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Wind Turbine Radar Interference Mitigation Working Group

Annual Progress Update for 2025

Sandia National Laboratories

U.S. DEPARTMENT of ENERGY

NNSA National Nuclear Security Administration

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INTRODUCTION

The Memorandum of Agreement (MOA), by which the efforts of the Wind Turbine Radar Interference Mitigation Working Group (WTRIM WG) are organized, requires the Executive Steering Group (ESG) to provide a yearly progress report at the end of each calendar year. This document includes a brief description of the major projects undertaken by the WTRIM WG for fiscal year 2025 categorized under the three strategic themes as detailed in the updated *Federal Interagency WTRIM Strategy*. These themes are:

1. Improving the capacity of government and industry to evaluate the impacts of wind energy installations on radar systems
2. Developing the hardware and software mitigation measures to increase the resilience of radar systems to wind turbines
3. Encouraging the development of next-generation radar systems that are resistant to wind turbine interference.

2025 was a year of uncertainty for the wind energy market. In the first half of the year, wind energy installations surged, more than doubling compared to the same period in 2024. However, this momentum was tempered in the second half, as wind turbine orders fell to their lowest levels since 2020, as reported by the American Clean Power Association (ACP)[1]. Additionally, an Executive Order temporarily withdrew all areas on the outer continental shelf from offshore wind leasing.

Amid these challenges, the Wind Turbine Radar Interference Mitigation Working Group remained steadfast in its mission to evaluate and mitigate the impacts of wind turbines on federally owned radar systems. For example, the U.S. Wind Turbine Database (USWTDB) played a pivotal role by providing essential data on wind turbine locations and specifications. This information is critical for ongoing cumulative impact analyses and wind impact assessments, particularly in understanding the spatial overlap between wind energy potential and radar line-of-sight. A notable initiative in 2025 is the performance study of the Aircraft Detection Lighting System (ADLS) to investigate the suitability of ADLS for military aviation given that these systems were originally designed for civilian aircraft. The study addresses concerns regarding the performance of ADLS radars for modern low-observable (stealthy) military aircraft, examining the required warning distances for safe turbine avoidance.

A significant achievement in 2025 was the amendment of the Memorandum of Agreement to include the Department of Homeland Security. This addition, along with several interagency agreements among WTRIM members to pursue further mitigation techniques for long-range radar systems and weather radar systems, underscores the Working Group's commitment to solving these challenges. These collaborative efforts are crucial for ensuring the coexistence of wind energy development and radar functionality.

[1] American Clean Power: https://cleanpower.org/resources/us-wind-energy-monitor-q2-2025/

2025 MAJOR TASKS AND ACCOMPLISHMENTS

Theme 1: Improving the capacity of government and industry to evaluate the impacts of existing and planned wind energy installations on sensitive radar systems.

WTRIM Memorandum of Agreement Amendment

Funding organization: NA
Background: The purpose of the amendment is to add the Department of Homeland Security as a member to the Wind Turbine Radar Interference Mitigation (WTRIM) Interagency Memorandum of Agreement (MOA). The WTRIM MOA allows additional federal agencies to join the WTRIM as full members through the agreement of existing members of the WTRIM (Section 4, "Mutual Understanding" subparagraphs E & F).

Status: The MOA Amendment adding the Department of Homeland Security as a member of the WTRIM Working Group was signed and executed by all WTRIM members as of April 15, 2025.

U.S. Wind Turbine Database

Funding organization: Department of Energy (DOE), U.S. Geological Survey (USGS), and American Clean Power Association (ACP)
Background: The U.S. Wind Turbine Database (USWTDB; https://eerscmap.usgs.gov/uswtdb) provides the locations of land-based and offshore wind turbines in the United States, corresponding wind project information, and turbine technical specifications. It is a continuously updated geo-rectified set of coordinates and characteristics of the wind turbine fleet of installed onshore and offshore wind turbines. Further, the USWTDB team prepares custom datasets exclusively for WTRIM members of turbines under construction or in advanced development for both onshore and offshore locations. These sets of data are used to determine likely future cumulative impacts of turbines on radar systems in certain geographies.

Status: The USWTDB viewer surpassed 22 million views in 2025 with a steady rate over time of roughly 300,000 views per month. 8% of the 2023–2024 views are from .gov including the National Oceanic & Atmospheric Administration (NOAA), DOE, U.S. Department of Agriculture (USDA), FAA, and national labs. Roughly 0.5% are from .mil origins including the US Armed Forces and the Secretary of War. Other large users include: .edu users including major colleges and universities and K–12 schools across the US; .st users including state governments; and, finally, developers, equipment manufacturers, utilities, and members of the public. The USWTDB interface allows online users to perform data summary calculations, screening and year-by-year changes of key turbine and project features, which are viewed in graphical format based on whichever turbines are showing in the viewer. In 2025, the team released a dataset of decommissioned turbines to USWTDB users and will continuously update this going forward.

Geographic Areas of Concern Update

Funding organization: Department of War (DOW)
Background: The Institute for Defense Analyses (IDA) was tasked to develop definitions for geographic areas of concern (GACs) that could have an adverse impact on military operations and readiness from potential wind turbine projects. Additionally, IDA was tasked to develop draft GAC maps for three military installations as a pilot program. The installations chosen were Sheppard AFB, Fort Indiantown Gap and Naval Weapons Systems Training Facility Boardman.

Status: IDA developed definitions for the GACs in three tiers. These definitions were vetted through the Clearinghouse and the Services. The definitions were then used to develop GACs for the three pilot sites. The definitions are:

- Area of Concern (AoC) 1: AoC1 is a geographic area that will result in an adverse impact* on military operations or readiness, and there are no feasible mitigation options.
- Area of Concern (AoC) 2: AoC2 is a geographic area that will result in an adverse impact* on military operations or readiness where Mitigation Resolution Team (MRT) will be required to determine if there is a feasible mitigation option. Mitigation will depend upon the impact of each proposed project on current and anticipated DOW activities.
- Area of Concern (AoC) 3: AoC3 is a geographic area of low to medium risk to military operations and readiness. DOW will monitor all new energy project proposals to determine risk to DOW activities.

* As defined by Section 312 of Title 10, United States Code, (10 U.S. § 183a (h)(1)) "Adverse impact on military operations and readiness means any adverse impact upon military operations and readiness, including flight operations, research, development, testing, and evaluation, and training, that is demonstratable and is likely to impair or degrade the ability of the armed forces to perform their warfighting missions."

The GACs delineate areas of concern where physical obstruction and/or electromagnetic interference may occur and ultimately affect military operations and readiness.

NORAD Areas-of-Concern List Update

Funding organization: North American Aerospace Defense Command (NORAD)
Background: NORAD maintains a Radar Area-of-Concern list that tracks the impact of existing and proposed wind turbines on individual radars. This effort is high-level analysis to identify and quantify the impact of existing and proposed wind energy projects on the National Airspace System (NAS) and the NORAD and USNORTHCOM missions. This product ranks areas of concern providing data for plans and operations. Additionally, it informs options for radar interference mitigation and prioritization of radar platforms and locations.

Status: NORAD works closely with DOW entities and the U.S. Wind Turbine Database partners to integrate both onshore and offshore existing and proposed wind turbine data into NORAD and USNORTHCOM analysis. Additionally, NORAD works closely with MIT Lincoln Laboratory to compare analysis of wind energy projects.

NORAD completed an update to the Areas-of-Concern list that has been expanded to 47 radars and reordered to reflect recent wind energy growth trends.

Wind Impact Assessment to Radar

Funding organization: DOW
Background: Emerging offshore wind development in coastal United States waters will impact DOW and the U.S. Coast Guard (USCG) operating areas in various ways. The Wind Impact Assessment to Radar (WIAR) is focused specifically on understanding and mitigating potential offshore wind interference effects to U.S. Navy and USCG radar systems. The objective of the WIAR project is to conduct a baseline assessment of impacts to currently fielded airborne and shipboard systems from offshore wind farms on a scale that currently exists only in other parts of the world but is anticipated to be in place in the next few years along the East Coast of the United States.

Status: The study team is analyzing data collected by a U.S. Navy Destroyer operating in the North Sea and is working to coordinate future collection events in the vicinity of the Coastal Virginia Offshore Wind and other offshore energy projects.

Offshore Wind Impacts on Surveillance Radar

Funding organization: DOW
Background: The Naval Air Warfare Center Aircraft Division (NAWCAD) received funding to evaluate the impact of wind farms on commercial airborne surveillance radars. Phase I validated and quantified the extent of clutter caused by wind turbines on radars currently used for range clearance operations. Phase II utilized trade studies and High-Performance Computing (HPC) to develop mitigation strategies aimed at addressing predicted radar performance limitations and improve surface vessel traffic awareness in wind farm-affected areas.

Status: Phase III is underway, focusing on model verification and validation through a planned test event involving operational wind turbines in Coastal Virginia. The technical mitigations developed during Phase II, combined with the results of Phase III testing, will inform future safety risk assessments and guide decision-making for range clearance precautions and procedures at the Atlantic Test Range (with potential applicability at other locations that use similar surveillance radars).

Underwater Acoustic Impacts of Offshore Wind

Funding organization: DOW
Background: Wind turbines create noise as they operate. Offshore wind turbines transfer mechanical noise into the water during construction, normal operations, and periodic maintenance. Literature suggests that offshore turbines generally produce noise in the low frequencies during operations, and such frequencies are of interest to naval operations. Additional effects could include less noise in the medium frequencies because the turbine slows down the wind. These changes in the ocean noise could affect Navy undersea training, testing, and operations when conducted in proximity to the turbine farms.

Status: CNA completed an assessment of potential underwater acoustic impacts on undersea operations and training from offshore wind turbines, as requested by the DOW's Military Aviation and Installation Assurance Siting Clearinghouse. CNA provided a government-only report to the DOW and Navy elements.

Theme 2: Developing and facilitating the deployment of hardware and software mitigation measures to increase the resilience of existing radar systems to wind turbines.

Implementation of In-phase & Quadrature (IQ) Range-azimuth Gating (RAG) Map

Funding organization: Federal Aviation Administration (FAA)
Background: The FAA is continuing its effort from an earlier Inter-Agency Agreement (IAA) between Second Level Engineering (specifically AJW-1433) and the Department of Energy. The main result from that IAA was an improvement to the In-phase/Quadrature (IQ) Range Azimuth Gated (RAG) map. Moving forward, further optimizations were made to the Airport Surveillance Radar Model-11 (ASR-11) to maximize the benefit from the IQ RAG map as possible.

Status: The updates to the ASR-11 were being verified with testing. Development testing on the simulator was completed in August 2025 and system testing in the ASR-11 lab in Oklahoma City was partially completed in September 2025. Operational site testing for final verification was

planned for 2026. This project has been halted in early December 2025 due to a shift to the Radar System Replacement (RSR) efforts. However, all the code, data, and documentation have been stored for any future integration.

Offshore Wind Impacts Modeling via AI & Machine Learning

Funding organization: DOW
Background: Georgia Tech Research Institute (GTRI) seeks to assess the impact of wind turbine installations on the Air Surveillance Radar (ASR)-11 and, subsequently, investigate approaches for mitigating any anticipated performance degradation. Initial efforts have focused on developing a database of ASR-11 data, both simulated and operational. These data sets will be used to support establishing baseline ASR-11 target detection performance (with and without wind turbines present) and for the development and assessment of any wind turbine mitigation algorithms.

Status: GTRI has developed a software environment for simulating ASR-11 returns from ground clutter, moving targets, thermal noise, and wind turbines. A large simulation database has been generated to support performance assessments and algorithm development. Additionally, GTRI has obtained and processed FAA-provided ASR-11 radar data and is currently performing the task of labeling that data. Once this is completed, GTRI will being to test a set of selected potential approaches for mitigating the impact of wind turbines on the ASR-11.

MIT LL ASR/ARSR Multi-static Project

Funding organization: DOW
Background: This project seeks to enhance the capabilities of existing air surveillance radar systems by deploying multiple receivers around regions of high-priority airspace to improve sensitivity for small targets, to increase resolution, and to reject ground clutter from wind turbines and other sources.

Status: MIT Lincoln Laboratory (MIT LL) has completed Phase I and II of the project and is currently in Phase III, algorithm development and multi-sensor analysis. This includes RF equipment performance optimization and antenna analysis and redesign. MIT LL tested the system in Burlington, VT, showing promising results. Additional testing of the system is being planned.

Wind Turbine Interference Mitigation via Adaptive Beam Steering (“Sidekick”) – Phase II

Funding organization: DOW
Background: The goal of this project is to develop and provide a technical mitigation solution using higher radar sample rates and multiple beam processing to minimize impacts on Airport Surveillance Radar (ASR) systems from wind farm installations.

Status: Space Dynamic Laboratory (SDL) has developed a passive radar receiver that uses the primary DASR signal as the transmitter. The receiver is an 8-element antenna array that uses elevation to discriminate targets from ground as well as an adaptive beam forming process to suppress energy coming from the direction of the ground. SDL has collected data from Travis Air Force Base with an instrumented Cessna aircraft flying spirals over the wind resource area demonstrating promising results.

Artificial Intelligence Processing Techniques for Surveillance Processing in Radar (CRADA)

Funding organization: FAA CRADA
Background: The FAA executed a CRADA (cooperative research and development agreement) with NVIDIA to support NVIDIA's development to use AI techniques for processing surveillance radar data. The CRADA began July 2025. NVIDIA expects to apply new AI approaches to the problem of air surveillance over wind resource areas.

Status: This project is on-going.

Machine Learning for Clutter Suppression and Characterization

Funding organization: FAA
Background: MIT Lincoln Laboratory has developed a real-time machine learning inference model that can significantly reduce clutter from wind turbines and other sources for radar systems.

Status: In FY25 MIT LL continued to train the model based on nearly a year of data from multiple radar sites. In FY26 MIT LL will work to transfer the software source code and training process to agency stakeholders, as well as test and evaluate the model based on radar performance requirements. For more information, requests can be made to the Long Range Radar Joint Program Office.

Long Range Radar Adaptive Nulling Feasibility Study

Funding organization: DOW
Background: This project analyzed the potential and value of replacing Long Range Radar components and employing adaptive elevation nulling to detect targets above wind turbines.

Status: The project is completed. The study leveraged data from the IFT&E program. Study noted that adaptive nulling would require changes to two hardware boards within the radar. For more information, request can be made to the Long Range Radar Joint Program Office.

FAA ARSR-4 Upgrades

Funding organization: FAA, DOW, DOE
Background: False targets increase near wind turbines that are located within the operating range of long-range radar systems. Increases in false targets decrease the radar's probability of detection of true targets, thus reducing the fidelity of the search data provided to stakeholders**.** The AJW-142, part of the NAS Defense Programs (NDP), developed the Stationary Doppler Target Suppressor (SDTS) that successfully met 80% probability of detection with an acceptable false alarm rate. As part of deploying the SDTS and clutter map segregation, the ARSR-4's Constant False Alarm Rate (CFAR) circuit board and Detection Maps circuit board will be modernized. The current wire-wrapped CFAR and Detection Maps boards in the ARSR-4 will be replaced with custom designed Printed Circuit Boards (PCBs) with Field Programmable Gate Arrays (FPGAs) and synthesized firmware that correlates to most of the Integrated Circuit (IC) logic currently on the wire-wrapped versions. This modernization will provide the necessary memory and processing capability to implement Clutter Map Segregation and SDTS.

Status: Two Interagency Agreements have been put in place- one between the DOE and FAA, and one between the DOW and FAA- to fund upgrades and testing to the ARSR-4 radar at critical radar sites. The agreements will support hardware and software upgrades and performance assessment

for several ARSR-4s critically saturated by wind farms, as identified by NORAD and supported by an analysis completed by MIT-LL.

Passive Radar CRADA

Funding organization: FAA CRADA
Background: The FAA executed a CRADA (cooperative research and development agreement) with Hensoldt to explore the feasibility of a passive radar for air surveillance. This past summer Hensoldt collected data with their Twinvis passive radar for targets of opportunity over wind resource areas near Corpus Christi, Texas. Twinvis tracked various aircraft over the wind turbines, however, detailed analyses were not conducted and therefore performance criteria over wind turbines were not assessed.

Status: Hensoldt and the FAA are completing an appendix to their main CRADA report to document the results of the data collections at Corpus Christi, Texas.

Air Force Flight Standards Agency Infill Radar Program

Funding organization: U.S. Air Force
Background: The Air Force seeks to demonstrate an infill radar capable of non-cooperative[2] target detection in and around wind resource areas. Recently, the Air Force experimented with a rotating antenna infill radar for this purpose and is now looking to a phased array antenna infill radar. The Air Force published a Request for Information (RFI) in January 2025 resulting in seven vendor responses. Subsequently, the Air Force published a Request for Proposals (RFP) in June 2025 resulting in five responses for a phased array antenna infill radar. Expert evaluations of the proposals yielded two viable contenders for support and demonstration of wind turbine mitigation performance.

Status: The two vendors are under contract to deploy their infill radar at Travis Air Force Base in 2026. In addition to targets of opportunity, civil air patrol flights will provide targets with complex flight paths to stress the effectiveness of each radar over the wind resource area.

Wind Turbine Clutter Mitigation for the NEXRAD Network

Funding organization: DOE
Background: The proposed complete wind turbine clutter (WTC) mitigation solution includes signal-processing-based detection and filtering techniques. An effective WTC detection technique must be able to respond to dynamic changes in the atmosphere and new wind farm developments. Changes in spatial variations in temperature, pressure, and humidity cause radar beam propagation changes, referred to as anomalous propagation, that result in apparent changes in the radar line-of-sight. That is, the radar beam "bends" toward (away from) the ground resulting in wind turbines causing more (less) impact on radar performance. Also, storm dynamics near wind farms determine how much WTC impacts radar performance. In this project, scientists at the National Severe Storms Laboratory and the Cooperative Institute for Severe and High Impact Weather Research and Operations will continue the evaluation of the two WTC detection techniques and advance them.

Status: A proof-of-concept WTC filtering technique was developed, and its performance was preliminarily demonstrated using one data set collected with a NEXRAD radar. An important

[2] Non-cooperative refers to targets without the use of on-board avionics, using radio signal reflections to cooperate with the radar.

finding from this initial demonstration is that the WTC filter must be applied only to locations that have dominant WTC contamination. When the filter is applied to locations with uncontaminated weather signals or weak WTC contamination, it may lead to significant weather signal losses that can negatively impact the performance of the radar. Additionally, because the WTC filter is computationally expensive, its application only on WTC-contaminated locations would help keep the overall computational complexity compatible with current NEXRAD signal-processing capabilities. The change is performance based on the content of the location which motivates the need for a WTC detection technique that can effectively control the application of the WTC filter, analogously to how the NEXRAD network uses a ground-clutter detection technique to limit the application of the ground-clutter filter to locations with ground-clutter contamination.

An Interagency Agreement (IAA) was signed between the DOE and the National Oceanic and Atmospheric Administration (NOAA) to fund this effort.

NOAA IOOS – BOEM Memorandum of Understanding & Offshore Wind Farm Agreements

Funding organization: NOAA Integrated Ocean Observing System (IOOS), Bureau of Ocean Energy Management (BOEM)
Background: BOEM issues commercial wind energy leases that give lessee the exclusive right to submit a Site Assessment Plan and Construction and Operations Plan, and to conduct activities described in those plans as approved by BOEM. NOAA's IOOS Office's mission is to manage the Integrated Ocean Observing System to produce, integrate, and communicate high quality ocean, coastal, and Great Lakes information to meet the safety, economic, and stewardship needs of the Nation. Offshore wind turbines have the potential to interfere with the High-Frequency (HF) radar systems if appropriate mitigation measures are not in place.

Status: The MOU Annex establishes a mechanism for NOAA and BOEM to ensure that offshore wind lessees are responsible for mitigation potential HF-radar interference pursuant to Construction and Operations Plan terms and conditions for any offshore wind project authorized by BOEM that may cause HF-radar interference.

OTT: Software Tools for the Mitigation of Wind Turbine Interference in the U.S. IOOS Network

Funding organization: NOAA Integrated Ocean Observing System (IOOS)
Background: Building on initial mitigation research efforts by CODAR Ocean Sensors, funded by the Bureau of Ocean Energy Management, this project will conduct the necessary system integration, testing, validation, and verification needed for operational capacity. Offshore wind turbines create interference with HF-radar measurements that can lead to blind spots in the national HF-radar network. As the implementation of offshore wind-based energy grows, the potential for interference with HF-radar operations will also grow, creating sizable gaps in high-quality data and coverage.

Status: Recent research has been able to characterize this interference, creating the opportunity to implement software-based solutions that mitigate this interference and close those gaps. This project will: collect wind turbine interference data using a range of HF-radar systems; develop a focused dataset of simulated, hybrid, and observed wind turbine interference to test mitigation; document operational changes of the networked IOOS HF-radar systems that will increase the accuracy of mitigation methods; and conduct a full scale, in situ validation of mitigation methods at the first major U.S. offshore wind farm. HF-radar is a critical component of the IOOS mission,

capable of making both high spatial and temporal resolution observations of surface currents over the continental shelf. The plan outlined here, paired with the recommendations of an IOOS-tasked community working group, will result in validated software operating on HF-radar site computers, enabling radars to observe ocean currents in and around operating offshore wind farms.

RCS Characterization of Wind Turbine Utilizing Carbon Fiber in Blades

Funding organization: DOE
Background: Wind turbine blades manufactured with carbon fiber have been shown to weigh 25% less than ones made from traditional fiberglass materials. That means blades that utilize carbon fiber in their spar-cap are capable of being longer than traditional fiberglass blades. This may pose additional impacts to radar systems already stressed with increased number of wind turbines constructed within the line-of-sight of the radar. Sandia National Laboratories (Sandia) will conduct initial research into the potential increased impact that carbon fiber may have on radar systems when wind turbine blades are manufactured with carbon fiber.

Status: Sandia selected the IEA 15 MW offshore reference wind turbine as the model for this effort due to its open-source design, which facilitates collaboration between private industry and public research organizations. The team analyzed the electromagnetic scattering behavior of wind turbine systems using computational electromagnetic (CEM) methods. Comparisons between perfect electric conductor (PEC) and fiberglass boundary conditions highlighted limitations in layered impedance boundary conditions for modeling dielectric materials. A working high-frequency structure simulation model was established, providing a foundation for future research into advanced materials and Doppler-related studies.

Aircraft Detection Lighting System Radar Performance Study

Funding organization: DOW
Background: Aircraft Detection Lighting System (ADLS) (most notably their aircraft detection radars) were designed to protect the safety of civilian aircraft. It is not known how they will perform to protect the safety of military aircraft, which differ from typical civilian air traffic in terms of speed, flight profile, and radar detectability. ADLS radar performance for modern low-observable (stealthy) military aircraft is a particular concern. This study examines the suitability of ADLS performance to protect the safety of military aviation, by examining the required warning distances to allow a military aircraft to safely avoid turbines, and whether current ADLS radars can technically and operationally provide appropriate warning distances.

Status: This study is in progress. A technical analysis is being prepared by the Center for Naval Analyses and will be delivered to the DOW's Military Aviation and Installation Assurance Siting Clearinghouse once operational field test data can be incorporated to validate the study findings.

Theme 3: Encouraging the development of next-generation radar systems that are resistant to wind turbine radar interference.

FAA Radar Modernization Program

Funding organization: FAA
Background: The FAA continues to seek new radars to modernize the National Air Space (NAS) with commercial off-the-shelf radars for air traffic control. The new radars will include non-cooperative surveillance with capabilities for wind turbine mitigation. These radars are expected

to improve non-cooperative surveillance in and around wind resource areas with new algorithms to mitigate the impact of wind turbines.
Status: The program is currently working with vendors to demonstrate cooperative and non-cooperative radar performance and thereby accelerate deployment of the new radars in the NAS.

Outreach & Engagement Activities

To carry out the wide array of activities noted above, the WTRIM WG team maintained a full slate of internal core collaboration activities (bi-monthly teleconferences, sub-committee meetings, and quarterly meetings). The working group continues to receive industry feedback through periodic informal briefs during core activities and through formal mechanisms such as the recent Air Force RFI.

2026 WTRIM WORKING GROUP OBJECTIVES

In fiscal year 2026, the WTRIM WG will continue to cooperate and coordinate to advance near- (5 years), mid- (10 years), and long-term (20 years) mitigations. Consistent with the activities specified in the Federal Interagency WTRIM Strategy and the MOA, the WTRIM WG will focus on the following list of objectives:

- Continue to support development and execution of technical analyses to identify, characterize, and mitigate impacts of wind turbines on member Agency capabilities and mission areas.
    - Increase focus of technical analyses to potential offshore wind impacts to Federal agencies and the public equities they support.
    - Support testing and evaluation activities related to WTRIM and Federally-funded studies.
- Continue to support the efforts to mature and deploy mitigation capabilities through field testing and analysis.
- Continue to address concerns associated with impacts to oceanographic and meteorological weather radars.

Continue to support the development of next-generation radar systems that are resistant to wind turbine interference in coordination with efforts such as the Golden Dome and the Brand-New Air Traffic Control System (BNATC).

For more information, please visit the following websites:

U.S. Department of War Military Aviation and Installation Assurance Siting Clearinghouse
www.dodclearinghouse.osd.mil/

U.S. Department of Energy Wind Program
www.energy.gov/eere/wind/wind/mitigating-wind-turbine-radar-interference

Federal Aviation Administration Obstruction Evaluation / Airport Airspace Analysis
https://oeaaa.faa.gov/oeaaa/external/portal.jsp

Bureau of Ocean Energy Management
www.boem.gov/renewable-energy

National Oceanic and Atmospheric Administration Radar Operations Center
www.roc.noaa.gov/WSR88D/

National Oceanic and Atmospheric Administration Integrated Ocean Observing System
https://ioos.noaa.gov

U.S. Department of Homeland Security
www.dhs.gov