ANNEX 2 TO THE
MEMORANDUM OF UNDERSTANDING

BETWEEN THE

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

AND THE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

TO

COORDINATE AND COLLABORATE ON HIGH-FREQUENCY RADAR
MITIGATION TO RESPONSIBLY ADVANCE OFFSHORE WIND

NOS Agreement Code MOA 2014-009
(Annex 24)/12011

I. PARTIES AND PURPOSE

A. This Annex 2 to the *Memorandum of Understanding between the Bureau of Ocean Energy Management, U.S. Department of the Interior, and the National Oceanic and Atmospheric Administration, U.S. Department of Commerce*, signed by the NOAA Administrator and the Director of the Bureau of Ocean Energy Management in January 2022 (MOU), MOU-2014-009/8847, is entered into by the Bureau of Ocean Energy Management (BOEM), a bureau within the Department of the Interior, and the National Oceanic and Atmospheric Administration (NOAA), a bureau within the Department of Commerce, on behalf of the Integrated Ocean Observing System Program Office (IOOS Office). BOEM and NOAA are the Parties to this Annex.

B. This Annex formalizes the coordination and cooperation of the Parties in executing strategies to mitigate potential impacts of offshore wind energy development on high-frequency (HF) radar to responsibly advance offshore wind pursuant to section 5(h) of the MOU.

C. This Annex incorporates the terms and conditions of the MOU-2014-009/8847.

II. AUTHORITIES

A. The authority for NOAA to enter into this Annex to the existing MOU is the Integrated Coastal and Ocean Observation System Act, codified at 33 U.S.C. 3601–3610, which directs NOAA to administer a National Integrated Coastal and Ocean Observation System (System). The System must "include[] in situ, remote, and other coastal and ocean observation and modeling capabilities, technologies, data management systems, communication systems, and product development systems and is designed to address regional and national needs for ocean and coastal information, to gather specific data on key ocean, coastal, and Great Lakes variables, and to ensure timely and sustained dissemination and availability of these data." 33 U.S.C. § 3601(1). The Administrator of NOAA, as delegated by the Secretary of Commerce, may execute an agreement, on a reimbursable or nonreimbursable basis, with any State or subdivision thereof, any Federal agency, any public or private organization, or any individual to carry out activities under this chapter. 33 U.S.C. § 3604(a).

B. The authority for BOEM to enter into this Annex is the Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. §§ 1331 *et seq*. and the National Environmental Policy Act, 42 U.S.C. §§ 4321 *et seq*.

III. BACKGROUND

A. BOEM's mission is to manage development of the U.S. Outer Continental Shelf (OCS) energy, mineral, and geological resources in an environmentally and economically responsible way. BOEM is responsible for offshore renewable energy development on the OCS pursuant to section 8(p) of OCSLA. 43 U.S.C. § 1337(p). BOEM's renewable energy program occurs in four distinct phases: planning, leasing, site assessment, and construction and operations. BOEM issues commercial wind energy leases that give the lessee the exclusive right to submit a Site Assessment Plan (SAP) and Construction and

Operations Plan (COP), and to conduct activities described in those plans as approved by BOEM. BOEM's approval of a lessee's COP may be subject to terms and conditions, including mitigation, monitoring, and reporting measures.

B. NOAA's IOOS Office's mission is to manage the Integrated Ocean Observing System (IOOS®) to produce, integrate, and communicate high quality ocean, coastal, and Great Lakes information to meet the safety, economic, and stewardship needs of the Nation. The System includes Federal and non-Federal coastal and ocean observation technologies that are managed through States, regional organizations, universities, nongovernmental organizations, or the private sector and integrated into the System by a regional coastal observing system ("regional association").

C. One of the technologies in the System is HF-radar systems, which measure oceanographic variables, including ocean surface current velocities and wave height, period, and direction in near real time. HF-radar systems are located near the water's edge and measure currents and waves over a large region of the coastal ocean, from a few kilometers offshore up to about 200 km, and can operate under any weather conditions. These data have many vital uses, including tracking and predicting the movement of spills of hazardous materials or other pollutants, monitoring water quality, and predicting sea state for safe marine navigation. The U.S. Coast Guard also integrates IOOS HF-radar data into its Search and Rescue systems.

D. The operation of offshore wind facilities has the potential to interfere with HF-radar systems if appropriate mitigation measures are not in place. IOOS HF-radars are located in nearly every coastal state in the continental U.S., as well as Alaska, Hawaii, and Puerto Rico. Recent BOEM project approvals have been conditioned on specific measures to mitigate project impacts on IOOS HF-radars. We expect that through continued technological advancements and in collaboration with other Federal agencies, partners, industry and other stakeholders we can ensure that projects and IOOS HF-radars will be operated compatibly.

IV. RESPONSIBILITIES

A. This Annex establishes a mechanism for NOAA and BOEM to ensure that offshore wind lessees are responsible for mitigating potential HF-radar interference pursuant to COP terms and conditions for any offshore wind project authorized by BOEM that may cause HF-radar interference.

B. BOEM agrees to:

1. Include Measures Required to Mitigate Interference to Oceanographic High-Frequency Radar ("HF-Radar Mitigation Measures") in the terms and conditions of BOEM's approval of any offshore wind projects with foreseeable HF-radar impacts. BOEM, in consultation with IOOS and with the approval of IOOS, will use the template language in Appendix A to develop the HF-Radar terms and conditions of COP approval during COP review.

2. Share with NOAA documentation submitted to BOEM from lessees pursuant to the HF-Radar Mitigation Measures for each COP.

3. Consult with NOAA, as required to implement the requirements in HF-Radar Mitigation Measures for each COP.
4. Consult with NOAA, when requested by NOAA, on revising the template language in Appendix A. BOEM agrees not to change the template language without NOAA's concurrence.
5. Provide updated and current Points of Contact for Section A of this Annex.

C. NOAA agrees to:

1. Promptly review and either approve, or provide BOEM with edits needed in order for IOOS to approve, the HF-Radar Mitigation Measures based on template language in Appendix A prior to BOEM's inclusion in COP terms and conditions for every offshore wind development. NOAA will, at a minimum, provide the list of individual HF-Radar Systems that require mitigation in the HF-Radar Mitigation Measures.
2. Share with BOEM documentation submitted to NOAA from lessees pursuant to the HF-Radar Mitigation Measures in each COP, when required for BOEM's approval under the HF-Radar Mitigation Measures, or when requested by BOEM.
3. Consult with BOEM, as required to implement the requirements in the HF-Radar Mitigation Measures for each COP.
4. Consult with BOEM, when requested by BOEM, on revising the template language in Appendix A.
5. Provide updated and current Points of Contact for Section A of this Annex.

V. DATA SHARING & ACCESS

A. NOAA will make publicly available in near real-time any oceanographic data transmitted by lessees pursuant to implemented terms and conditions of COP approval for HF-radar mitigation.

B. Each Party will take all lawful steps to prevent the disclosure of proprietary or classified information without the consent of the other Party.

C. If a Party transfers technical data or software that is proprietary, and for which protection is to be maintained, that Party will mark such data or software with a notice indicating that they will not be used or disclosed by the receiving Party and its contractors or subcontractors, except for the purposes of fulfilling the receiving Party's responsibilities under this Annex.

VI. COSTS

A. Subject to the availability of appropriated funds, each Party is responsible for funding its respective responsibilities under this Annex. This Annex does not provide for the transfer of funds between the Parties and does not obligate any funds. Any transfer of funds

between the Parties to implement provisions of this Annex shall be executed through separate documentation, including, as appropriate, an amendment to this Annex.

VII. POINTS OF CONTACT

Points of contact for this agreement are as follows:

A. Senior Leadership:

a. BOEM
Walter D. Cruickshank
Deputy Director
Bureau of Ocean Energy Management
Email: walter.cruickshank@boem.gov

b. NOAA
Rachel Dempsey
Deputy Assistant Administrator for Navigation, Observations, and Positioning
NOAA, National Ocean Service
Email: rachael.dempsey@noaa.gov

B. Program Management:

a. BOEM
Wright Frank
Renewable Energy Programs Policy Group Supervisor
Bureau of Ocean Energy Management
45600 Woodland Rd.
Sterling, VA 20166
Telephone: (703) 787-1325
Email: wright.frank@boem.gov

b. NOAA
Brian Zelenke
Surface Currents Program Manager
NOAA, IOOS Office
1315 East-West Highway, Bldg. SSMC3
Silver Spring, MD 20910
Telephone: (240) 533-9440
Email: brian.zelenke@noaa.gov

VIII. PERIOD OF AGREEMENT, MODIFICATION, OR TERMINATION

A. The terms of this Annex will remain in effect until (1) the expiration of the underlying BOEM/NOAA MOU (10 years after signature on January 12, 2022 unless terminated earlier per the terms of that agreement); (2) it is terminated by mutual agreement of the Parties; or (3) 180 days advance written notice is given by either Party; whichever occurs first. Termination of this Annex will not affect the Parties' responsibilities to implement

HF-Radar Mitigation Measures required in individual COP terms and conditions prior to termination.

B. This Annex may be amended at any time by mutual consent of both Parties. Amendments will be executed in writing and signed by both parties. This Annex will be reviewed annually, at a minimum. It may be subject to reconsideration at such other times as may be required and as agreed to by the Parties entering into the agreement.

C. Changes to the template in Appendix A and to the Points of Contact for Section A do not require amendment of this Annex.

D. This Annex will become effective upon the date of the last signature set forth below and remain in force and effect for the same time period as the underlying BOEM/NOAA MOU unless it is terminated early as detailed in Subsection A above.

IX. CONFLICTS WITH DIRECTIVES AND RESOLUTION OF DISAGREEMENTS

A. Nothing herein is intended to conflict with current Department of Commerce or Department of the Interior directives. If the terms of this Annex are inconsistent with existing directives of either Party agreeing to this Annex, then those portions of this Annex, which are determined to be inconsistent, will be invalid, but the remaining terms and conditions not affected by the inconsistency will remain in full force and effect. At the first opportunity for review of this Annex, all necessary changes will be accomplished by either an amendment to this Annex or by entering into a new Annex, whichever is deemed expedient to the interest of the Parties.

B. If disagreement arises between the Parties about implementation of this Annex or the template in Appendix A; the interpretation of the provisions of this Annex or the template in Appendix A; or amendments and/or revisions to this Annex or the template in Appendix A, that cannot be resolved at the lowest possible level, the area(s) of disagreement will be stated in writing by each Party and presented to the other Party for consideration. If agreement is not reached within 30 days, the Parties will forward the written presentation of the disagreement to their own respective higher officials for appropriate resolution.

C. The Parties agree to pursue resolution of conflicts at the lowest possible level. When conflicts cannot be resolved, the conflicts will initially be elevated to the BOEM Deputy Director or National Ocean Service Deputy Assistant Administrator. The Parties acknowledge that issues may require continued elevation that could eventually culminate with the Secretary of the Interior and the Secretary of Commerce. The Department of the Interior is the authority for final decision under the OCSLA.

X. APPROVALS

IN WITNESS WHEREOF, NOAA and BOEM hereby execute this Annex:

Deputy Assistant Administrator for Navigation, Observations, and Positioning National Ocean Service NOAA	Date
WALTER CRUICKSHANK Digitally signed by WALTER CRUICKSHANK Date: 2024.12.19 13:29:59 -05'00'	December 19, 2024
Deputy Director BOEM	Date

Appendix A[1]

Offshore Wind Construction & Operations Plan (COP): Measures Required to Mitigate Interference to Oceanographic High-Frequency Radar

1 High-Frequency Radar Interference Analysis and Mitigation (Planning) (Construction) (Operations).

The Project has the potential to interfere with oceanographic high-frequency (HF) radar systems in the U.S. Integrated Ocean Observing System (IOOS®), which is managed by the IOOS Office within the National Oceanic and Atmospheric Administration (NOAA) pursuant to the Integrated Coastal and Ocean Observation System Act of 2009 (Pub. L. No. 111-11), as amended by the Coordinated Ocean Observation and Research Act of 2020 (Pub. L. No. 116-271, Title I), codified at 33 U.S.C. §§ 3601–3610 (referred to herein as "IOOS HF-radar"). IOOS HF-radar measures the sea state, including ocean surface current velocity and waves in near real time. These data have many vital uses ("mission objectives"), including tracking and predicting the movement of spills of hazardous materials or other pollutants, monitoring water quality, and predicting sea state for safe marine navigation. The U.S. Coast Guard also integrates IOOS HF-radar data into its Search and Rescue systems. The Project is within the measurement range of [TODO:QUANTITY] IOOS HF-radar systems listed in the table below:

Radar Name	Radar Operator
[TODO:NAME]	[TODO:OPERATOR]

1.1 Mitigation Requirement

Due to the potential interference with IOOS HF-radar and the risk to public health, safety, and the environment, the Lessee must mitigate unacceptable interference with IOOS HF-radar from the Project. Interference must be mitigated before commissioning the first wind turbine generator (WTG) or before blades start spinning, whichever is earlier, and interference mitigation must continue throughout operations and decommissioning until the point of decommissioning where all rotor blades are removed. Interference is considered unacceptable if, as determined by BOEM in consultation with NOAA's IOOS Office, IOOS HF-radar performance falls or may fall outside any of the specific radar systems' operational parameters or fails or may fail to meet IOOS's mission objectives.

1.2 Mitigation Review

The Lessee must submit documentation to BOEM demonstrating how it will mitigate unacceptable interference with IOOS HF-radar in accordance with Section 1.1. The Lessee must submit this documentation to BOEM (renewable_reporting@boem.gov) at least 120 days prior to commissioning the first WTG or blades start spinning, whichever is earlier. If, after consultation with the NOAA IOOS Office, BOEM deems the mitigation acceptable, the Lessee must conduct activities in accordance with the proposed mitigations.

[1] The numbers listed in this Appendix A are sample formatting and do not indicate where these terms will appear within a COP approval document.

If, after consultation with NOAA IOOS Office, BOEM deems the mitigation unacceptable, the Lessee must resolve all comments on the documentation to BOEM's satisfaction.

1.3 Mitigation Agreement

The Lessee is encouraged to enter into an agreement with the NOAA IOOS Office to implement mitigation measures, and any such Mitigation Agreement may satisfy the requirement to mitigate unacceptable interference with IOOS HF-radar. The point of contact for the development of a Mitigation Agreement with the NOAA IOOS Office is the Surface Currents Program Manager, whose contact information is available at https://ioos.noaa.gov/about/meet-the-ioos-program-office/ and upon request from BOEM. If the parties reach a mitigation agreement, the Lessee must submit the agreement to BOEM at renewable_reporting@boem.gov. A Lessee may satisfy its obligations under Section 1.2 by providing BOEM with an executed Mitigation Agreement between the Lessee and NOAA IOOS. If there is any discrepancy between Section 1.2 and the terms of a Mitigation Agreement, the terms of the Mitigation Agreement will prevail.

1.4 Mitigation Data Requirements

Mitigation required under Section 1.2 must address the following:

1.4.1 Before commissioning the first WTG or before blades start spinning, whichever is earlier, and continuing throughout the life of the Project until the point of decommissioning when all rotor blades are removed, the Lessee must make publicly available via NOAA IOOS near real-time, accurate numerical telemetry of surface current velocity, wave height, wave period, wave direction, and other oceanographic data measured at Project locations selected by the Lessee in coordination with the NOAA IOOS Office.

1.4.2 If requested by the NOAA IOOS Office, the Lessee must share with IOOS accurate numerical time-series data of blade rotation rates, nacelle bearing angles, and other information about the operational state of each WTG in the Lease Area to aid interference mitigation.

1.5 Additional Notification and Mitigation

1.5.1 If at any time the NOAA IOOS Office or a HF-radar operator informs the Lessee that the Project will cause unacceptable interference to a HF-radar system, the Lessee must notify BOEM of the determination and propose new or modified mitigation pursuant to Section 1.2 as soon as possible and no later than 30 calendar days from the date on which the determination was communicated.

1.5.2 If a mitigation measure other than that identified in Section 1.2 is proposed, then the Lessee must submit information on the proposed mitigation measure to BOEM for its review and concurrence. If, after consultation with the NOAA IOOS Office, BOEM deems the mitigation acceptable, the Lessee must conduct activities in accordance with the proposed mitigations. The Lessee must resolve all comments on the documentation to BOEM's satisfaction prior to implementation of the mitigation.

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