SAND2018-2361C

Wind Turbine Interference on Radar Systems
Federal Strategies for Mitigation

Establishes a framework of cooperation and coordination between agencies

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)
DEPARTMENT OF HOMELAND SECURITY (DHS)
FEDERAL AVIATION ADMINISTRATION (FAA)
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

Purpose: to mitigate technical and operational impacts of wind turbine projects on critical radar missions.

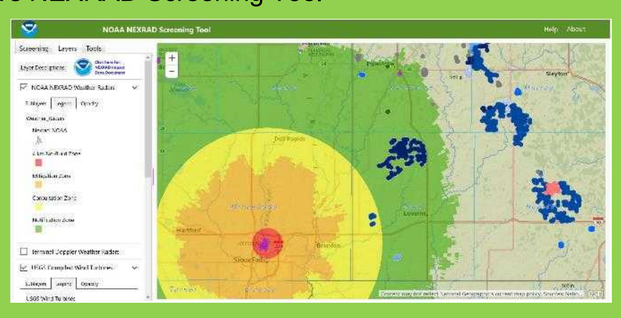
Goals include:

- Develop near- (5 years), mid- (10 years), and long-term (20 years) mitigation solution recommendations.
- Determine funding requirements to implement workable solutions and include a process for each MOU participant to fund execution of specific near-, mid-, and long-term mitigation solution.

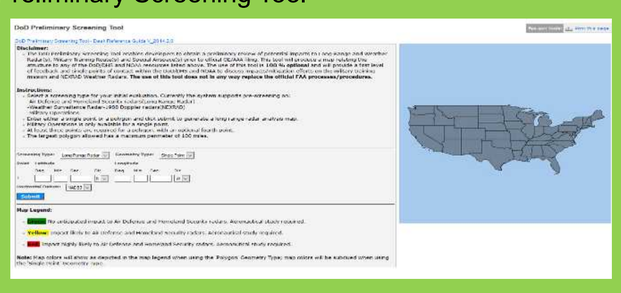
Modeling & Simulation Tools and Databases

Examples include:

NOAA's NEXRAD Screening Tool



DOD Preliminary Screening Tool



DOD's Risk of Adverse Impacts on Military Operations and Readiness Maps (RAIMORAs)

NORAD's Radar Obstruction Evaluation Model/Simulator (ROEMS)

Sandia's Tools for Siting, Planning, and Encroachment Analysis for Renewables (TSPEAR)

U.S. Wind Turbine Database

BOEM's & NOAA's Marine Cadastre

Improving evaluation of impacts

Developing mitigation measures

Encouraging next-generation radar systems

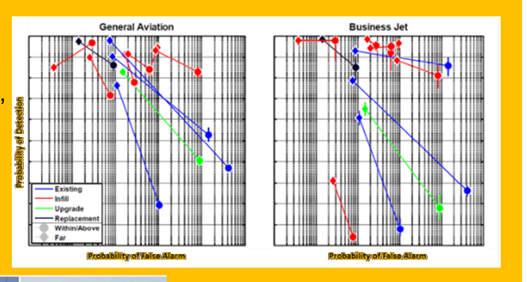
Pilot Mitigation Projects

Applies to new wind energy projects identified during:

- Initial planning activities; mitigation terms negotiated via DOD's Siting Clearinghouse and Mitigation Response Teams.
- Post-submission determination via the FAA's OE/AAA Review process; mitigation terms negotiated via the DOD/DHS Long-Range Radar/Joint Program Office.

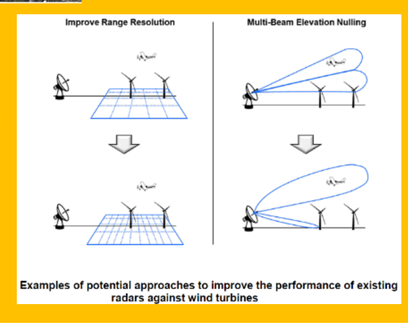
Field Testing

Performed testing studies at radar sites in Tyler, Minnesota, Abilene, Texas, and King Mountain, Texas



Infill Radars

Existing Radar Upgrades



Examples of potential approaches to improve the performance of existing radars against wind turbines

Next Generation Radar

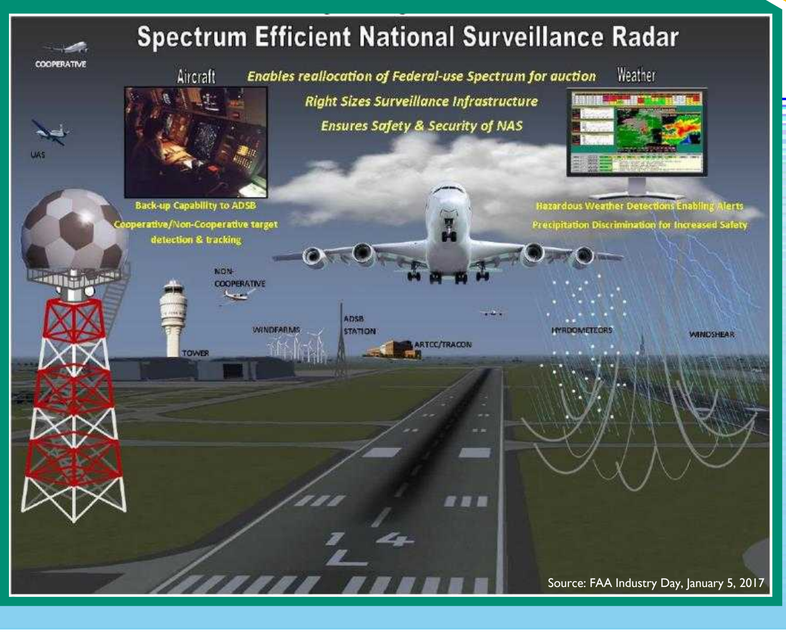
The replacement of the existing National Airspace System and weather radar fleet with radar systems that are more robust to wind turbines is the long-term solution to wind turbine radar interference.

Potential systems benefiting from WTRIM work:

- Multi-Function Phased Array Radar
- Three-Dimensional Expeditionary Long-Range Radar

A key role of the WTRIM Working Group is to ensure these systems include requirements for wind turbine interference mitigation at early stages of the development and acquisition cycle.

Current Federal Effort:



Source: FAA Industry Day, January 5, 2017

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