

FINAL DRAFT FOR ESG APPROVAL



MEMORANDUM OF UNDERSTANDING Establishment of the Wind Turbine Radar Interference Mitigation Working Group

Between the Following U.S. Federal Government Agencies

DEPARTMENT OF DEFENSE (DOD)
DEPARTMENT OF ENERGY (DOE)
FEDERAL AVIATION ADMINISTRATION (FAA)
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)
BUREAU OF OCEAN ENERGY MANAGEMENT (BOEM)

I. PURPOSE

All Federal agencies having a stake in resolving wind turbine radar interference issues should, where opportunities present themselves, develop a shared vision and framework to coordinate activities. This Memorandum of Understanding (MOU) supersedes the 2014 Memorandum of Understanding, *Establishment of the Wind Turbine Radar Interference Mitigation Working Group (WTRIM)*, and establishes a general framework to encourage cooperation and coordination between the signatory agencies (the Parties). The purpose of this MOU is to identify and develop the means to mitigate the potential technical and operational effects of wind turbine projects on critical radar missions within the jurisdiction of the Parties, including offshore regions. The goals of the interagency effort include:

- a. Developing near-term (5 years), mid-term (10 Years), and long-term (20 years) goals focusing on technology driven mitigation solutions. These will be primarily technology driven, but may also extend to policy and legislative proposals, as necessary.
- b. Creating and executing a plan to implement workable solutions that includes a process for the Parties to commit funding necessary to execute the near, mid, and long-term mitigation, as outlined in Section II.

II. REQUIREMENTS

A. Whereas all Parties have been empowered by internal management, and in some cases additionally by Congress, to identify wind turbine/radar interference mitigation solutions, their representatives will coordinate the development of an interagency Research and Development Plan, as well as commitments of funding required for all associated studies, field tests, or other agreed to expenditures to be cost-shared commensurate with meeting agency equity needs.

B. Department of Energy: Whereas DOE supports research and development to reduce the cost of wind energy and overcome challenges to its adoption nationwide, including, but not limited to, wind turbine radar interference, DOE will:

- a. Commit senior departmental oversight and leadership.
- b. Participate in the budget process by helping identify required studies, field tests, or other agreed-to expenditures.

C. Department of Defense, Federal Aviation Administration, and the National Oceanic and Atmospheric Administration: Whereas these agencies and sub-agencies have critical radar systems that are threatened by wind turbine interference and need to identify workable and affordable mitigation measures, they will:

- a. Commit senior departmental oversight and leadership.
- b. Help identify required studies, field tests, or other agreed to activities.
- c. Help identify resources to support WTRIM activities commensurate with meeting their agency needs and budgetary constraints.
- d. Use this MOU to satisfy the requirement for the Secretary of Defense to enter into an arrangement with the National Oceanic and Atmospheric Administration to conduct a joint study on the impact of wind farms on weather radars and military operations, as required by the Fiscal Year 2019 National Defense Authorization Act, Section 318.

D. Bureau of Ocean Energy Management: Whereas BOEM is the regulatory authority and primary permitting agency for offshore wind energy development on the Outer Continental Shelf and has need to identify critical radar interference and workable mitigation measures, BOEM will:

- a. Commit senior management oversight and leadership.
- b. Participate in the budget process by helping to identify required studies, field tests, or other agreed to expenditures based on the principles of cost sharing commensurate with meeting their equity needs.

E. The interagency team will collaborate as appropriate with other federal government groups and organizations, including, but not limited to:

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The DoD/FAA National Air Surveillance (NAS) Modernization Working Group, the joint working group responsible for addressing common NAS information assurance needs.

III. STIPULATIONS (subject to applicable Federal laws, regulations, and policies)

Now, therefore, the Parties agree that the undertaking will be implemented with the following stipulations:

- A. Management of the WTRIM Working Group will be carried out in the manner of a three-tiered team:
- a. Executive Steering Group (ESG): The ESG will be composed of executive level representatives from each of the Parties to provide oversight and strategic direction to the Working Group. The ESG will:
 - i. Approve a 5-year plan for studies, field tests or other agreed-to activities on which agency funding requirements can be determined, based on the principle of cost-sharing and commensurate with the intent of the MOU and respective agency equity needs.
 - ii. Prepare a yearly progress report at the end of each calendar year. The report should also include objectives for the following years.
 - iii. Lead, or designate a Senior Steering Group (SSG) representative to lead quarterly progress review briefings held by the WTRIM, provide executive oversight, and ensure that the spirit and purpose of the MOU is being satisfactorily pursued.
 - iv. Appoint representatives to an SSG that is composed of management level representatives from each of the Parties who will carry out ESG approved tasks.
 - b. Senior Steering Group (SSG) – The ESG will appoint organizational representatives to the SSG. The SSG’s purpose will be to provide the WTRIM Working Group (WG) program management and synchronization across WTRIM WG activities. When necessary, the SSG may invite government representatives from non-Parties to participate in meetings.
 - c. WTRIM WG – The WG will be composed of representatives from within as well as outside the Parties, as approved by the SSG. The WG will normally include federal government scientists, engineers, and agency analysts, who will be responsible for executing project tasks, as approved and directed by the SSG. The WG may, as necessary, be augmented at the approval of an SSG member.

IV. MUTUAL UNDERSTANDINGS.

- A. This MOU describes the general terms upon which the Parties will cooperate. Performance by each Party under the terms of this MOU is subject to the

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availability of appropriated funds and personnel resources through their respective funding procedures. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds or transfer of anything of value between Parties to this MOU will be handled in accordance with applicable laws, regulations, and procedures. Any such endeavors by the SSG will be outlined in separate agreements, such as work plans or statements of work, which will be made in writing by representatives of the Parties and independently authorized by appropriate authority.

- B. This MOU is a voluntary agreement and does not create any rights or benefits, either substantive or procedural, enforceable by law or equity, by persons who are not party to this agreement, against the Parties, or their officers or employees. This MOU does not apply to any person outside those of the Parties. This MOU does not impose any legally binding requirements on the Parties, the regulated community, or the public and does not restrict the authorities of the Parties to exercise their discretion in making regulatory decisions based upon their judgment about specific facts and application of relevant statutes and regulations.
- C. Nothing in this MOU is intended to diminish, modify, or otherwise affect the statutory or regulatory authorities of the Parties or relieve them of their obligations under Federal Law.
- D. Nothing in this MOU will be construed as an indication of a financial commitment by the Parties for the expenditure of funds, except as authorized in specific appropriations.
- E. This MOU may only be modified or amended by mutual agreement of all Parties in writing.
- F. Additional Federal organizations may become Parties to the MOU by the approval of the ESG.
- G. This MOU may be terminated at any time by the mutual written agreement of all Parties or individual Parties may withdraw upon 90 days written notice to the other Parties.
- H. This MOU will remain in force for a period of five years from the date of its execution.

- V. **POINTS OF CONTACT.** The following individuals will be the working level points of contact for this MOU:

DEPARTMENT OF DEFENSE

Steve Sample
Deputy Director, DoD Siting
Clearinghouse

**BUREAU OF OCEAN ENERGY
MANAGEMENT**

Jennifer Miller
Geophysicist, Office of Renewable
Energy Programs

DEPARTMENT OF ENERGY

Patrick Gilman
Modeling and Analysis Program
Manager, Wind Energy Technologies
Office

**FEDERAL AVIATION
ADMINISTRATION**

James Baird
Surveillance Lead, NAS EA Division

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Jessica Schultz
Radar Operations Center
National Weather Service

EFFECTIVE DATE. The Parties have by their signatures on the following pages executed this MOU as of this date:

FOR THE DEPARTMENT OF DEFENSE

Ronald E. Tickle
Executive Director, DoD Siting Clearinghouse, Office of the Assistant Secretary
of Defense
(Energy, Installations & Environment)



FOR THE DEPARTMENT OF ENERGY

Timothy Unruh
Deputy Assistant Secretary, Renewable Power
Office of Energy Efficiency and Renewable Energy



FOR THE FEDERAL AVIATION
ADMINISTRATION

Joseph Post
Director, (Acting) NAS Systems Engineering Services
(ANG-B) FAA NextGen Office



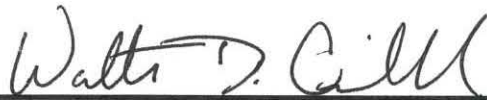
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**FOR THE NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION**

Joseph Pica, Director
Office of Observations
National Weather Service



BUREAU OF OCEAN ENERGY MANAGEMENT



Dr. Walter D. Cruickshank
Acting Director, Bureau of Ocean Energy Management





**BUREAU OF OCEAN ENERGY MANAGEMENT
DOCUMENT TRACKING CONTROL SLIP**

Date: 06/13/2019

DCN: OEM0002127		ES No:
Orig Office: OREP-PM Staff	Input Date: 04/25/2018	Addressee: OREP, Office of Renewable Energy Programs
Due Date:	Signature Level: D	
Subject: BOEM SIGNATORY TO THE MOU FOR THE WTRIM WG		

Comments:

Task Codes:

- | | | |
|-------------------------|--------------------------------|---------------------------|
| 0 - Prepare Draft Reply | 6 - Revise | 12 - Email Draft Reply |
| 1 - Prepare Reply | 7 - Obtain Additional Comments | 13 - Advance Read |
| 2 - Appropriate Action | 8 - Other - See Comments | 14 - File |
| 3 - Surname | 9 - Mail/Distribute | 15 - For Your Information |
| 4 - Signature | 10 - Finalize | 16 - Surname through DTS |
| 5 - Review/Comment | 11 - Simultaneous Surnames | 17 - Required ES Review |

Routing:

Assigned To	Task	Assigned Date	Due Date	Completed Date
LM-Assistant Secretary Joe Balash	3 - Surname	05/28/2019		06/13/2019
LM-ASLM CCU	9 - Mail/Distribute	06/13/2019		06/13/2019
OREP-ETRB-staff Jennifer Miller	15 - For Your Information	06/13/2019		
DIR-Acting Director Walter Cruickshank	4 - Signature <i>Walter D. Cruickshank</i>	06/13/2019		<i>6-14-19</i>



BUREAU OF OCEAN ENERGY MANAGEMENT DOCUMENT TRACKING CONTROL SLIP

Date: 12/11/2018

DCN: OEM0002127		ES No:
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Routing:

Assigned To	Task	Assigned Date	Due Date	Completed Date
DIR-ODM Ericka Williams	3 - Surname	12/11/2018	11/09/2018 ¹ <i>cancel</i>	12/11/2018
DIR-COS Emily Lindow	3 - Surname	12/11/2018	<i>4 edits for Emily</i>	12/12/2018
DIR-SpA James Schindler	3 - Surname		<i>[Signature]</i>	12/12/18
DDIR James Kendall	3 - Surname		<i>[Signature]</i>	12/18/18
DIR-Acting Director Walter Cruickshank	3 - Surname	<i>Call w/ edits to briefing paper</i>		12/18/18
LM-ASLM CCU	3 - Surname	<i>12/21/18</i>		

12/18 Update



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Routing:

Assigned To	Task	Assigned Date	Due Date	Completed Date
OREP-ETRB-staff Jennifer Miller	5 - Review/Comment	04/25/2018		05/02/2018
OREP-ETRB-C Darryl Francois	5 - Review/Comment	05/11/2018		05/11/2018
OREP-DPM Annette Moore	5 - Review/Comment	05/11/2018		05/11/2018
OREP-PM Staff Mary Borcharding	5 - Review/Comment	05/11/2018		05/17/2018
OREP-S Wendy Money	5 - Review/Comment	05/17/2018		05/21/2018
OREP-PM James Bennett	5 - Review/Comment	05/18/2018		05/18/2018
OREP-ETRB-staff Jennifer Miller	2 - Appropriate Action	05/18/2018		08/31/2018
OREP-ETRB-C Darryl Francois	3 - Surname	08/31/2018	09/05/2018	09/13/2018
OREP-DPM Annette Moore	3 - Surname	09/13/2018	09/06/2018	09/19/2018
OREP-PM James Bennett	3 - Surname	09/19/2018	09/07/2018	09/26/2018
OREP-ETRB-staff Jennifer Miller	2 - Appropriate Action	09/26/2018		10/04/2018
OREP-DPM Annette Moore	3 - Surname	10/04/2018	10/09/2018	10/05/2018
OREP-PM	3 - Surname	10/08/2018	10/10/2018	10/05/2018



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James Bennett				
SOL-DMR-BOR-Kaplowitz.j Joshua Kaplowitz	16 - Surname through DTS	10/05/2018		10/08/2018
SOL-DMR-BOR-Baker.t Timothy Baker	16 - Surname through DTS	10/08/2018		10/09/2018
SOL-DMR-BOR-Daugherty.d Dennis Daugherty	3 - Surname	10/09/2018		10/10/2018
SOL-DMR-Hawbecker.K Karen Hawbecker	16 - Surname through DTS	10/10/2018		10/12/2018
SOL-DMR Support Staff	3 - Surname	10/12/2018		10/12/2018
SOL-SOL-Burke.m Marcella Burke	16 - Surname through DTS	10/15/2018		10/16/2018
SOL-SOL-Front Office	2 - Appropriate Action	10/16/2018		10/17/2018
SOL-DAD	3 - Surname	10/17/2018	10/19/2018	10/17/2018
OPRA Robert Sebastian	3 - Surname	10/17/2018	10/26/2018	12/11/2018
OPRA Deanna Meyer-Pietruszka	3 - Surname	12/11/2018		12/11/2018