.1 acres for the subsea transmission cables in Oregon state waters. The terrestrial project boundary encompasses about 17.5 acres.

118. In a September 23, 2020, email to Commission staff,⁶³ OSU stated the need to modify the proposed project boundary near the UCMF site specified in Exhibit G of its final license application. OSU noted that, based on new information from the HDD contractor, moving the boundary 30-40 feet at that location would reduce the risk associated with the HDD boring operation for installation of the transmission lines.

119. Moving the project boundary 30-40 feet would not change the analysis in Commission staff’s EA or conclusions pursuant to section 7 of the ESA, because the project boundary would still fall within the area analyzed in the EA. Moreover, moving the project boundary would not cause new landowners to be affected by the proposed action.

120. OSU’s proposed project boundary of 5,159.7 acres for the subsea transmission cable corridor includes a large amount of submerged land along and between the five subsea cables that do not serve any project purpose. The exhibit G map in the application depicts that at the seaward extent, the subsea cables are nearly 1 mile apart with all of the submerged land between them enclosed within the project boundary. Commission regulations require that the boundary around linear (continuous) project features such as access roads, transmission lines, and conduits be described by specified distances from center lines or offset lines of survey.⁶⁴ The width of such corridors must not exceed 200 feet unless good cause is shown for a greater width. Because OSU has not shown good cause for including the additional submerged land between the subsea transmission

⁶² 18 C.F.R. § 4.41(h)(2).

⁶³ See communication memo filed to the record on October 14, 2020.

⁶⁴ 18 C.F.R. § 4.41(h)(2)(ii).

cables, staff does not recommend OSU's expansive project boundary for the subsea cable corridor.

121. Article 204 of this license requires OSU to file revised Exhibit G drawings that include within the project boundary the additional land near the UCMF facility needed for the transmission line route, and exclude from the project boundary submerged lands along and within the subsea cable corridor that do not serve a project purpose.

ADMINISTRATIVE PROVISIONS

A. Annual Charges

122. The Commission collects annual charges from licensees for administration of the FPA and to compensate for the use and occupancy of federal lands.⁶⁵ Article 201 provides for the collection of funds for administration of the FPA and use of occupancy of federal lands.

123. The revised project boundary required by Article 204 of this license will decrease the amount of federal land occupied by the project. Article 205 requires OSU to file documentation on the amount of federal land within the revised project boundary.

B. Exhibit A

124. Commission regulations require that licensees file an Exhibit A that describes the project. The Exhibit A project description filed by OSU on May 31, 2019, does not include limiting the number of conduits to a maximum of three for installation of the terrestrial transmission lines as proposed by OSU in letter filed October 15, 2019. Therefore, Exhibit A is not approved. Article 202 requires OSU to file a revised Exhibit A.

C. Exhibit F Drawings

125. Commission regulations require that licensees file Exhibit F drawings that consist of general design drawings of the principal project works. The drawings must show all major project structures in sufficient detail to provide a full understanding of the project. The Exhibit F drawings filed by OSU on May 31, 2019, do not include limiting the number of conduits to a maximum of three for installation of the terrestrial transmission lines as proposed by OSU in letter filed October 15, 2019. Therefore, the Exhibit F drawings are not approved. Article 203 requires OSU to file revised Exhibit F drawings.

⁶⁵ 18 C.F.R. §§ 11.1(c)(5), 11.2.

D. Amortization Reserve

126. The Commission requires that for original licenses for major projects, non-municipal licensees must set up and maintain an amortization reserve account after the first 20 years of operation of the project under license. Article 206 requires the establishment of the account.

E. Project Financing

127. To ensure that there are sufficient funds available for project construction, operation, and maintenance, Article 207 requires OSU to file for Commission approval documentation of project financing for the construction, operation, and maintenance of the project at least 90 days before starting any construction associated with the project.

F. As-Built Exhibits

128. Where new construction or modifications to the project are involved, the Commission requires licensees to file revised exhibits of project features as-built. Article 208 provides for the filing of these exhibits.

G. Project Land Rights Progress Report

129. Standard Article 5 set forth in Form L-6 requires OSU to acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project, within 5 years. To monitor compliance with Article 5, Article 209 requires OSU to file no later than 4 years after license issuance, a report detailing its progress in acquiring title in fee or the necessary rights to all lands within the project boundary. The report must include specific documentation on the status of the rights that have been acquired as of the filing date of the progress report, and a plan and schedule to acquire all remaining rights prior to the 5-year deadline.

H. Use and Occupancy of Project Lands and Waters

130. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 431 allows OSU to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

I. L-Form Modification

131. Pursuant to Ordering Paragraph (F), this license is subject to the standard license articles set forth in Form L-6 (October 1975), entitled, "Terms and Conditions of License

for Unconstructed Major Project Affecting Navigable Waters and Lands of the United States,”⁶⁶ with a modification to Article 15 to include the Secretary of Commerce as a recommending entity.

J. Start of Construction

132. Article 301 requires OSU to commence construction of the project works within two years from the issuance date of the license and complete construction of all the supporting infrastructure of the project within five years from the issuance date of the license.

K. Review of Final Plans and Specifications

133. Article 302 requires OSU to provide the Commission’s Division of Dam Safety and Inspections (D2SI)-Portland Regional Office with final contract drawings and specifications, together with a supporting design report consistent with the Commission’s engineering guidelines, and the following plans: a quality control and inspection program; a temporary construction emergency action plan; and an Erosion and Sediment Control Plan.

134. Article 303 requires OSU to provide the Commission’s D2SI-Portland Regional Engineer with design drawings and letters of approval for any deep excavations at least 30 days before the start of any on-site construction authorized by the license.

135. To ensure the safety of the public at or near the project site, Article 304 requires the licensee to provide an annual Navigation Safety Report to the Commission’s D2SI-Portland Regional Engineer.

136. Article 305 requires OSU to file with the Commission and provide to the Commission’s D2SI-Portland Regional Office a revised Emergency Response and Recovery Plan to include: (1) a description of contingency measures to modify operations; (2) a plan for annual testing of emergency equipment; and (3) a plan for annual testing with response agencies.

137. Article 306 requires OSU to file an Annual Performance Report and Certification by December 31 of each year, with the Secretary of the Commission and submit two hard copies of the report and certification to the D2SI-Portland Regional Engineer.

STATE AND FEDERAL COMPREHENSIVE PLANS

138. Section 10(a)(2)(A) of the FPA requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving,

⁶⁶ Form L-6 is reprinted at 54 F.P.C. 1792 (1975).

developing, or conserving a waterway or waterways affected by the project.⁶⁷ Under section 10(a)(2)(A), federal and state agencies filed comprehensive plans that address various resources in Oregon. Of these, the staff identified and reviewed 50 comprehensive plans that are relevant to this project.⁶⁸ No inconsistencies were found.

CONSERVATION EFFORTS

139. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement programs of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities.⁶⁹ OSU plans to sell all of the power generated by the project to CLPUD for distribution in its system.

140. Given that the project is a testing facility and OSU will sell all of the project's power to CLPUD for distribution, OSU will have a limited ability to influence users of the electricity generated by the project. For these reasons, OSU will operate the project in a manner that is consistent with section 10(a)(2)(C) of the FPA.

SAFE MANAGEMENT, OPERATION, AND MAINTENANCE OF THE PROJECT

141. Staff reviewed OSU's preliminary plans to build the project as described in the license application. The project will be safe when constructed, operated, and maintained in accordance with the Commission's standards and provisions of this license.

NEED FOR POWER

142. The project will connect to the CLPUD system, which serves over 38,000 customers including residential, commercial, and industrial users (CLPUD 2014). CLPUD is the fourth largest utility in Oregon (ODOE 2012) and currently receives all its energy from the Bonneville Power Administration.

143. The project, when operating a technology being tested, will provide hydroelectric generation to meet part of Oregon's power requirements, resource diversity, and capacity

⁶⁷ 16 U.S.C. § 803(a)(2)(A). Comprehensive plans for this purpose are defined in section 2.19 of the Commission's Rules and Regulations. 18 C.F.R. § 2.19.

⁶⁸ The list of applicable plans can be found in section 5.4 of the EA for the project.

⁶⁹ 16 U.S.C. § 803(a)(2)(C).

needs. The project will provide electricity to the Oregon coast region, and will have a maximum installed capacity of 20 MW.

144. The power generated at PacWave South Project will vary, depending on the number and types of WECs installed and testing conditions. OSU will install up to 20 WECs, ranging from 150 kilowatts to 2 MW per WEC. The capacity and number of WECs at the project will be lower earlier in the license term and is expected to increase over the license term.

145. The North American Electric Reliability Corporation (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The PacWave South Project is located within the jurisdiction of the Northwest Power Pool (NWPP), a sub-region of the Western Electricity Coordinating Council, a region of NERC. According to NERC's 2019 forecast, average annual demand requirements for the NWPP sub-region are projected to grow at an average rate of 1.5 percent from 2019 through 2028. NERC projects that resource capacity margins (generating capacity in excess of demand) would range between 21.8 percent and 23.4 percent of firm peak demand during the 10-year forecast period, including estimated new capacity additions.

146. While the project will produce a limited amount of energy to serve the customers of CLPUD, the project has value in determining the potential of an emergent renewable energy industry segment that could bring additional renewable electricity to commercial and residential consumers in Oregon and other states.

PROJECT ECONOMICS

147. In determining whether to issue an original license for a hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,⁷⁰ the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

148. In applying this analysis to the PacWave South Project, three options have been considered: the no-action alternative, OSU's proposal, and the project as licensed herein. Under the no-action alternative, the project would not be built. Under OSU's proposal, the levelized annual cost of operating the PacWave South Project is \$11,350,000 or

⁷⁰ 72 FERC ¶ 61,027 (1995).

\$518.26 per megawatt-hour (MWh). The project will generate an estimated average of 21,900 MWh of energy annually. The annual value of alternative power under OSU's proposal will be \$3,665,000 or \$167.34/MWh. Therefore, in the first year of operation, the project costs \$7,685,000, or \$350.92/MWh, more than the likely alternative cost of power.

149. As licensed herein with mandatory conditions and staff recommended measures, the levelized annual cost of operating the project will be about \$11,357,000, or \$518.60/MWh. Based on the same estimated average generation of 21,900 MWh, the project will produce power valued at \$3,665,000 when multiplied by the alternative power cost of \$167.34/MWh. Therefore, in the first year of operation, project power will cost \$7,693,000, or \$351.27/MWh, more than the likely cost of alternative power.

150. Although staff's analysis shows that the project as licensed herein would cost more to operate than the estimated cost of alternative power, it is the applicant who must decide whether to accept this license and any financial risk that entails.

151. Although staff does not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is relatively insensitive to inflation compared to fossil fueled generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many public interest factors the Commission considers in determining whether or not, and under what conditions, to issue a license.

COMPREHENSIVE DEVELOPMENT

152. Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality.⁷¹ Any license issued must be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

153. The EA for the project contains background information, analysis of effects, and support for related license articles. The project will be safe if operated and maintained in accordance with the requirements of this license.

154. Based on staff's independent review and evaluation of the project, recommendations from the resource agencies and other stakeholders, and the no-action

⁷¹ 16 U.S.C. §§ 797(e), 803(a)(1).

alternative, as documented in the EA, the PacWave South Project, as licensed herein, is best adapted to a comprehensive plan for improving or developing the Pacific Ocean on the OCS and in Oregon State territorial waters.

155. This alternative was selected because: (1) issuance of a license will allow OSU to test WECs' dependability as a source of electrical energy for the region and thereby provide the public interest benefits of informing the development of ocean energy technologies and further efforts to diversify the nation's energy supply; (2) the up to 20 MWs of electric energy generated will come from a renewable resource, which will not contribute to atmospheric pollution; (3) the required environmental and public safety measures will adequately protect, mitigate, and enhance marine, fish, wildlife and cultural resources, recreation, navigation, and other uses of the Pacific Ocean along the Central Oregon Coast that could be affected by the project; and (4) the monitoring required for the project will provide an improved understanding of the environmental effects of wave energy projects, which will be instrumental in assessing the potential effects of future projects of this type and identifying measures to minimize adverse environmental effects.

LICENSE TERM

156. Section 6 of the FPA⁷² provides that original licenses for hydropower projects shall be issued for a period not to exceed 50 years. On October 19, 2017, the Commission established a 40-year default license term policy for original and new licenses.⁷³ OSU requested a 25-year license to allow it sufficient time to: (1) optimize WECs and arrays to increase their energy capture, improve their survivability and reliability, and decrease their levelized cost of energy; (2) refine deployment, recovery, operations, and maintenance procedures; (3) collect interconnection and grid synchronization data; and (4) gather information about potential environmental effects, and economic and social benefits.⁷⁴ Accordingly, a 25-year license term for the PacWave South Project is appropriate.

The Director orders:

(A) This license is issued to Oregon State University (licensee), for a period of 25 years, effective the first day of the month in which this order is issued, to construct,

⁷² 16 U.S.C. § 799.

⁷³ *Policy Statement on Establishing License Terms for Hydroelectric Projects*, 82 Fed. Reg. 49,501 (Oct. 26, 2017), 161 FERC ¶ 61,078 (2017).

⁷⁴ Moreover, a 25-year license term is consistent with the length of the lease issued by BOEM and the understanding of stakeholders during the licensing process.

operate, and maintain the PacWave South Hydrokinetic Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in these lands, described in the project description and the project boundary discussion of this order.

(2) Project works consisting of: (1) four offshore test berths containing a maximum of 20 wave energy conversion (WEC) devices with a maximum total installed capacity of 20 MW; (2) various anchoring systems including gravity-based anchors, suction anchors, plate anchors, and drag embedment anchors, constructed with steel, concrete, or a mixture of steel and concrete; (3) mooring systems (most likely single- or three-point moorings) consisting of chain, steel cables, or synthetic materials; (4) mooring infrastructure that includes surface buoys, subsurface floats, and chain, wire or rope, as catenary, tendon or bridle lines; (5) subsea connectors; (6) five buried subsea transmission cables, averaging 8.3 nautical miles long converging in five nearshore conduits; (7) five approximately 10-foot by 10-foot by 10-foot onshore cable landing vaults and beach manholes at Driftwood; (8) five or fifteen 0.4-mile-long buried terrestrial transmission lines (carried in 1-3 conduits) connecting to a Utility Connection and Monitoring Facility (UCMF); (9) five or fifteen 0.1-mile-long buried terrestrial transmission lines (carried in one to three conduits) to grid-interconnection at the Central Lincoln People's Utility District (CLPUD) system; (10) an access road to the UCMF property; and (11) appurtenant facilities.

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A, F, and G filed on May 31, 2019, as part of the application for license, do not conform to the Commission regulations and are not approved.

(D) This license is subject to the conditions submitted by the Oregon Department of Environmental Quality under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the conditions included in the lease issued by the Bureau of Ocean Energy Management, as those conditions are set forth in Appendix B to this order.

(F) This license is subject to the incidental take terms and conditions of the biological opinion submitted by the National Marine Fisheries Service under section 7 of the Endangered Species Act, as those conditions are set forth in Appendix C to this order.

(G) This license is also subject to the articles set forth in Form L-6 (October, 1975), entitled “Terms and Conditions of License for Unconstructed Major Project Affecting Navigable Waters and Lands of the United States,” (*see* 54 F.P.C. 1792 *et seq.*), as reproduced at the end of this order, and the following additional articles:

Article 201. *Administrative Annual Charges.* The licensee must pay the United States the following annual charges, as determined in accordance with the provisions of the Commission’s regulations in effect from time to time:

(a) effective as of the date by which the licensee is required to commence project construction, or as that date may be extended to reimburse the United States for the cost of administration of Part I of the FPA. The authorized installed capacity for that purpose is 20.0 megawatts; and

(b) to recompense the United States for the use, occupancy and enjoyment of the amount of its lands to be determined pursuant to Article 205.

Article 202. *Exhibit A Project Description.* Within 90 days of the effective date of this license, the licensee must file for Commission approval, a revised Exhibit A that includes a description of the number of conduits that will be used to install the onshore transmission line. The revised Exhibit A must comply with section 4.61(c) of the Commission’s regulations.

Article 203. *Exhibit F Drawings.* Within 90 days of the effective date of this license, the licensee must file for Commission approval, revised Exhibit F drawings that include the number of conduits that will be used to install the terrestrial transmission lines. Exhibit F must be identified as **Critical Energy Infrastructure Information (CEII) material under 18 C.F.R. §388.113**. The Exhibit F drawings must comply with sections 4.39 and 4.41(g) of the Commission’s regulations.

Article 204. *Exhibit G Drawings.* Within 90 days of the effective date of this license, the licensee must file for Commission approval, revised Exhibit G drawings that show the location of the project and principal features, and the project boundary enclosing all project works and other features, to include: (1) the land needed for the terrestrial transmission line installation near the utility connection and monitoring facility site; and (2) only those lands along and within the subsea cable transmission line corridor that are necessary for operation and maintenance of the project, not to exceed a width of 200 feet unless good cause is shown. The Exhibit G drawings must comply with sections 4.39 and 4.41(h) of the Commission’s regulations.

Article 205. Statement of Federal Lands. Within 90 days of the effective date of this license, the licensee must file documentation of the amount of federal land occupied by the project. The acreage must be consistent with the federal lands identified on the revised exhibit G drawings required by Article 204.

Article 206. Amortization Reserve. Pursuant to section 10(d) of the Federal Power Act, after the first 20 years of operation of the project under license, a specified reasonable rate of return upon the net investment in the project must be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One-half of the project surplus earnings, if any, accumulated after the first 20 years of operations under the license, in excess of the specified rate of return per annum on the net investment, must be set aside in a project amortization reserve account at the end of each fiscal year. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year after the first 20 years of operation under the license, the amount of that deficiency must be deducted from the amount of any surplus earnings subsequently accumulated, until absorbed. One-half of the remaining surplus earnings, if any, cumulatively computed, must be set aside in the project amortization reserve account. The amounts established in the project amortization reserved account must be maintained until further order of the Commission.

The annual specified reasonable rate of return must be the sum of the annual weighted costs of long-term debt, preferred stock, and common equity, as defined below. The annual weighted cost for each component of the reasonable rate of return is the product of its capital ratio and cost rate. The annual capital ratio for each component of the rate of return must be calculated based on an average of 13 monthly balances of amounts properly includable in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rates for long-term debt and preferred stock must be their respective weighted average costs for the year, and the cost of common equity must be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 207. Documentation of Project Financing. At least 90 days before starting construction, the licensee must file with the Commission for approval, the licensee's documentation for the project financing. The documentation must show that the licensee has acquired the funds, or commitment for funds, necessary to construct the project in accordance with this license. The documentation must include, at a minimum, financial statements, including a balance sheet, income statement, and a statement of actual or estimated cash flows over the license term which provide evidence that the licensee has sufficient assets, credit, and projected revenues to cover project construction, operation, and maintenance expenses, and any other estimated project liabilities and expenses. The financial statements must be prepared in accordance with generally

accepted accounting principles and signed by an independent certified public accountant. The licensee must not commence project construction associated with the project before the filing is approved.

Article 208. *As-built Exhibits.* Within 90 days of completion of construction of the facilities authorized by this license, the licensee must file for Commission approval, revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. If the licensee determines the previously approved exhibits reflect the as-built facilities and no revisions are necessary, the licensee must file a letter stating the approved exhibits reflect the as-built project facilities.

Article 209. *Project Land Rights Progress Report.* No later than 4 years after license issuance, the licensee must file a report with the Commission describing the status of acquiring title in fee or the rights for all the lands within the project boundary. The report must provide an overview map of each parcel and summary table identifying the licensee's rights over each parcel within the project boundary. The report must also include specific supporting documentation showing the status of the land rights on all parcels of land within the project boundary that: (1) have been acquired up to the date of filing of the report, including pertinent deeds, lease agreements, and/or bill of sale information that specifically verify the licensee's rights; and (2) the licensee's plan and schedule for acquiring all remaining project lands prior to the five-year deadline, including a history of actions taken, current owner information, the type of ownership to be acquired whether in fee or by easement, and the timeline for completing property acquisition.

Article 301. *Start of Construction.* The licensee must commence construction of the project works within two years from the issuance date of the license and must complete construction of all the supporting infrastructure of the project within five years from the issuance date of the license.

Article 302. *Contract Plans and Specifications.* At least 60 days prior to the start of any construction, the licensee must file final design documents with the Secretary of the Commission, preferably through eFiling. The licensee must also submit two hard copies of the documents to the Division of Dam Safety and Inspections (D2SI)-Portland Regional Engineer. The design documents must include: final plans and specifications, supporting design report, Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the D2SI-Portland Regional Engineer has reviewed and commented on the documents, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Article 303. *Deep Excavation Construction Drawings.* Should construction require deep excavations, the licensee must: (1) have a Professional Engineer who is

independent from the construction contractor, review and approve the design of contractor-designed deep excavations prior to the start of construction; and (2) ensure that construction of deep excavations is consistent with the approved design. At least 30 days before starting construction of any deep excavations, the licensee must file the approved deep excavation construction drawings and specifications, and the letters of approval with the Secretary of the Commission, preferably through eFiling. The licensee must also submit two hard copies of the documents to the Commission's Division of Dam Safety and Inspections-Portland Regional Engineer.

Article 304. Annual Navigation Safety Report. Following the start of operations and by December 31 of each year, the licensee must file a Navigation Safety Report with the Secretary of the Commission, preferably through eFiling. The licensee must also submit two hard copies of the report to the Division of Dam Safety and Inspections - Portland Regional Engineer. The report must describe: (a) the operation and maintenance of private aids to navigation during the previous year; and (b) any navigation safety incidents that occurred during the previous year.

Article 305. Emergency Response and Recovery Plan. At least 90 days before starting project operations, the licensee must file a revised Emergency Response and Recovery Plan (APEA, Appendix G) filed on May 31, 2019, with the additional provisions required by Oregon Department of Environmental Quality's water quality certification conditions 9 and 10 (Appendix A) and the following additional provisions:

- (1) description of contingency measures to modify operations;
- (2) a plan for annual testing of emergency equipment; and
- (3) a plan for annual coordination with response agencies.

The plan must be filed with the Secretary of the Commission, preferably through eFiling. The licensee must also submit two hard copies of the report to the Division of Dam Safety and Inspections (D2SI)-Portland Regional Engineer.

The licensee must prepare the plan after consultation with the U.S. Coast Guard, Bureau of Ocean Energy Management, Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and any other pertinent emergency response agency. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's rationale, based on project-specific reasons. The licensee may not begin project

operations until the D2SI-Portland Regional Engineer has reviewed and commented on the plan.

Article 306. Annual Performance Report and Certification. Following start of operations and by December 31 of each year, the licensee must file a Performance Report and Certification with the Secretary of the Commission, preferably through eFiling. The licensee must also submit two hard copies of the report and certification to the Division of Dam Safety and Inspections - Portland Regional Engineer. The performance report should include: the dates the Wave Energy Converters were installed and removed; the adequacy of project monitoring and operations; the findings of inspections; and a summary of the major maintenance and repairs performed during the previous year. The report should certify that the project features are being operated, monitored, inspected, and maintained in accordance with the license and approved plans.

Article 401. Commission Approval, Requirement to file Plans and Reports, Notification of Deviation, and Filing of Amendments.

(a) *Requirement to File Plans for Commission Approval*

Certain conditions of the Oregon Department of Environmental Quality's (Oregon DEQ's) water quality certification (Appendix A) and the National Marine Fisheries Service's (NMFS) incidental take statement terms and conditions (Appendix C) require the licensee to prepare plans for approval by Oregon DEQ or NMFS for implementation of specific measures without prior Commission approval. Each such plan must also be submitted to the Commission for approval and include an implementation schedule. These plans are listed in the following table.

NMFS Condition No.	Oregon DEQ Condition No.	Description	Commission Due Date
	8	Erosion and Sediment Control Plan	At least 90 days prior to the start of construction
	13	Adaptive Management Plan	Prior to commencing project operation
4a		Stormwater Management Plan	At least 90 days prior to the start of construction.

The licensee must submit to the Commission documentation of its consultation,

copies of comments and recommendations made in connection with each plan, a description of how each plan accommodates the comments and recommendations, and documentation that it has received approval from Oregon DEQ and NMFS as applicable. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information. The Commission reserves the right to make changes to any plan submitted. Upon Commission approval, each plan becomes a requirement of the license, and the licensee must implement the plan, including any changes required by the Commission.

(b) Requirement to File Reports

Certain NMFS incidental take statement terms and conditions (Appendix C) require the licensee to file reports with other entities. These reports document compliance with requirements of this license and may have a bearing on future actions. Each report must also be submitted to the Commission. These reports are listed in the following table.

NMFS Condition No.	Description	Commission Due Date
4(a)	Annual report on Benthic Sediments Monitoring	Following installation of the first WEC and by December 31 of each year.
4(a)	Annual report on Organism Interaction Monitoring	Following installation of the first WEC and by December 31 of each year.
4(a)	Annual Report on Acoustic Monitoring	Following installation of the first WEC and by December 31 of each year.
4(a)	Annual Report on Electromagnetic Frequency Monitoring	Yearly on December 31 beginning the year in which the first WEC is installed.
4(b)	Annual Report on WEC Installation and Removal Activities	Following installation of the first WEC and by December 31 of each

		year.
4(c)	Report on Project Construction Completion that describes HDD Installation of the Terrestrial Transmission Lines, and HDD and Jet Plow Installation of the Subsea Transmission Cables	Following installation of the subsea cables and terrestrial transmission lines and by December 31.

With each report filed with the Commission, the licensee must include documentation of any consultation and provide copies of any comments received, as well as its response to each comment. The Commission reserves the right to require changes to project operations or facilities based on the information contained in the report and any other available information.

(c) Requirement to File Amendment Applications

Certain NMFS incidental take terms and conditions contemplate unspecified long-term changes to project operations or facilities for the purpose of mitigating environmental effects. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. In any amendment request, the licensee must identify related project requirements and request corresponding amendments or extensions of time, as needed, to maintain consistency among requirements.

Article 402. Horizontal Directional Drilling Plan. At least 90 days prior to the start of project construction, the licensee must file for Commission approval a horizontal directional drilling (HDD) plan that is consistent with the criteria outlined in the Commission's 2019 Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans and the Commission's guidance for HDD crossings beneath wetlands outlined in its 2013 Wetland and Waterbody Construction and Mitigation Procedures. The plan must also include, at a minimum, the following provisions:

(1) a description of how OSU would minimize risks of inadvertent return in the marine environment;

(2) identification of the HDD locations (both marine and terrestrial), maps, coordinates and spatial dimensions;

(3) protocols for locating the depth of the water table and an assessment of the risks of avoiding or drilling through the water table;

(4) a description of the HDD laydown area location at Driftwood, manhole

spacing (e.g. 20 feet apart), and protocols for drill site preparation and set up;

(5) a description of the HDD target minimum depth beneath dunes, beach, wetland and stream habitat, diameter of the HDD hole, and approximate dimensions (distance, width, depth) of the HDD subsea cable and transmission line corridors;

(6) a description of the geotechnical analysis conducted by OSU to ensure successful HDD and reduce the risk of inadvertent return to the maximum extent (e.g. identify vulnerabilities or hazards and how they will be avoided); and

(7) a description of the HDD methods (e.g. conventional HDD or direct pipe installation - drill and leave);

(8) a description of the HDD scope (e.g. number of marine HDD bores and no more than 3 terrestrial HDD bores);

(9) the schedule and timing of HDD installation (e.g. one month per marine borehole, 6-8 months in total);

(10) construction best operating procedures designed to minimize the potential for inadvertent return of drilling fluids;

(11) a description of anticipated support services such as marine vessels or divers;

(12) a description of inspection procedures to facilitate the timely detection of inadvertent return or leaks, if any;

(13) protocols for monitoring (e.g. drill mud pressure and volume), containment, response recovery and clean-up of inadvertent return, and notification procedures, including notification of Oregon Department of Fish and Wildlife;

(14) protocols for storing emergency response equipment on-site during HDD operations;

(15) descriptions of alternate or contingency crossing methods should the primary method fail as a successful cable and transmission line installation location;

(16) a map of alternative vehicle beach access points and description of consultation procedures with Oregon Parks and Recreation Department to inform the public;

(17) a map of environmentally sensitive sites (e.g. western snowy plover potential habitat, seaside hoary elfin potential habitat, streams, wetlands, dune habitat);

(18) locations for spoil piles on previously disturbed, paved, areas selected to avoid impacts on habitat, approved by the Oregon Department of Environmental Quality,

Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service;

(19) a list of additives used in drilling fluid and procedures and approved disposal sites for spoils and drilling mud; and

(20) a description of demobilization procedures for HDD machinery and equipment.

The plan must be developed in consultation with the Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The licensee must include with the plan copies of comments and recommendations made on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information. The licensee must allow a minimum of 30 days for the consulted agencies to comment and make recommendations before filing the plan with the Commission.

The Commission reserves the right to require changes to the plan. The revised plan must not be implemented until the licensee is notified that it has been approved by the Commission. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 403. Storm Water Management Plan. At least 90 days prior to the start of project construction, the licensee must file for Commission approval a storm water management plan. The plan must include, at a minimum, the provisions set forth in NMFS's incidental take statement term and condition 3.

The plan must be developed in consultation with the National Marine Fisheries Service, Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, and U.S. Fish and Wildlife Service. The licensee must include with the plan copies of comments and recommendations made on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the consulted agencies to comment and make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan must not be implemented until the licensee is notified that it has been approved by the Commission. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 404. Erosion and Sediment Control Plan. At least 90 days prior to the start of project construction, the licensee must file for Commission approval an erosion and sediment control plan. The plan must include, at a minimum, the provisions specified in Oregon Department of Environmental Quality's water quality certification condition 8, and the following additional provisions:

- (1) a detailed description of actual site conditions (i.e., soil, groundwater, and vegetation conditions, etc.);
- (2) site-specific measures to control erosion, to prevent slope instability, and to minimize the quantity of sediment resulting from project construction;
- (3) a detailed description of the location for storage or deposition of removed overburden and spoil; and
- (4) an implementation schedule.

The plan must be developed in consultation with the Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The licensee must include with the plan copies of comments and recommendations made on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the consulted agencies to comment and make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan must not be implemented until the licensee is notified that it has been approved by the Commission. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 405. Habitat Mitigation Plan. At least 90 days prior to the start of project construction, the licensee must file for Commission approval a revised Habitat Mitigation Plan filed on June 5, 2019 (APEA, Appendix K), to include the following modifications to the revegetation plan component:

1. Methods and a schedule for implementation, monitoring, and reporting;
2. Completion timeframes, success criteria, and secondary mitigation measures including reseeded, soil amendment, supplemental irrigation or other water management to ensure establishment of native vegetation;

3. The information and data requested in enclosure B of Oregon Department of Land Conservation and Development's May 1, 2020, Coastal Zone Management Act consistency determination;
4. Methods to address soil compaction and erosion control, and to restore natural drainage patterns;
5. Short-term soil stabilization measures, if necessary;
6. Noxious weed control measures and monitoring of noxious weed control and revegetation efforts for three years post construction, two times per year (spring and fall) and every third year thereafter to determine success;
7. Mitigation areas, if necessary, with mitigation goals to be met by revegetation;
8. Plans to seed and plant with native vegetation to maximize benefits to fish and wildlife;
9. The licensee's proposed PM&E measures described in the Habitat Management Plan, filed on May 31, 2019.;
10. Survey requirements and methods for the elfin butterfly and its larval host species (kinnikinnick), and potential mitigation measures to be implemented based on the survey results to ensure that kinnikinnick plants are avoided;
11. Measures to avoid or minimize the disturbance to kinnikinnick plants (a larval host species for the seaside hoary elfin butterfly) within the project footprint; where disturbance is unavoidable, conduct species-specific elfin butterfly surveys, as needed, to determine the extent of occupied habitat and need for mitigation to include:
 - a. using native species, including kinnikinnick where appropriate, to establish forest habitat in adjacent areas along the north side of the UCMF access road (NW Wenger Lane);
 - b. transplanting or relocating kinnikinnick plants prior to construction;
 - c. replanting kinnikinnick plants after construction; and
 - d. removing encroaching disturbed/shore pine forest to enhance kinnikinnick growth and survival.

The revegetation plan component must be developed after consultation with the U.S. Fish and Wildlife Service, Oregon Department of Environmental Quality, Oregon Department of Land Conservation and Development, and Oregon Department of Fish and

Wildlife. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project specific information.

The Commission reserves the right to require changes to the plan. The plan must not be implemented until the licensee is notified that it has been approved by the Commission. Upon Commission approval, the licensees must implement the plan including any changes required by the Commission.

Article 406. Benthic Sediments Monitoring Plan and Mitigation Measure 2. Prior to the start of any project construction activities, the licensee must implement the Benthic Sediments Monitoring Plan and associated Mitigation Measure 2 filed on May 31, 2019 (APEA, Appendices H and I).

The vessel anchoring plan component of Mitigation Measure 2 must be developed in consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The licensee must include with the vessel anchoring plan copies of comments and recommendations made on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the consulted agencies to comment and make recommendations before filing the vessel anchoring plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information. The Commission reserves the right to require changes to the vessel anchoring plan. The vessel anchoring plan must not be implemented until the licensee is notified that it has been approved by the Commission. Upon Commission approval, the licensee must implement the vessel anchoring plan, including any changes required by the Commission.

The Benthic Sediments Monitoring Plan may not be modified without prior Commission approval. Any proposed modifications to the plan must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the plan made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified plan.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modified plan, including any changes required by the Commission.

Article 407. *Organism Interaction Monitoring Plan.* Prior to the start of project operation, the licensee must implement the Organism Interaction Monitoring Plan filed on May 31, 2019 (APEA, Appendix H).

This plan may not be modified without prior Commission approval. Any proposed modifications to the plan must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the plan made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified plan.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modified plan, including any changes required by the Commission.

Article 408. *Acoustics Monitoring Plan.* Prior to the start of project construction, the licensee must implement the Acoustics Monitoring Plan filed on May 31, 2019 (APEA, Appendices H), with the following modifications:

The annual reports required by section 6 of the Acoustics Monitoring Plan must include: (1) an analysis of whether the acoustic measurements during the reporting year were sufficient to meet the plan's objectives; and (2) recommendations to modify the plan during the next sampling period, if necessary. The annual reports must be prepared in consultation with the Bureau of Ocean Energy Management, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Oregon Department of Fish and Wildlife.

This plan may not be modified without prior Commission approval. Any proposed modifications to the plan must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the plan made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified plan.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modified plan, including any changes required by the Commission.

Article 409. *Electromagnetic Field Monitoring Plan and Mitigation Measure 1.* Prior to project construction activities, the licensee must implement the Electromagnetic Field Monitoring Plan and associated Mitigation Measure 1 filed on May 31, 2019 (APEA, Appendices H and I).

This plan and measure may not be modified without prior Commission approval. Any proposed modifications to the plan must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the plan made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified plan.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 410. *Mitigation for Marine Species Entanglement or Collision.* Prior to project construction activities, the licensee must implement the *Mitigation for Marine Species Entanglement or Collision* (Mitigation Measure 3) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 411. Adaptive Management Framework. Prior to the start of project operation, the licensee must implement the *Adaptive Management Framework* filed on May 31, 2019 (APEA, Appendix J), to the extent that it applies to the monitoring plans and mitigation measures required above in license Articles 406 to 410.

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 412. Mitigation for Dynamic Positioning Vessel Activity on Marine Resources. Prior to the start of project construction, the licensee must implement the *Mitigation for Dynamic Positioning Vessel Activity on Marine Resources* (Mitigation Measure 6) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, and National Marine Fisheries Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, and National Marine Fisheries Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 413. Mitigation for Sound from WECs and Mooring Systems. Prior to the start of project construction, the licensee must implement the *Mitigation for Sound from WECs and Mooring Systems* (Mitigation Measure 7) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by the Bureau of Ocean Energy Management Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 414. *Mitigation for Pinniped Haulout on WECs and Project Structures.* Prior to the start of project operation, the licensee must implement the *Mitigation for Pinniped Haulout on WECs and Project Structures* (Mitigation Measure 8) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Bureau of Ocean Energy Management, National Marine Fisheries Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, National Marine Fisheries Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 415. *Bird and Bat Conservation Strategy Plan.* At least 90 days before the start of project construction, the licensee must file for Commission approval a revised Bird and Bat Conservation Strategy Plan filed on May 31, 2019 (APEA, Appendix B), that includes the following additional provisions:

(1) Consult with Oregon Parks and Recreation Department (Oregon PRD), U.S. Fish and Wildlife Service (FWS), and Oregon Department of Fish and Wildlife to define suitable nesting habitat for the western snowy plover in the project area;

(2) Implement a worker environmental awareness program to train construction personnel about federally listed species and their habitats;

(3) If HDD commences during the western snowy plover nesting season (March 15 to September 15), prior to operation of the HDD, surveys of suitable nesting habitat must be conducted by a biological monitor(s), approved by FWS, within 600 feet of the western edge of the parking lot at the Driftwood Beach State Recreation Site;

(4) Consult with Oregon PRD regarding the placement of any necessary structures (e.g., noise barriers) and signage placed within Driftwood Beach State Recreation Site to protect the western snowy plover;

(5) During the western snowy plover nesting season (March 15 to September 15), all project activities and project equipment associated with the onshore cable landing must be limited to the parking lot at the Driftwood Beach State Recreation Site and not occur within a protective buffer zone (defined as at least 164 feet from any potentially suitable nesting habitat or foraging habitat for the western snowy plover); if not feasible, surveys for nesting plovers must be conducted by a qualified biologist approved by FWS;

(6) If surveys document western snowy plovers nesting within the buffer zone, then no new activities that produce noise may commence until the fate of the nest(s) has been determined;

(7) Requests for project activities to occur along the western edge of the parking lot within the buffer zone at the Driftwood Beach State Recreation Site must be submitted to FWS for approval on a case-by-case basis.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensees are notified by the Commission that the plan is approved. Upon Commission approval, the licensees must implement the plan, including any changes required by the Commission.

Article 416. Mitigation for Construction Impacts to Benthic Habitat. Prior to the start of project construction, the licensee must implement the *Mitigation for Impacts to Benthic Habitat* (Mitigation Measure 11) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 417. *Mitigation for Water Resources.* Prior to the start of project construction, the licensee must implement the *Mitigation for Water Resources* (Mitigation Measure 12) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 418. *Mitigation for Vessel Traffic.* Prior to the start of project construction, the licensee must implement the *Mitigation for Vessel Traffic* (Mitigation Measure 13) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 419. *Mitigation for Geologic and Soil Resources.* Prior to the start of project construction, the licensee must implement the *Mitigation for Geologic and Soil Resources* (Mitigation Measure 14) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 420. *Mitigation for Aquatic Resources and Threatened and Endangered Species.* Prior to the start of project construction, the licensee must implement the *Mitigation for Aquatic Resources and Threatened and Endangered Species* (Mitigation Measure 15) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 421. *Mitigation for Terrestrial Resources.* Prior to the start of project construction, the licensee must implement the *Mitigation for Terrestrial Resources* (Mitigation Measure 16) filed on May 31, 2019 (APEA, Appendix I).

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the

measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 422. *Navigation Safety Risk Assessment and Mitigation for Recreation, Ocean Use, and Land Use.* Prior to project construction activities, the licensee must implement the *Navigation Safety Risk Assessment* (APEA, Appendix E) and *Mitigation for Recreation, Ocean Use, and Land Use* (APEA, Appendix I, Mitigation Measure 17) filed on May 31, 2019.

The assessment or measure may not be modified without prior Commission approval. Any proposed modifications to the assessment or measure must be approved by the U.S. Coast Guard and Oregon Parks and Recreation Department before submittal to the Commission for approval. Any such submittal must include documentation of consultation with the U.S. Coast Guard and Oregon Parks and Recreation Department. The submittal must also include copies of comments and recommendations on the proposed modifications to the assessment or measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified assessment or measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 423. *Driftwood Interpretive Display Plan.* Within one year of license issuance, the licensee must file a plan, for Commission approval, to design (adhering to the Commission's Part 8 requirements) and install an interpretive display at Driftwood Beach State Recreation Site that would inform and educate the public about the project. The plan must be developed in consultation with Oregon Parks and Recreation Department (Oregon PRD). The licensee must include with the plan copies of comments and recommendations made on the completed plan after it has been prepared and provided to the Oregon PRD, and specific descriptions of how the agency comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the consulted agencies to comment and make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan must not be implemented until the licensee is notified that it has been approved by the Commission. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 424. Five-Year Report. Beginning five years and six months after deployment of the first WEC device at the project, and recurring every five years thereafter, the licensee must file with the Commission a report that describes: (1) all WEC deployments and associated project activities from the prior five years (not including the most recent six months), including a description of the types and number of WEC devices deployed, frequency and duration of WEC deployments, monitoring activities and results, and any adaptive management criteria or response actions that were applied or modified; and (2) a description of WEC deployment activities that are planned or that are reasonably foreseeable in the next five years including, to the extent known, the types and number of WEC devices likely to be deployed, and the likely duration of such deployments. Copies of the report must also be provided to the Bureau of Ocean Energy Management, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Oregon Department of Fish and Wildlife.

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 425. Fish or Wildlife Emergency Notification. In the event of an emergency in which fish or wildlife are being killed, harmed or endangered by project facilities or operations in a manner that was not anticipated, the licensee must notify the Commission and agencies with regulatory authority (Bureau of Ocean Energy Management, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Oregon Department of Fish and Wildlife) as soon as possible and take action to promptly minimize the impacts of the emergency, including implementing any guidance pursuant to agency legal authorities. Within 48 hours after the emergency, the licensee must notify the agencies and the Commission regarding the results of actions taken to minimize impacts to fish or wildlife and must consult with the agencies regarding whether additional actions are necessary. These notification requirements do not prevent the licensee from taking immediate actions to protect life and property, stabilize an incident, or minimize potential damage.

This measure may not be modified without prior Commission approval. Any proposed modifications to the measure must be approved by Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the measure made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified measure.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modifications, including any changes required by the Commission.

Article 426. *Reservation of Authority to Prescribe Fishways.* Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 427. *Emergency Response and Recovery Plan.* Prior to the start of project construction, the licensee must implement the Emergency Response and Recovery Plan filed on May 31, 2019 (APEA, Appendix G), with the additional provisions required by Oregon Department of Environmental Quality's water quality certification conditions 9 and 10 (Appendix A).

This plan may not be modified without prior Commission approval. Any proposed modifications to the plan must be approved by Bureau of Ocean Energy Management, Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the plan made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified plan.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modified plan, including any changes required by the Commission.

Article 428. Operations and Maintenance Plan. Prior to the start of project operation, the licensee must implement the Operations and Maintenance Plan filed on May 31, 2019 (APEA, Appendix F), with the following modification:

The quarterly and annual reports required by the Operations and Maintenance Plan must be filed with the Commission and submitted to the Bureau of Ocean Energy Management, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Oregon Department of Fish and Wildlife.

This plan may not be modified without prior Commission approval. Any proposed modifications to the plan must be approved by Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service before submittal to the Commission for approval. Any such submittal must include documentation of consultation with Bureau of Ocean Energy Management, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The submittal must also include copies of comments and recommendations on the proposed modifications to the plan made by these consulted entities, and specific descriptions of how the entities' comments are accommodated by the modified plan.

The Commission reserves the right to require changes to the licensee's modifications. Upon Commission approval, the licensee must implement the modified plan, including any changes required by the Commission.

Article 429. Coordination with Oregon Department of Transportation. At least 3 months prior to any project construction-related closures of Driftwood Beach State Recreation Site (Driftwood) that are scheduled to be 90 days in duration or longer, the licensee must coordinate with Oregon Department of Transportation to ensure adequate signage informing motorists of any temporary closures is posted in advance of the closure, and file with the Commission documentation of coordination with Oregon Department of Transportation prior to closure of Driftwood.

Article 430. Protection of Undiscovered Cultural Resources. If the licensee discovers previously undiscovered cultural resources during the course of constructing, maintaining, or operating project works or other facilities at the project, the licensee must stop all land-clearing and land-disturbing activities in the vicinity of the resource and consult with the Oregon State Historic Preservation Office (SHPO) to determine the need for any cultural resource studies or measures. If no studies or measures are needed, the licensee must file with the Commission documentation of its consultation with the Oregon SHPO.

If a discovered cultural resource is determined to be eligible for the National Register of Historic Places (National Register), the licensee must file for Commission approval a Historic Properties Management Plan (HPMP) prepared by a qualified cultural

resources specialist after consultation with the Oregon SHPO. In developing the HPMP, the licensee must use the Advisory Council on Historic Preservation and the Federal Energy Regulatory Commission's *Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects*, dated May 20, 2002. The HPMP must include the following items: (1) a description of each discovered property, indicating whether it is listed in or eligible to be listed in the National Register; (2) a description of the potential effects on each discovered property; (3) proposed measures for avoiding or mitigating adverse effects; (4) documentation of consultation; and (5) a schedule for implementing mitigation and conducting additional studies. The Commission reserves the right to require changes to the HPMP.

The licensee must not resume marine or land-disturbing activities in the vicinity of a cultural resource discovered during construction, installation, maintenance, operation, or removal of project facilities, until informed by the Commission that the requirements of this article have been fulfilled.

Article 431. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance, for any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee must require multiple use and occupancy of facilities for access to project lands

or waters. The licensee must also ensure, to the satisfaction of the Commission's authorized representative that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69 kilovolt or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee must file with the Commission a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land

conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project lands or waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation,

public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article must not apply to any part of the public lands and reservations of the United States included within the project boundary.

(H) The licensee must serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

(I) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 825*l*, and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing constitutes acceptance of this order.

for
Terry L. Turpin
Director
Office of Energy Projects

FEDERAL ENERGY REGULATORY COMMISSION

**TERMS AND CONDITIONS OF LICENSE FOR UNCONSTRUCTED
MAJOR PROJECT AFFECTING NAVIGABLE WATERS
AND LANDS OF THE UNITED STATES**

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar

as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any features or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written

approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the state and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character and locations of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of

funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal Agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior, Secretary of Commerce, or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs,

waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be

removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. Timber on lands of the United States cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for, and the resulting slash and debris disposed of, in accordance with the requirements of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber shall be at current stumpage rates, and payment for young growth timber below merchantable size shall be at current damage appraisal values. However, the agency of the United States having jurisdiction may sell or dispose

of the merchantable timber to others than the Licensee: Provided, That timber so sold or disposed of shall be cut and removed from the area prior to, or without undue interference with, clearing operations of the Licensee and in coordination with the Licensee's project construction schedules. Such sale or disposal to others shall not relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from project lands.

Article 27. The Licensee shall do everything reasonably within its power, and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned, to prevent, to make advance preparations for suppression of, and to suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and shall pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the works appurtenant or accessory thereto under the license.

Article 28. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 29. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 30. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other routes or means of transportation and communication as are not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 31. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 32. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license, and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 33. The Licensee shall make use of the Commission's guidelines and other recognized guidelines for treatment of transmission line rights-of-way, and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 34. The Licensee shall cooperate with the United States in the disposal by the United States, under the Act of July 31, 1947, 61 Stat. 681, as amended (30 U.S.C. sec. 601, et seq.), of mineral and vegetative materials from lands of the United States occupied by the project or any part thereof: Provided, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: Provided further, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission after notice and opportunity for hearing.

Article 35. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity

for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 36. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 37. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

Appendix A
Filed June 12, 2020

Water Quality Certificate Conditions issued on June 11, 2020, by the Oregon Department of Environmental Quality (Oregon DEQ) under Section 401 of the Clean Water Act, for the PacWave South Hydrokinetic Project No. 14616

General

Upon the Federal Energy Regulatory Commission (FERC) issuance of a license for the PacWave South Hydrokinetic Project (Project), the Oregon State University (OSU or “the Applicant”) must comply with the following § 401 Certification conditions (401 WQC):

1) Project Operation

Throughout the life of the FERC license, OSU must operate the Project as specifically described in Exhibit B of its Final License Application to FERC (dated May 31, 2019) (FERC application materials). In accordance with applicable law, OSU shall notify DEQ if FERC authorizes modification to these operations so as to allow DEQ to determine whether such changes may result in any discharge to state waters, and if so, whether such changes may affect compliance with applicable water quality standards.

2) Responsible Parties

This 401 WQC applies to the Applicant. The Applicant is responsible for the work of its contractors and sub-contractors, as well as any other entity that performs work related to this WQC.

3) Work Authorized

Work authorized by this 401 WQC is limited to the work described in FERC application materials as well as in the Application or Pre-Construction Notification submitted to the U.S. Army Corps of Engineers (USACE) and additional application materials (hereafter “the Section 404 permit application materials”), unless otherwise authorized by DEQ. If the project is operated in a manner not consistent with the project description contained in the FERC and Section 404 permit application materials, the Applicant is not in compliance with this 401 WQC and may be subject to enforcement. To the extent that there are any conflicts between the terms and conditions in this 401 WQC and how activities, obligations, and processes are described in FERC and Section 404 application materials, the terms and conditions in this 401 WQC, as interpreted by DEQ, shall control.

4) Copy of 401 WQC

A copy of this 401 WQC must be kept on the job site and readily available for reference by Applicant and its contractors, as well as by DEQ, USACE, National Marine Fisheries Service (NMFS), Oregon Department of Fish and Wildlife (ODFW), and other appropriate state and local government officials.

5) Modification to 401 WQC

Without limiting DEQ's discretion to take other actions in accordance with 33 USC 1341, DEQ may modify the Certification: (a) to add, delete, or modify Certification conditions as authorized by OAR 340-048-0050, (b) if project activities are having an adverse impact on state water quality or beneficial uses, or (c) if the Applicant is otherwise in violation of the conditions of this 401 WQC.

6) Access

The Applicant and its contractors must allow DEQ access to the project site, staging areas, and mitigation sites to monitor compliance with these 401 WQC conditions, including:

- a. Access to any records, logs, and reports that must be kept under the conditions of this 401 WQC;
- b. To inspect best management practices (BMPs), monitoring or operational equipment or methods; and
- c. To collect samples or monitor any discharge of pollutants.

7) Enforcement

Failure of any person or entity to comply with this 401 WQC may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.

8) Erosion and Sediment Control

During construction, erosion and sediment control measures must be implemented to prevent or control movement of sediment, soil or pollutants into waters of the state. The Applicant is required to develop and implement an effective erosion and sediment control plan. **Any project that disturbs more than one acre is required to obtain an NPDES 1200-C construction stormwater permit from DEQ.** In addition, the Applicant (or responsible party) must:

- a. Where practicable, use removable pads or mats to prevent soil compaction at all construction access points through, and staging areas in, riparian or wetland areas to prevent soil compaction.
- b. Demarcate wetlands not specifically authorized to be impacted to protect from disturbance and/or erosion.
- c. Place dredged or other excavated material on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands. Place BMPs as necessary to stabilize and prevent erosion.

9) Spill Prevention

The Applicant must fuel, operate, maintain and store vehicles, and must store construction materials, in areas that will not impact water quality either directly or due to potential discharges.

10) Spill & Incident Reporting

- a. In the event that petroleum products, chemicals, or any other deleterious materials are discharged into state waters, the discharge must be promptly reported to the Oregon Emergency Response Service (OERS) at 800-452-0311. Containment and cleanup must begin immediately and be completed as soon as practicable.
- b. If the project operations result in distressed or dying fish, the operator must immediately: cease operations; take appropriate corrective measures to prevent further environmental damage; and immediately notify DEQ and ODFW.

11) Vegetation Protection and Site Restoration

- a. The Applicant must protect riparian, wetland, and shoreline vegetation in the authorized project area from disturbance through one or more of the following:
 - i. Minimization of project and impact footprint;
 - ii. Designation of staging areas and access points in open, upland areas;
 - iii. Fencing and other barriers demarking construction areas; and
 - iv. Use of alternative equipment (e.g., spider hoe or crane).
- b. If authorized work results in any vegetative disturbance and the disturbance has not been accounted for in planned mitigation actions, the Applicant must successfully reestablish vegetation to a degree of function equivalent or better than before the disturbance.

12) Wetland, Riparian, and Water Quality Protection

The Applicant shall avoid and protect from harm, **all wetlands and riparian areas located within 50 feet of USACE jurisdictional waters**, unless proposed, necessary,

and approved as part of the project. If a local jurisdiction has a more stringent buffer requirement, that requirement will override this certification requirement.

- a. For proposals that include directionally-bored stream or wetland crossings:
 - i. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, must be completely isolated, recovered, then recycled or disposed of to prevent entry into waters of the state.
 - ii. In the event that drilling fluids enter a water of the state, the equipment operator must stop work, immediately initiate containment measures and report the spill to the Oregon Emergency Response System (OERS) at 800-452-0311.
- b. For proposals that include utility lines through wetlands, include anti-seep collars or equivalent technology to prevent draining the wetlands.

13) Adaptive Management

If DEQ determines exceedances of water quality standards are occurring as a result of Project activities, OSU shall develop and propose measures to address such an exceedance as part of an adaptive management plan. OSU shall develop and submit to DEQ an adaptive management plan to ensure that the Project does not cause or contribute to a violation of applicable criteria. Following DEQ approval, OSU shall implement the plan in accordance with DEQ's approval. If DEQ determines monitoring demonstrates that applicable criteria are being met, then DEQ may allow OSU to cease monitoring for a period of time or for the remaining term of the license.

14) Project Ownership

Applicant shall notify DEQ of any change in ownership of the Project, and obtain DEQ's review and approval prior to such change.

15) Project Repair or Maintenance

OSU shall obtain DEQ's review and approval before undertaking Project repair or maintenance activities that may potentially affect water quality (other than repair or maintenance activities authorized by the new FERC license). DEQ may, at OSU's request, approve specified repair and maintenance activities on a periodic or ongoing basis.

16) Water Quality Standards Compliance

Notwithstanding the conditions of this 401 WQC, no wastes shall be discharged and no activities shall be conducted which will violate state water quality standards.

Appendix B
Filed February 16, 2021
Effective March 1, 2021

**Bureau of Ocean Energy Management’s Research Lease for Renewable Energy
Development on the Outer Continental Shelf**

<p>UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT</p> <p>RESEARCH LEASE OF SUBMERGED LANDS FOR RENEWABLE ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF</p> <p><i>Paperwork Reduction Act of 1995 statement: This form does not constitute an information collection as defined by 44 U.S.C. § 3501 et seq. and therefore does not require approval by the Office of Management and Budget.</i></p>	Office	Renewable Energy Lease Number
	Camarillo, CA	OCS-P 0560
	Cash Bonus and/or Acquisition Fee	Resource Type
	N/A	Marine Hydrokinetic
	Effective Date	Block Number(s)
		See Addendum A

This lease, which includes any addenda hereto, is hereby entered into by and between the United States of America, (“Lessor”), acting through the Bureau of Ocean Energy Management (“BOEM”), its authorized officer, and

Lessee	Interest Held
Oregon State University	100%

(“Lessee”). This lease is effective on the date written above (“Effective Date”) and will continue in effect until the lease terminates as set forth in Addendum “B.” In consideration of the promises, terms, conditions, covenants, and stipulations contained herein and attached hereto, the Lessee and the Lessor agree as follows:

Section 1: Statutes and Regulations.

This lease is issued pursuant to subsection 8(p) of the Outer Continental Shelf Lands Act (“the Act”), 43 U.S.C. §§ 1331 *et seq.* This lease is subject to the Act and regulations promulgated pursuant to the Act, including but not limited to, applicable offshore renewable energy and alternate use regulations at 30 CFR Part 585 as well as other applicable statutes and regulations in existence on the Effective Date of this lease. This lease is also subject to those statutes enacted (including amendments to the Act

or other statutes) and regulations promulgated thereafter, except to the extent that they explicitly conflict with an express provision of this lease. It is expressly understood that amendments to existing statutes, including but not limited to the Act, and regulations may be made, and/or new statutes may be enacted or new regulations promulgated, which do not explicitly conflict with an express provision of this lease, and that the Lessee bears the risk that such amendments, regulations, and statutes may increase or decrease the Lessee's obligations under the lease.

Section 2: Rights of the Lessee.

- (a) The Lessor hereby grants and leases to the Lessee the exclusive right and privilege, subject to the terms and conditions of this lease and applicable regulations, to conduct activities in the area identified in Addendum "A" of this lease ("leased area"), as described and authorized in any future License issued by the Federal Energy Regulatory Commission (FERC) for Project 14616 (hereinafter, "License"). This lease does not, by itself, authorize any activity within the leased area.
- (b) The rights granted to the Lessee herein are limited to those activities described in the License and, as applicable, all other permits and authorizations needed to conduct the activities described in the License. The rights granted to the Lessee are limited by the lease-specific terms, conditions, and stipulations required by the Lessor per Addendum "C."
- (c) This lease does not authorize the Lessee to conduct activities on the Outer Continental Shelf (OCS) relating to or associated with the exploration for, or development or production of, oil, gas, other seabed minerals, or renewable energy resources other than those renewable energy resources identified in Addendum "A."

Section 3: Reservations to the Lessor.

- (a) All rights in the leased area and project easement(s) not expressly granted to the Lessee by the Act, applicable regulations, this lease, or any License, are hereby reserved to the Lessor.
- (b) The Lessor reserves the right to suspend the Lessee's operations in accordance with the national security and defense provisions of section 12 of the Act and applicable regulations.
- (c) The Lessor reserves the right to authorize other uses within the leased area and project easements(s) that will not unreasonably interfere with activities described in the License, pursuant to this lease.

- (d) The Lessor reserves the right to initiate lease cancellation proceedings pursuant to 30 CFR 585.437 if it determines that activities conducted pursuant to the License would violate subsection 8(p) of the Act.

Section 4: Payments.

The Lessor will not charge the Lessee any fees for the purpose of ensuring a fair return for the use of this lease area on the OCS because this is a research lease issued pursuant to 30 CFR 585.238.

Section 5: License.

The Lessee may conduct those activities described in the License in the area described in Addendum "A".

Section 6: Associated Project Easement(s).

Pursuant to 30 CFR 585.200(b), the Lessee has the right to one or more project easement(s), without further competition, for the purpose of installing gathering, transmission, and distribution cables, pipelines, and appurtenances on the OCS, as necessary for the full enjoyment of the lease, and under applicable regulations in 30 CFR Part 585. The easement is described in Addendum "A" and is subject to any conditions that FERC may require in its License.

Section 7: Conduct of Activities.

The Lessee must conduct, and agrees to conduct, all activities in the leased area and project easement(s) in accordance with a License, and with all applicable laws and regulations.

The Lessee further agrees that no activities authorized under the License will be carried out in a manner that:

- (a) could unreasonably interfere with or endanger activities or operations carried out under any lease or grant issued or maintained pursuant to the Act, or under any other license or approval from any Federal agency;
- (b) could cause any undue harm or damage to the environment;
- (c) could create hazardous or unsafe conditions; or
- (d) could adversely affect sites, structures, or objects of historical, cultural, or archaeological significance, without notice to and direction from the Lessor on how to proceed.

Section 8: Violations, Suspensions, Cancellations, and Remedies.

If the Lessee fails to comply with (1) any of the applicable provisions of the Act or regulations, (2) the License, or (3) the terms of this lease, including associated Addenda, the Lessor may exercise any of the remedies that are provided under the Act and applicable regulations, including, without limitation, issuance of cessation of operations orders, suspension or cancellation of the lease, and/or the imposition of penalties, in accordance with the Act and applicable regulations.

The Lessor may also cancel this lease for reasons set forth in subsection 5(a)(2) of the Act (43 U.S.C. § 1334(a)(2)), or for other reasons provided by the Lessor pursuant to 30 CFR 585.437.

Non-enforcement by the Lessor of a remedy for any particular violation of the applicable provisions of the Act or regulations, or the terms of this lease, will not prevent the Lessor from exercising any remedy, including cancellation of this lease, for any other violation or for the same violation occurring at any other time.

Section 9: Indemnification.

The Lessee, to the extent not otherwise prohibited by law, hereby agrees to indemnify the Lessor for, and hold the Lessor harmless from, any claim caused by or resulting from any of the Lessee's operations or activities on the leased area or project easement(s) or arising out of any activities conducted by or on behalf of the Lessee or its employees, clients, contractors (including Operator, if applicable), subcontractors, or their employees, under this lease, including claims for:

- a. loss or damage to natural resources,
- b. the release of any petroleum or any Hazardous Materials,
- c. other environmental injury of any kind,
- d. damage to property,
- e. injury to persons, and/or
- f. costs or expenses incurred by the Lessor.

Except as provided in any addenda to this lease, the Lessee will not be liable for any losses or damages proximately caused by the activities of the Lessor or the Lessor's employees, contractors, subcontractors, or their employees. The Lessee must pay the Lessor for damage, cost, or expense due and pursuant to this section within 90 days after written demand by the Lessor. Nothing in this lease will be construed to waive any liability or relieve the Lessee from any penalties, sanctions, or claims that would otherwise apply by statute, regulation, operation of law, or could be imposed by the Lessor or other government agency acting under such laws.

“Hazardous Material” means

1. Any substance or material defined as hazardous, a pollutant, or a contaminant under the *Comprehensive Environmental Response, Compensation, and Liability Act* at 42 U.S.C. §§ 9601(14) and (33);
2. Any regulated substance as defined by the Resource Conservation and Recovery Act (“RCRA”) at 42 U.S.C. § 6991 (7), whether or not contained in or released from underground storage tanks, and any hazardous waste regulated under RCRA pursuant to 42 U.S.C. §§ 6921 *et seq.*;
3. Oil, as defined by the Clean Water Act at 33 U.S.C. § 1321(a)(1) and the Oil Pollution Act at 33 U.S.C. § 2701(23); or
4. Other substances that applicable Federal, state, tribal, or local laws define and regulate as “hazardous.”

Section 10: Financial Assurance.

The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum “B.” As required by the applicable regulations in 30 CFR Part 585, if, at any time during the term of this lease, the Lessor requires additional financial assurance, then the Lessee must furnish the additional financial assurance required by the Lessor in a form acceptable to the Lessor within 90 days after receipt of the Lessor’s notice of such requirement.

Section 11: Assignment or Transfer of Lease.

This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee’s application to transfer or assign all or part of this lease. Any assignment will be effective on the date the Lessor approves the Lessee’s application. Any assignment made in contravention of this section is void.

Section 12: Relinquishment of Lease.

The Lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the Lessor a written relinquishment application, in accordance with applicable regulations in 30 CFR Part 585. No relinquishment of this lease or any portion thereof will relieve the Lessee or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area and project easement(s) pursuant to section 13 of this lease and applicable regulations.

Section 13: Removal of Property and Restoration of the Leased Area and Project Easement(s) on Termination of Lease.

Unless otherwise authorized pursuant to the applicable regulations in 30 CFR Part 585, the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area and project easement(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with the License, any subsequent FERC approvals, and applicable regulations in 30 CFR Part 585.

Section 14: Safety Requirements.

The Lessee must:

- a. maintain all places of employment for activities authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;
- b. maintain all operations within the leased area and project easement(s) in compliance with applicable regulations in 30 CFR Part 585 and orders from the Lessor, FERC, and other Federal agencies with jurisdiction, intended to protect persons, property and the environment on the OCS; and
- c. to the extent not otherwise prohibited by law, provide any requested documents and records, which are pertinent to occupational or public health, safety, or environmental protection, and allow prompt access, at the site of any operation or activity conducted under this lease, to any inspector authorized by the Lessor or other Federal agency with jurisdiction.

Section 15: Debarment Compliance.

The Lessee must comply with the Department of the Interior's non-procurement debarment and suspension regulations set forth in 2 CFR Parts 180 and 1400 and must communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.

Section 16: Equal Opportunity Clause.

During the performance of this lease, the Lessee must fully comply with paragraphs (1) through (7) of section 202 of Executive Order 11246, as amended (reprinted in 41 CFR 60-1.4(a)), and the implementing regulations, which are for the purpose of

preventing employment discrimination against persons on the basis of race, color, religion, sex, or national origin. Paragraphs (1) through (7) of section 202 of Executive Order 11246, as amended, are incorporated in this lease by reference.

Section 17: Certification of Nonsegregated Facilities.

By entering into this lease, the Lessee certifies, as specified in 41 CFR 60-1.8, that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. As used in this certification, the term "facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees. Segregated facilities include those that are segregated by explicit directive or those that are in fact segregated on the basis of race, color, religion, sex, or national origin, because of habit, local custom, or otherwise; provided, that separate or single-user restrooms and necessary dressing or sleeping areas must be provided to assure privacy as appropriate. The Lessee further agrees that it will obtain identical certifications from proposed contractors and subcontractors prior to awarding contracts or subcontracts unless they are exempt under 41 CFR 60-1.5.

Section 18: Compliance with 43 CFR Parts 17 and 41.

During the performance of this lease, the Lessee must fully comply with all applicable obligations set forth in 43 CFR Parts 17 and 41, which bar discrimination on the basis of race, color, sex, national origin, handicap, or age under any program or activity receiving Federal financial assistance from the Department of the Interior.

Section 19: Notices.

All notices or reports provided from one party to the other under the terms of this lease must be in writing, except as provided herein and in the applicable regulations in 30 CFR Part 585. Written notices and reports must be delivered to the Lessee's or Lessor's Lease Representatives, as specifically listed in Addendum "A," either electronically, by hand, by facsimile, or by United States first class mail, adequate postage prepaid. Each party must, as soon as practicable, notify the other of a change to their Lessee's or Lessor's Contact Information listed in Addendum "A" by a written notice signed by a duly authorized signatory and delivered by hand or United States first class mail, adequate postage prepaid. Until such notice is delivered as provided in this section, the last recorded contact information for either party will be deemed

current for service of all notices and reports required under this lease. For all operational matters, notices and reports must be provided to the party's Operations Representatives, as specifically listed in Addendum "A," as well as the Lease Representatives.

Section 20: Severability Clause.

If any provision of this lease is held unenforceable, all remaining provisions of this lease will remain in full force and effect.

Section 21: Modification.

Unless otherwise authorized by the applicable regulations in 30 CFR Part 585, this lease may be modified or amended only by mutual agreement of the Lessor and the Lessee. No such modification or amendment will be binding unless it is in writing and signed by duly authorized signatories of the Lessor and the Lessee.

<hr/> <p>Oregon State University</p> <hr/> <p>Lessee</p>	<hr/> <p>The United States of America</p> <hr/> <p>Lessor</p>
<hr/> <p>(Signature of Authorized Officer)</p>	<hr/> <p>(Signature of Authorized Officer)</p>
<hr/> <p>(Name of Signatory)</p>	<hr/> <p>Thomas J. Liu</p> <hr/> <p>(Name of Signatory)</p>
<hr/> <p>(Title)</p>	<hr/> <p>Acting Regional Director, Pacific Regional Office</p> <hr/> <p>(Title)</p>
<hr/> <p>(Date)</p>	<hr/> <p>(Date)</p>

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ADDENDUM "A"

DESCRIPTION OF LEASED AREA AND LICENSE ACTIVITIES

Lease Number OCS-P 0560

I. Lessor and Lessee Contact Information

Lessee Company Number: 15047

(a) Lessor's Contact Information

	Lease Representative	Operations Representative
Title	Regional Director	Same as Lease Representative.
Address	Pacific Regional Office Mail Stop CM 102 760 Paseo Camarillo, Suite 102 Camarillo, CA 93010-6002	
Phone	855-320-1484	
Fax	805-388-1049	
Email	renewableenergypocs@boem.gov	

(b) Lessee's Contact Information

	Lease Representatives	
Name	Michael J. Green	Nicole Neuschwander
Title	Vice President for Finance & Administration	Director, OSU Real Property
Address	Oregon State University 640 Kerr Administration Bldg Corvallis, OR 97331-8565	Oregon State University 850 SW 35 th Corvallis, OR 97333
Phone	541-737-2447	541-737-6925
Fax		
Email	michael.green@oregonstate.edu	realestate@oregonstate.edu

	Operations Representatives	
Name	Burke Hales	Dan Hellin
Title	Chief Scientist	Operations & Logistics Manager

Address	PacWave, Oregon State University 104 COAS Administration Bldg Corvallis, OR 97331	PacWave, Oregon State University 104 COAS Administration Bldg Corvallis, OR 97331
Phone	541-737-8121	541-737-5452
Fax		
Email	bhales@coas.oregonstate.edu	dan.hellin@oregonstate.edu

II. Description of Leased Area

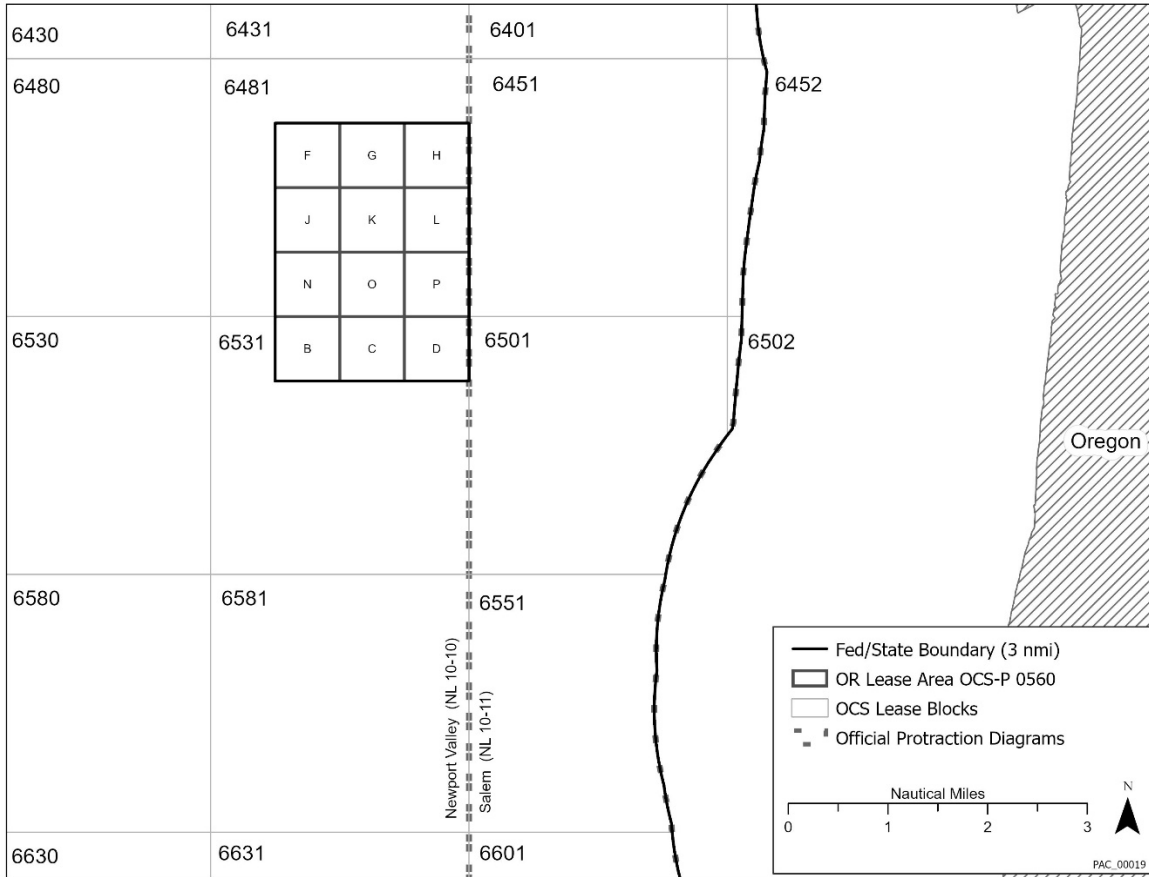
The total acreage of the leased area is approximately 4,270 acres (1,728 hectares).

This area is subject to later adjustment, in accordance with applicable regulations (*e.g.*, contraction, relinquishment).

The following portions of OCS Blocks (an Aliquot is 1/16th of an OCS Block), lying within Official Protraction Diagram Newport Valley NL 10-10, are depicted on the map below and comprise 4,270 acres (1,728 hectares), more or less.

Official Protraction Diagram Newport Valley NL 10-10

- 1) Block 6481, S1/2 of NE1/4, SE1/4 of NW1/4, E1/2 of SW1/4, SE1/4
(Aliquots F, G, H, J, K, L, N, O, P)
- 2) Block 6531, N1/2 of NE1/4, NE1/4 of NW1/4
(Aliquots B, C, D)



Map of Lease OCS-P 0560

III. Renewable Energy Resource

Marine Hydrokinetic

IV. Description of the Project

A test site using wave energy converters, marker buoys, anchors and mooring systems, and support buoys and instrumentation located in the leased area as well as subsea transmission and auxiliary cables on the OCS, as described in the License.

V. Description of Project Easement(s)

The length of the 200-foot wide corridor on which the five (5) cables will be located are as follows:

- Cable 1 – 3.3 statute miles,
- Cable 2 – 3.7 statute miles,
- Cable 3 – 4.1 statute miles,

Cable 4 – 4.9 statute miles, and
 Cable 5 – 5.2 statute miles.

This area is subject to later adjustment, in accordance with applicable regulations (*e.g.*, contraction, relinquishment).

The following portions of OCS Blocks (an Aliquot is 1/16th of an OCS Block), lying within Official Protraction Diagram Newport Valley NL 10-10 and Salem NL 10-11 within which the 200-foot wide corridor lies, are depicted on the map below.

Official Protraction Diagram Newport Valley NL 10-10

- 1) Block 6531, S1/2 of NE1/4, SE1/4 of NW1/4, N1/2 of SE1/4, SE1/4 of SE1/4 (Aliquots F, G, H, K, L, P)

Official Protraction Diagram Salem NL10-11

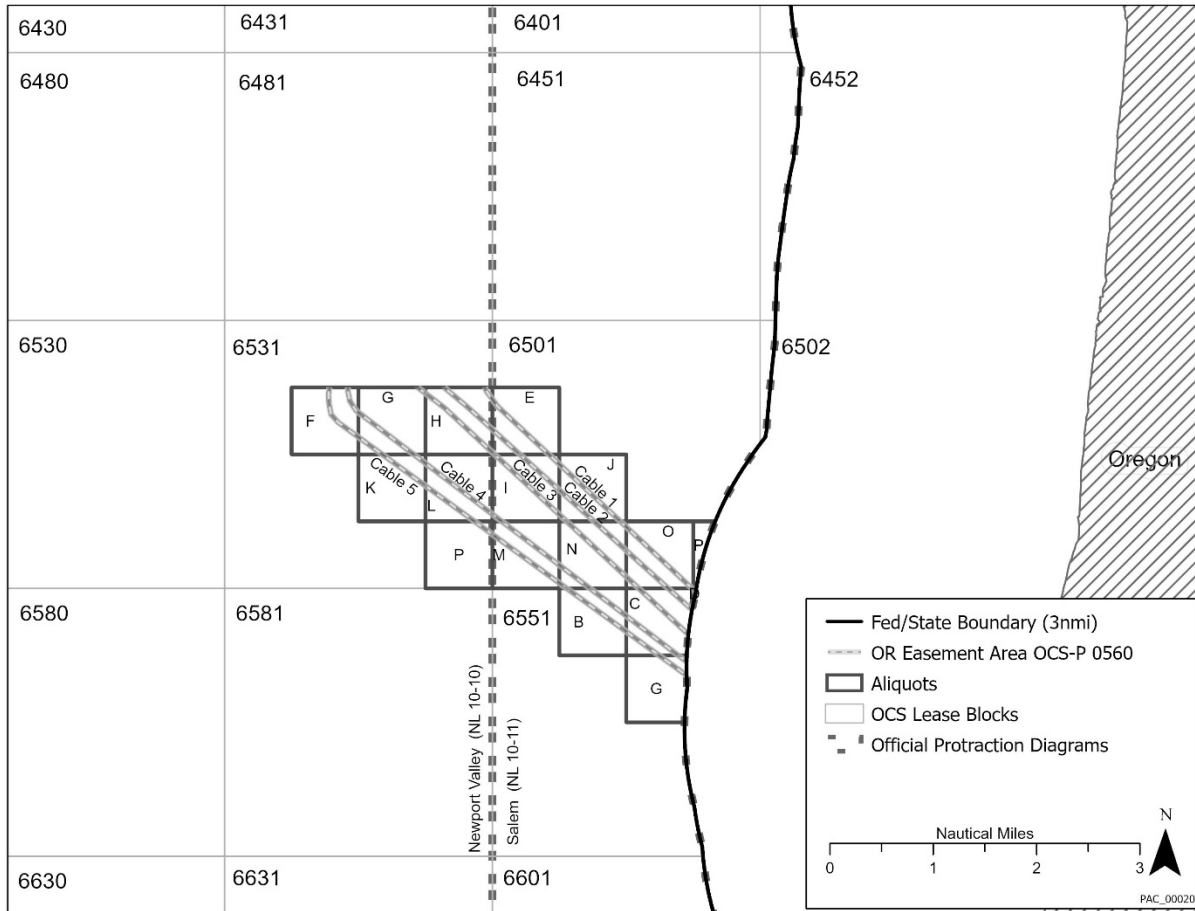
- 1) Block 6501, SW1/4 of NW1/4, SW1/4, SW1/4 of SE1/4, a portion of SE1/4 of SE1/4 (Aliquots E, I, J, M, N, O, a portion of P)
- 2) Block 6551, A portion of NE1/4 of NE1/4, a portion of NW1/4 of NE1/4, NE1/4 of NW1/4, a portion of SW1/4 of NE1/4 (Aliquots B and portions of C, D, and G)

The easements consist of an area of 100 feet to either side of the centerline of each of the five (5) cables, which consists of four (4) transmission cables and one (1) auxiliary cable. The centerline of the easements can be determined by interconnecting the points indicated by the centerline coordinates. Coordinates for the centerline follow an order for north to south for each cable (points 1–12 for Cable 1, points 13–24 for Cable 2, *etc.*) and are provided in X, Y (eastings, northings) UTM Zone 10N, NAD 83 and geographic (longitude, latitude), NAD83.

Cable	Point Number	UTM X (easting)	UTM Y (northing)	Latitude	Longitude
1	1	403863.84	4933200.00	44.545727	-124.210251
1	2	403888.16	4933140.50	44.545197	-124.209938
1	3	404093.72	4932860.00	44.542694	-124.207298
1	4	404374.66	4932597.00	44.540363	-124.203712
1	5	404789.19	4932209.00	44.536930	-124.198425
1	6	405203.75	4931821.00	44.533493	-124.193138
1	7	405618.38	4931433.00	44.530056	-124.187843
1	8	406033.06	4931045.50	44.526619	-124.182556
1	9	406447.78	4930657.50	44.523182	-124.177269

1	10	406862.53	4930269.50	44.519745	-124.171982
1	11	407277.38	4929882.00	44.516308	-124.166695
1	12	407643.13	4929542.00	44.513294	-124.162033
2	13	403136.19	4933200.00	44.545628	-124.219414
2	14	403403.16	4932975.50	44.543644	-124.216011
2	15	403612.44	4932796.50	44.542061	-124.213341
2	16	404031.34	4932418.00	44.538708	-124.208000
2	17	404450.31	4932039.50	44.535358	-124.202660
2	18	404869.34	4931661.00	44.532005	-124.197311
2	19	405288.41	4931282.50	44.528652	-124.191971
2	20	405707.50	4930904.00	44.525303	-124.186630
2	21	406126.69	4930525.50	44.521950	-124.181290
2	22	406545.88	4930147.00	44.518600	-124.175941
2	23	406965.16	4929768.50	44.515247	-124.170601
2	24	407384.47	4929390.00	44.511894	-124.165260
2	25	407577.19	4929218.00	44.510372	-124.162804
3	26	402663.63	4933200.00	44.545563	-124.225357
3	27	402808.50	4933089.00	44.544586	-124.223518
3	28	402960.00	4932973.00	44.543564	-124.221588
3	29	403184.53	4932794.50	44.541985	-124.218727
3	30	403384.69	4932608.50	44.540337	-124.216171
3	31	403800.09	4932222.50	44.536919	-124.210876
3	32	404215.53	4931836.50	44.533501	-124.205574
3	33	404631.00	4931450.50	44.530079	-124.200272
3	34	405046.53	4931064.50	44.526661	-124.194977
3	35	405462.13	4930678.50	44.523239	-124.189674
3	36	405877.78	4930292.50	44.519821	-124.184372
3	37	406293.47	4929906.50	44.516403	-124.179077
3	38	406709.19	4929520.50	44.512981	-124.173775
3	39	407124.97	4929135.00	44.509563	-124.168480
3	40	407512.19	4928775.50	44.506378	-124.163544
4	41	401405.75	4933200.00	44.545395	-124.241188
4	42	401417.47	4933096.00	44.544460	-124.241020
4	43	401444.53	4932959.50	44.543236	-124.240654
4	44	401553.75	4932788.00	44.541706	-124.239250
4	45	401645.47	4932718.00	44.541088	-124.238083
4	46	402083.78	4932385.00	44.538151	-124.232506
4	47	402522.16	4932051.50	44.535210	-124.226921
4	48	402960.56	4931718.50	44.532269	-124.221344
4	49	403399.03	4931385.00	44.529327	-124.215767
4	50	403837.53	4931052.00	44.526386	-124.210182

4	51	404276.06	4930718.50	44.523449	-124.204605
4	52	404714.66	4930385.50	44.520508	-124.199028
4	53	405153.31	4930052.50	44.517567	-124.193443
4	54	405592.00	4929719.50	44.514626	-124.187866
4	55	406030.72	4929386.50	44.511684	-124.182289
4	56	406469.50	4929053.50	44.508747	-124.176704
4	57	406908.31	4928720.50	44.505806	-124.171127
4	58	407480.66	4928286.00	44.501972	-124.163849
5	59	401082.34	4933200.00	44.545349	-124.245262
5	60	401060.56	4933070.50	44.544178	-124.245506
5	61	401072.13	4932899.00	44.542641	-124.245331
5	62	401109.44	4932716.00	44.540997	-124.244827
5	63	401234.88	4932575.50	44.539753	-124.243225
5	64	401380.13	4932470.00	44.538822	-124.241371
5	65	401822.91	4932148.50	44.535984	-124.235741
5	66	402265.72	4931826.50	44.533150	-124.230110
5	67	402708.59	4931505.00	44.530312	-124.224472
5	68	403151.50	4931183.00	44.527477	-124.218842
5	69	403594.47	4930861.50	44.524643	-124.213203
5	70	404037.47	4930540.00	44.521805	-124.207573
5	71	404480.50	4930218.00	44.518970	-124.201942
5	72	404923.59	4929896.50	44.516132	-124.196304
5	73	405366.72	4929575.00	44.513298	-124.190674
5	74	405809.88	4929253.50	44.510460	-124.185043
5	75	406253.09	4928932.00	44.507626	-124.179405
5	76	406696.38	4928610.50	44.504791	-124.173775
5	77	407139.66	4928289.00	44.501953	-124.168137
5	78	407480.66	4928043.00	44.499783	-124.163803



Map of Easement OCS-P 0560

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ADDENDUM "B"

LEASE TERM AND FINANCIAL SCHEDULE

Lease Number OCS-P 0560

I. Lease Term

The duration of each term of the lease is described below. The terms may be extended or otherwise modified in accordance with applicable regulations in 30 CFR Part 585.

Lease Term	Duration
Research Lease Term	25 years, or initial term of the License, whichever is longer, but not to exceed 27 years from the Effective Date.

Renewal: This Lease is not automatically renewed if the License is extended beyond its initial term. The Lessee may request renewal of the term of this lease, in accordance with applicable regulations in 30 CFR Part 585. The Lessor, at its discretion, may approve a renewal request to conduct substantially similar activities as were originally authorized under the License. The Lessor will not approve a renewal request that involves development of a type of renewable energy not originally authorized in the lease.

The Research Lease Term begins on the Effective Date of this lease.

II. Definitions

"Lease Issuance Date" refers to the date on which this lease has been signed by *both* the Lessee and the Lessor.

"Effective Date" has the same meaning as "effective date" in BOEM regulations provided in 30 CFR 585.237.

III. Financial Assurance

The amount of financial assurance required to meet all lease obligations includes:

(a) **Initial Financial Assurance.** Prior to the Lease Issuance Date, the Lessee must provide an initial lease-specific bond, or other approved means of meeting the Lessor's initial financial assurance requirements in an amount equal to \$100,000.

(b) **Decommissioning Financial Assurance.** In addition to the initial lease-specific financial assurance discussed above, the Lessor will require a decommissioning bond or other form of financial assurance based on the anticipated decommissioning costs in accordance with applicable BOEM regulations (30 CFR 585.515-537). The Lessor will base the determination for the amounts of all decommissioning financial assurance requirements on estimates of the cost to meet all accrued lease obligations. The Lessor determines the amount of decommissioning financial assurance requirements on a case-by-case basis. The decommissioning obligation must be guaranteed through an acceptable form of financial assurance and will be due according to the schedule beginning before commencement of the installation of project facilities on a date or dates to be determined by the Lessor.

(c) **Adjustments to Financial Assurance Amounts.** The Lessor reserves the right to adjust the amount of any financial assurance requirement (initial or decommissioning) associated with this lease and/or reassess the Lessee's cumulative lease obligations, including decommissioning obligations, at any time. If the Lessee's cumulative lease obligations and/or liabilities increase or decrease, the Lessor will notify the Lessee of any intended adjustment to the financial assurance requirements and provide the Lessee an opportunity to comment in accordance with applicable BOEM regulations.

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ADDENDUM "C"

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-P 0560

The Lessee's rights to conduct activities on the leased area are subject to the following terms, conditions, and stipulations. The Lessor reserves the right to impose additional terms and conditions incident to the future approval or approval with modifications or amendments of the License.

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1 DEFINITIONS

- 1.1 Definition of “Archaeological Resource”: The term “archaeological resource” has the same meaning as “archaeological resource” in BOEM regulations provided in 30 CFR 585.112.
- 1.2 Definition of “Qualified Marine Archaeologist”: The term “qualified marine archaeologist” means a person retained by the Lessee who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (48 FR 44738- 44739), and has experience analyzing marine geophysical data.

2 NATIONAL SECURITY AND MILITARY OPERATIONS

The Lessee must comply with the requirements specified in stipulations 2.1, 2.2 and 2.3 when conducting activities in the License.

2.1 Hold and Save Harmless

Whether compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the Lessee, to the extent not otherwise prohibited by law, assumes all risks of damage or injury to persons or property, which occur in, on, or above the OCS, to any persons or to any property of any person or persons in connection with any activities being performed by the Lessee in, on, or above the OCS, if such injury or damage to such person or property occurs by reason of the activities of any agency of the United States Government, its contractors, or subcontractors, or any of its officers, agents or employees, being conducted as a part of, or in connection with, the programs or activities of the individual military command headquarters (hereinafter “the appropriate command headquarters”) listed in the contact information provided as an enclosure to this lease.

Notwithstanding any limitation of the Lessee’s liability in Section 9 of the lease, the Lessee assumes this risk related to Lessee’s activities in, on, or above the OCS whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The Lessee, to the extent not otherwise prohibited by law, further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury related to Lessee’s activities in, on, or above the OCS, in connection with the programs or activities of the command headquarters, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

2.2 Evacuation or Suspension of Activities

- 2.2.1 General. The Lessee hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations and/or require evacuation on this lease in the interest of national security pursuant to Section 3(c) of this lease.
- 2.2.2 Notification. Every effort will be made by the appropriate military agency to provide as much advance notice as possible of the need to suspend operations and/or evacuate. Advance notice will normally be given before requiring a suspension or evacuation. Temporary suspension of operations may include, but is not limited to the evacuation of personnel and appropriate sheltering of personnel not evacuated. "Appropriate sheltering" means the protection of all Lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances and will be implemented by an order (oral and/or written) from the BOEM Pacific Regional Director, after consultation with the appropriate command headquarters or other appropriate military agency, or higher Federal authority. The appropriate command headquarters, military agency, or higher authority will provide information to allow the Lessee to assess the degree of risk to, and provide sufficient protection for, the Lessee's personnel and property.
- 2.2.3 Duration. Suspensions or evacuations for national security reasons will not generally exceed seventy-two (72) hours; however, any such suspension may be extended by order of the BOEM Pacific Regional Director. During such periods, equipment may remain in place, but all operations, if any, must cease for the duration of the temporary suspension if so directed by the BOEM Pacific Region. Upon cessation of any temporary suspension, the BOEM Pacific Region will immediately notify the Lessee such suspension has terminated and operations on the leased area can resume.
- 2.2.4 Lessee Point-of-Contact for Evacuation/Suspension Notifications. The Lessee must inform the Lessor of the persons/offices to be notified to implement the terms of 2.2.2 and 2.2.3.
- 2.2.5 Coordination with Command Headquarters. The Lessee must establish and maintain early contact and coordination with the appropriate command headquarters, in order to avoid or minimize the potential to conflict with and minimize the potential effects of conflicts with military operations.
- 2.2.6 Reimbursement. The Lessee is not entitled to reimbursement for any costs or expenses associated with the suspension of operations or activities or the evacuation of property or personnel in fulfillment of the military mission in accordance with 2.2.1 through 2.2.5 above.

2.3 **Electromagnetic Emissions**

The Lessee, prior to entry into any designated defense operating area, warning area, or water test area, for the purpose of commencing License activities must enter into an agreement with the commander of the appropriate command headquarters to coordinate the electromagnetic emissions associated with such activities. The Lessee must ensure that all electromagnetic emissions associated with such activities are controlled as directed by the commander of the appropriate command headquarters.

3 STANDARD OPERATING CONDITIONS

3.1 General Requirement

Marine Trash and Debris Prevention. The Lessee must ensure that vessel operators, employees, and contractors actively engaged in activity in support of the License are briefed on marine trash and debris awareness and elimination, as described in the Bureau of Safety and Environmental Enforcement (BSEE) Notice to Lessees and Operators (NTL) No. 2015-G03 (“Marine Trash and Debris Awareness and Elimination”) or any NTL that supersedes this NTL, except that the Lessor will not require the Lessee to post placards. The Lessee must ensure that these vessel operator employees and contractors receive training on the environmental and socioeconomic impacts associated with marine trash and debris and their responsibilities for ensuring that trash and debris are not intentionally or accidentally discharged into the marine environment. The above-referenced NTL provides information the Lessee may use for this awareness briefing.

3.2 Archaeological Requirements

3.2.1 Seafloor disturbing activities on the OCS not authorized under the License.

The Lessee may only conduct seafloor disturbing activities on the OCS, not otherwise authorized under the License, in locations where (a) an analysis of the results of High Resolution Geophysical surveys performed in accordance with the Lessor’s guidance has been completed by a Qualified Marine Archaeologist; (b) archaeological report(s) prepared in accordance with the Lessor’s guidance have been completed by a Qualified Marine Archaeologist; (c) the Lessor has reviewed the data and report(s) and found them to be sufficient for the identification of archaeological resources; and (d) the Lessor has notified the Lessee that it has no objection to the activities. The Lessor will review these submissions and notify the Lessee of any areas that must be avoided in performing such seafloor disturbing activities.

3.2.2 No Impact without Approval. In no case may the Lessee knowingly impact a potential archaeological resource while conducting activities on the OCS not otherwise authorized under the License without the Lessor’s prior approval.

- 3.2.3 Post-Review Discovery Clauses. If the Lessee, while conducting seafloor disturbing activities on the OCS not otherwise authorized under the License, discovers an unanticipated potential archaeological resource, such as the presence of a shipwreck (*e.g.*, a sonar image or visual confirmation of an iron, steel, or wooden hull, wooden timbers, anchors, concentrations of historic objects, piles of ballast rock) or evidence of a pre-contact archaeological site (*e.g.*, stone tools, pottery or other pre-contact artifacts) within the project area, the Lessee must:
- 3.2.3.1 Immediately halt seafloor/bottom-disturbing activities within the area of discovery;
 - 3.2.3.2 Notify the Lessor within 24 hours of discovery;
 - 3.2.3.3 Notify the Lessor in writing via report to the Lessor within 72 hours of its discovery;
 - 3.2.3.4 Pursuant to 30 CFR 585.802(a)(3), keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until the Lessor has made an evaluation and instructs the applicant on how to proceed; and
 - 3.2.3.5 Conduct any additional investigations as directed by the Lessor to determine if the resource is eligible for listing in the National Register of Historic Places (30 CFR 585.802(b)). The Lessor will do this if: (1) the site has been impacted by the Lessee's project activities; or (2) impacts to the site or to the area of potential effect cannot be avoided. If investigations indicate that the resource is potentially eligible for listing in the National Register of Historic Places, the Lessor will tell the Lessee how to protect the resource or how to mitigate adverse effects to the site. If the Lessor incurs costs in protecting the resource, under Section 110(g) of the National Historic Preservation Act, the Lessor may charge the Lessee reasonable costs for carrying out preservation responsibilities under the OCS Lands Act (30 CFR 585.802(c-d)).

3.3 **Reporting and Research Site Access Requirements**

- 3.3.1 Reporting. The Lessee must include the Lessor on the distribution of all plans, status reports, monitoring reports, annual reports, incident reports and other reports required under the License for activities on the OCS through the duration of the lease term.
- 3.3.2 Research Site Access. The Lessor retains the right to access, with prior notification, to the site of any operation or activity conducted under this lease or the License, to the Lessor or a designated representative for research

purposes. This provision does not limit the Lessor's authority to access the lease for other purposes, including, but not limited to, inspections conducted pursuant to 30 CFR 585.822.

DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

ENCLOSURE

CONTACT INFORMATION FOR REPORTING REQUIREMENTS

Lease Number OCS-P 0560

The following contact information must be used for the reporting and coordination requirements specified in ADDENDUM "C", Stipulation 2:

ATTN: Executive Director
Military Aviation and Installation Assurance Siting Clearinghouse
Office of the Assistant Secretary of Defense (Sustainment)
3400 Defense Pentagon, Room 5C646
Washington, DC 20301 – 3400

ATTN: Department of Defense West Coast Coordinator
Department of the Navy - Navy Region Southwest
750 Pacific Highway, OF1514
San Diego, CA 92132

Appendix C
Filed December 20, 2019

Amount or Extent of Take; Reasonable and Prudent Measures; and Terms and Conditions included in the National Marine Fisheries Service's Incidental Take Statement for the Licensing of the PacWave South Hydrokinetic Project P-14616

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

- Behavior modification of ESA-listed fish associated with sound from WECs, vessel traffic, and cable laying;
- Behavior modification of ESA-listed fish associated with EMF generated by WECs, power cables, and subsea connectors; and

Accurately quantifying the small number of fish of each species taken by these pathways is not possible. Much of the action area is too deep and velocities are too great to allow observation of injured or killed fish. Furthermore, there are no methods available to monitor this death and injury because it will occur throughout the year over a large area. In such cases, we use a take surrogate or take indicator that rationally reflects the incidental take caused by the proposed action.

The best available indicator for the extent of incidental take associated with acoustic noise is the decibel measurements from WEC devices deployed in the test site. The OSU will implement the AMF, which consists of the acoustic monitoring plan and PME #5 and #7. Under PME #7(2) and (3), OSU will implement mitigation measures if: (1) persistent sound associated with one or more WECs is monitored to exceed 120 dB (re: 1 μ Pa) at 100 m (equivalent to 151 dB [re: 1 μ Pa at 1 m]) for 4 or more consecutive days that are not during high sea states; and (2) temporary exceedance of 120 dB (re: 1 μ Pa) at 117 m (see Appendix I, OSU 2019) during two separate, but consecutive high sea state conditions. The NMFS uses a conservative exposure threshold for behavior modification of 150 dB (re: 1 μ Pa). The indicator is the exceedance of 150 dB (re: 1 μ Pa at 1 m) at either of the persistent or temporary conditions described above. This indicator is connected causally to the amount of take that will occur from increased sound because the exceedance of behavior threshold translates into an adverse behavior modification of listed species individuals. This metric can also be easily monitored during the proposed acoustic monitoring (Appendix H, OSU 2019) If acoustic monitoring exceeds 150 dB (re: 1 μ Pa) at 1 m under the conditions described above, reinitiation of this consultation may be required.

The best available indicator for the extent of take associated with EMF is the measurement of EMF produced by the WECs, power cables, or subsea connectors. The

EMF monitoring plan (Appendix H, OSU 2019) indicated that biologically relevant level of EMF is 3 milliteslas at 10 m from the source for up to 60 days. This will serve as the indicator and is causally linked to the amount of take that will occur because this level of EMF would translate to an adverse modification in behavior of listed species individuals. This metric can also be easily monitored during the proposed EMF monitoring (Appendix H, OSU 2019), allowing the indicator to serve 5 'High sea states' are defined as conditions that meet the National Oceanic and Atmospheric Administration's small craft advisory definition. WCRO-2019-03469 -52- as a clear reinitiation trigger. If EMF monitoring indicates that EMF exceeds 3 milliteslas at 10 m from the source for more than 60 days, then reinitiation of this consultation may be required.

For stormwater, OSU has yet to prepare a stormwater plan for stormwater associated with UCMF and Driftwood Beach State Recreation Site. Because we had no specific stormwater treatment plan or designs, we conducted our stormwater analysis on the assumption that stormwater would discharge from the sites untreated. Thus, the indicator is the 2 acres of impervious surfaces associated with the construction and the re-paving of the Driftwood Beach State Recreation Site, which is causally linked to the take caused by stormwater discharge from the amount of stormwater and contaminants discharged to Buckley Creek and the Pacific Ocean. This indicator is also easily designed and measured, allowing it to serve as a clear reinitiation trigger. If the construction and re-paving of impervious surfaces exceeds 2 acres, reinitiation of this consultation may be required.

Reasonable and Prudent Measures

The following Reasonable and Prudent Measures are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02):

- 1) Minimize incidental take from behavior modification associated with underwater sound produced by the proposed action.
- 2) Minimize incidental take from behavioral modification associated with EMF generated by the proposed action.
- 3) Minimize incidental take from stormwater discharge associated with the UCMF and Driftwood Beach State Recreation Site.
- 4) Conduct monitoring sufficient to document the proposed action does not exceed the parameters analyzed in this opinion or the extent of take described above, and report monitoring results to NMFS.

Terms and Conditions

The following terms and conditions are non-discretionary, and the FERC or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The FERC or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this Incidental Take Statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse:

- 1) To implement reasonable and prudent measure #1, FERC shall ensure that OSU (licensee) will implement the Acoustic Monitoring Plan and PME #5 and #7 (mitigation for impacts of sound from WECs and their mooring systems on marine resources) as part of the adaptive management framework.
- 2) To implement reasonable and prudent measure #2, FERC shall ensure that OSU (licensee) will implement the EMF monitoring plan and PME #1 (mitigation for potential impacts of EMF on marine resources) as part of the adaptive management framework.
- 3) To implement reasonable and prudent measure #3, FERC shall ensure that OSU:
 - a) Works with NMFS to develop an acceptable stormwater management plan for the UCMF and re-paving of the Driftwood parking lot. The stormwater management plan will include:
 - i) Explanation of how runoff from all contributing impervious area that is within or contiguous with the project area will be managed using site sketches, drawings, specifications, calculations, or other information commensurate with the scope of the action.
 - ii) Identify the pollutants of concern.
 - iii) Identify all contributing and non-contributing impervious areas that are within and contiguous with the project area.
 - iv) Describe the BMPs that will be used to treat the identified pollutants of concern, and the proposed maintenance activities and schedule for the treatment facilities.
 - v) Provide a justification for the capacity of the facilities provided based on the expected runoff volume, including, e.g., the design storm, BMP geometry, analyses of residence time, as appropriate.
 - vi) Include the name, email address, and telephone number of the person responsible for designing the stormwater management facilities that NMFS may contact if additional information is necessary to complete the effects analysis.
 - vii) A maintenance, repair, and component replacement plan that details what needs to be done, when, and by whom for each treatment facility.

- viii) Water quality treatment practices and facilities designed to accept and fully treat the volume of water equal to 50% of the cumulative rainfall from the 2-year, 24-hour storm. A continuous rainfall/runoff model may be used instead of runoff depths to calculate water quality treatment depth.
- ix) Water quantity treatment using retention or detention facilities that must limit discharge to match pre-developed discharge rates (i.e., the discharge rate of the site based on its natural groundcover and grade before any development occurred) using a continuous simulation for flows between 50% of the 2-year event and the 10-year flow event (annual series).
- x) Low impact development practices to infiltrate or evaporate runoff to the maximum extent feasible. For runoff that cannot be infiltrated or evaporated and therefore will discharge into surface or subsurface waters, apply one or more of the following specific primary treatment practices, supplemented with appropriate soil amendments:
 - (1) Bioretention cell
 - (2) Bioslope, also known as an “ecology embankment”
 - (3) Bioswale
 - (4) Constructed wetlands
 - (5) Infiltration pond
 - (6) Media filter devices with demonstrated effectiveness. Propriety devices should be on a list of “Approved Proprietary Stormwater Treatment Technologies” i.e., City of Portland (2008) Stormwater Management Manual. Bureau of Environmental Services.
 - (7) Porous pavement, with no soil amendments and appropriate maintenance
 - (8) All stormwater flow control treatment practices and facilities will be designed to maintain the frequency and duration of instream flows generated by storms within the following end-points:
 - (a) Lower discharge endpoint, by U.S. Geological Survey (USGS) flood frequency zone: Western Region = 42% of 2-year event
 - (b) Upper discharge endpoint
 - (i) Entrenchment ratio <2.2 = 10-year event, 24-hour storm
 - (ii) Entrenchment ratio >2.2 = band overtopping event
- xi) When conveyance is necessary to discharge treated stormwater directly into surface water or a wetland, the following requirements apply:
 - (1) Maintain natural drainage patterns
 - (2) To the maximum extent feasible, ensure that water quality treatment for contributing impervious area runoff is completed before commingling with offsite runoff for conveyance.
 - (3) Prevent of the flow path from the project to the receiving water and, if necessary, provide a discharge facility made entirely of manufactured elements (e.g., pipes, ditches, discharge facility protection) that extends at least to the ordinary high-water line.
- xii) NMFS will review the proposed stormwater treatment plan.

- 4) To implement reasonable and prudent measure #4, FERC shall ensure that OSU conducts reporting that ensures the extent of incidental take described in the ITS of this opinion is not exceeded. Reporting shall include:
- a) Annual reporting to NMFS on the results of the benthic sediments, organism interactions, acoustics, and EMF monitoring plans. OSU will contact NMFS within 48 hours of an exceedance of the following:
 - i) More than 20 WECs installed at the site at any one time throughout the license period
 - ii) Acoustic monitoring detects sound levels associated with WEC operation or mooring systems greater than 150 dB (re: 1 μ PA)
 - iii) EMF monitoring detects or models EMF levels associated with WECs, subsea connectors, or power cables above 3 milliteslas equal to or greater than 10 meters away from the source and the duration that this occurred
 - b) Annual reporting on the WEC installation and removal activities including:
 - i) The number and type of WECs installed at the test site
 - ii) The number and type of WECs removed from the test site
 - iii) The number and type of anchors associated with WECs installed or removed including the anchors re-used for WEC installation.
 - c) A project completion report that consists of the following:
 - i) Project name
 - ii) Contact name, address, and phone number
 - iii) Description of implementation of terrestrial HDD for power cable installation that includes:
 - (1) Start and stopping dates
 - (2) Any instances of frac-out affecting wetlands or streams in the action area
 - (3) Explanation of the environmental impacts associated with frac-out, specifically pertaining to ESA-listed OC coho salmon
 - (4) Measures taken to avoid or minimize effects of frac-out on ESA-listed salmon
 - iv) Description of subsea cable laying activities including:
 - (1) Start and stopping dates and total number of days of cable laying activities
 - (2) Explanation of any work stoppages associate with cable laying activities
 - (3) Explanation of the effectiveness of meeting the measures outlined in APEA. Appendix I, measure 6)
 - (4) Explanation of any instances where any one of the subsea power cables was unable to be buried in the sea floor including the unburied distance and location and any minimization measures to attenuate EMF associated with the subsea power cables
 - d) Submit reports to: ARA, Oregon-Washington Coastal Area Office, NOAA Fisheries, West Coast Region, Attn: WCRO-2019-03469, 1201 Lloyd Blvd, Suite 1100, Portland, Oregon 97232-1274.