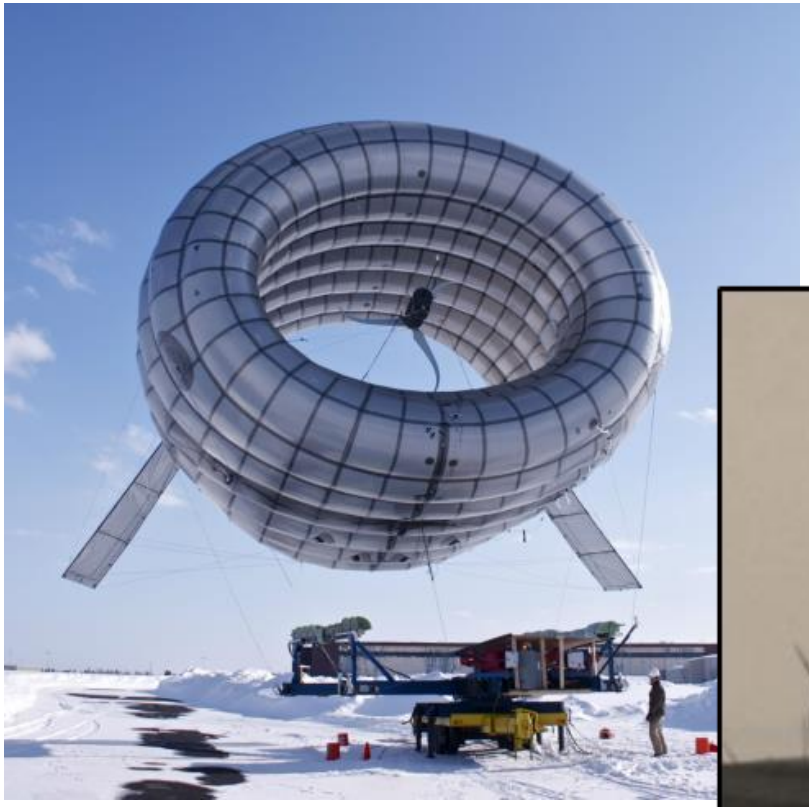
# DoD Siting Clearinghouse

The Impact of Commercial Renewable Energy Development on Military Systems and National Defense Mission



Presented by Mr. David Tancabel

# Outline

- ❑ Clearinghouse Overview
- ❑ SCH Functional Areas
- ❑ Impacts on Military Systems
- ❑ Internal Outreach

# Mission Compatibility Evaluation Process
## Framed by the FY2011 National Defense Authorization Act

- Section 358 “Study Of Effects Of New Construction Of Obstructions On Military Installations And Operations”
  - ❑ Integrated review process with FAA
  - ❑ Identification of mitigation options
  - ❑ Limited authority to object to projects
  - ❑ Ability to accept voluntary contributions for mitigation
  - ❑ Mitigate adverse impacts on acquisitions of new systems

Ref: http://www.acq.osd.mil/dodsc/library/sec-358-pl-111-383.pdf

# DoD Siting Clearinghouse Concept of Operations

- A Single DoD Voice
  - Parallel multi-service review
  - Timely, repeatable, predictable Process
  - Promote compatibility between renewable energy and military mission operations
  - Oversight and coordination of mitigation negotiation
  - Decisions based on empirical data and rigorous science
  - Outreach and early consultation with industry, local, state, and Federal stakeholders


DoD Clearinghouse Web Site: http://www.acq.osd.mil/dodsc/

# Functional Areas

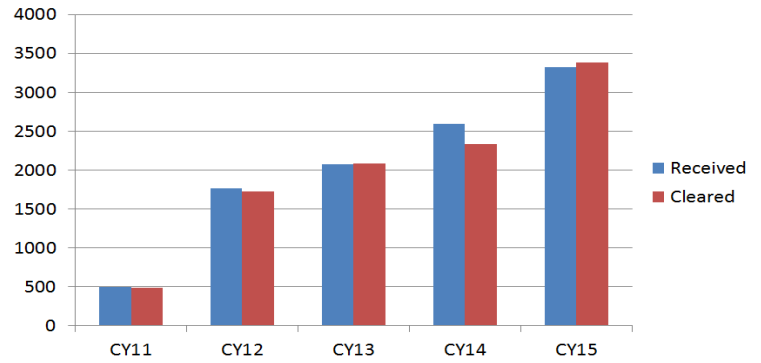
## MCE PROCESS

**Formal**

- Filed projects with the FAA

**Informal**

- Request directly from developers and other Federal and State agencies




## R&D

- **WTRIM**
- Purpose: Develop near (5 years), mid (10 years), long term (20 years) mitigation solution recommendations.

## Outreach

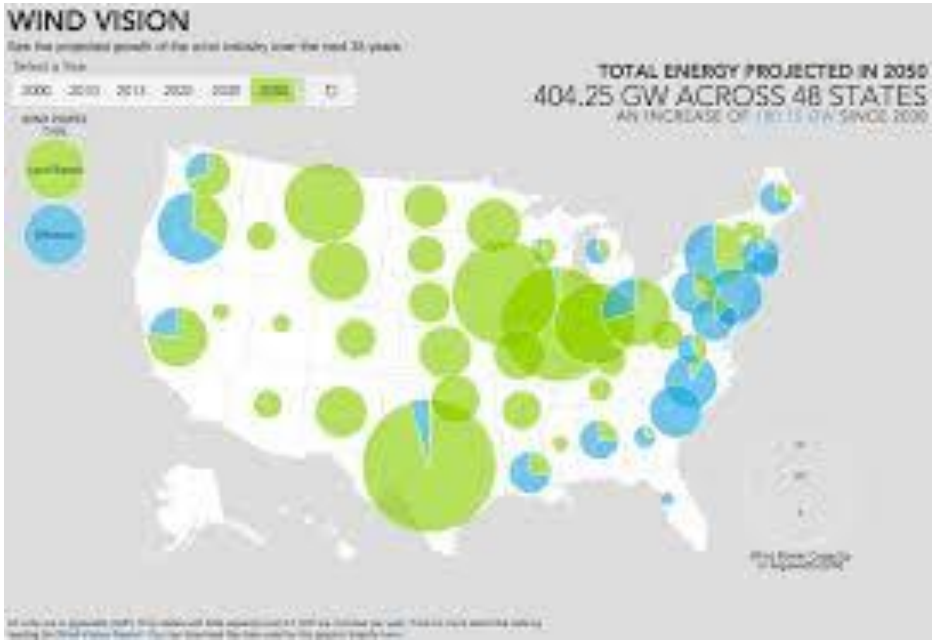
- **Intergovernmental Compatibility Partnerships**
- **Internal Outreach**

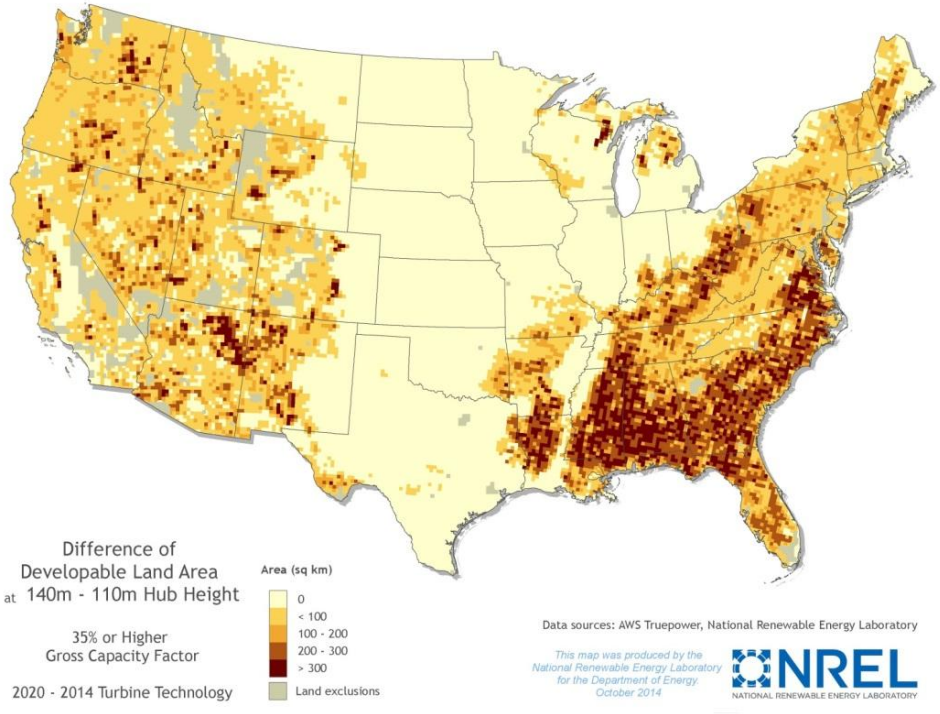
# Impact to Military Systems and Operations

- Radar/Wind Turbine Interference
  - Military “terminal area” air traffic control radars
  - “En-route” air traffic control radars (in support of the FAA)
  - Air defense long-range surveillance radars
  - Ground-based military unique radars (ADAMS, ROTHR, BMD)
  - Full spectrum testing of airborne military radars
- Low-level Flight Obstructions
  - Military Training Routes
  - Restricted Airspace
  - Special Use Airspace
- Electromagnetic Interference from Electrical Power Lines
- Glint/Glare
  - Solar power towers
  - Photovoltaic and hot water heating systems near airfields

# Potential New Areas of Economically Viable Wind Energy Development

- DOE's 2015 Wind Vision doubling of renewable wind by 2030, and doubling again by 2050, with the greatest growth in shown in green, below left
- Exponential growth driven by emerging technology that will allow taller structures, thus opening new areas (in brown, below, right)



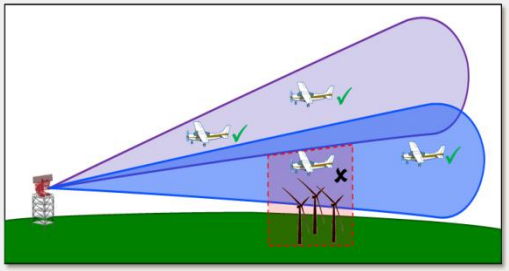

Sources: Wind Vision Report: http://energy.gov/eere/wind/maps/wind-vision
NREL wind map: http://apps2.eere.energy.gov/wind/windexchange/windmaps/resource_potential.asp

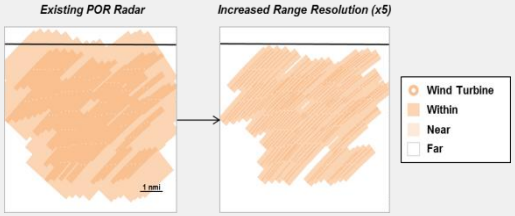
# WTRIM Working Group

- WG MOU Signatories: DOE, DOD, FAA, NOAA
  - DHS and BOEM
- PURPOSE: *Mitigate the technical and operational impact of wind turbine projects on critical radar missions*
- GOALS: *Develop near (5 years), mid (10 Years), Long term (20 years) mitigation solution recommendations; By 2025, to fully address wind turbine radar interference and ensure the long-term resilience of radar operations.*
  - *Pool funding to identify, test, and implement workable solutions*
- VEHICLES: *Technical Studies - Systems Test – Modeling & Simulation – Pilot Mitigation Programs – Acquisition Strategy-Hardware and Software Solution*

# Interference Mitigation R&D Efforts

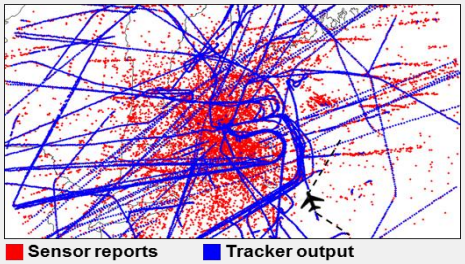
## Existing Radar Algorithm Upgrades





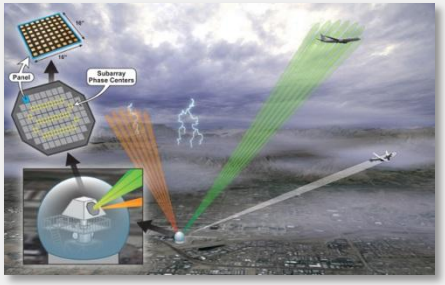

- Multi-beam turbine nulling
- Increased range resolution

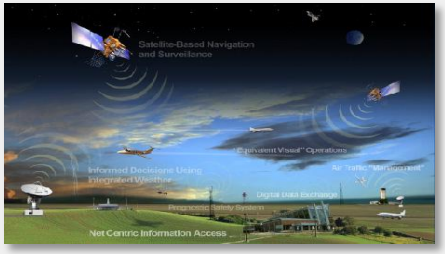
## C2/Automation Systems




- Radar network tuning
- Advanced sensor fusion

## Future Systems






- Mitigation requirements for next-gen surveillance

# Internal Outreach

- New Equities and Stakeholders
- Where is the best place to ensure compatibility issues are resolved early?
  - Acquisition process for radar and weapons systems
- We need to position the SCH to effectively inform DoD about the changing environment.

# Questions?

# Contact Information

- Mr. David Tancabel
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