



Wind Turbines and Radar

An informational resource

Summary

Recent blanket action by some agencies in the U.S. government effectively halts development of many pending wind energy facilities and has led to a de facto moratorium on the development of new clean, renewable, domestic wind energy resources in parts of the United States. While President Bush recently recognized the value of wind energy to the nation's energy future, noting that it could contribute 20% of U.S. electricity supply, this action places a roadblock squarely in the path of the wind industry as it seeks to realize that goal.

AWEA recognizes and respects the paramount importance of any concerns relating to national security, and we support resolving such concerns as quickly as possible. We also believe that rapid development of domestic energy resources is vital to national security. Further, solutions to most wind farm/radar interaction issues exist and are already in use at many military sites, both in the U.S. and elsewhere around the world, including the U.S. Navy base at Guantanamo and a U.S. Air Force facility on Ascension Island in the South Atlantic, both of which obtain part of their electricity supplies from wind installations.

We therefore urge that every effort be made to understand and apply, where appropriate, the effective mitigation measures that are already in use around the world to deal with the radar impacts of wind development. We stand ready to work with government agencies to find acceptable solutions to their concerns. However, overly broad restrictions that shut down the industry, threatening jobs, local economic revenue and the growth of clean, renewable, domestic wind energy are neither productive nor appropriate.

Background

At some sites, wind turbines can interfere with civilian or military radar. However, there are solutions that can be implemented. Any study of wind energy's effects on radar should also explore these solutions.

The National Defense Authorization Act for Fiscal Year 2006, signed into law January 6, 2006 (PL 109-163), contained a last-minute amendment inserted by Senator John Warner (R-VA) requiring the Department of Defense to study and report on the effects of wind projects on military readiness.

SEC. 358. REPORT ON EFFECTS OF WINDMILL FARMS ON MILITARY READINESS.

Not later than 120 days after the date of the enactment of this Act, the Secretary of Defense shall submit to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives a report on the effects of windmill farms on military readiness, including an assessment of the effects on the operations of military radar installations of the proximity of windmill farms to such installations and of technologies that could mitigate any adverse effects on military operations identified.

Concerns about impacts led the Department of Defense (DOD) and the Department of Homeland Security (DHS) to issue an Interim Policy on Proposed Windmill Farm Locations on March 21, 2006. This policy states that:

“The DOD/DHS Long Range Radar Joint Program Office Interim Policy is to contest any establishment of windmill farms within radar line of site of the National Air Defense and

Homeland Security Radars. This is to remain in effect until the completion of the study and publishing of the Congressional Report.”

The original Congressional language was aimed at one project. However, many other projects in the U.S. have received a “Notice of Presumed Hazard” from the Federal Aviation Administration (FAA) and halted development. AWEA is aware of projects in various stages of development - some only a few months away from construction – in Wisconsin, Illinois, North Dakota, South Dakota, and Minnesota that have suddenly been thrown into uncertainty.

Impacts to the wind industry: de facto regional moratorium in parts of the country

The Interim Policy distributed by the Department of Defense and the Department of Homeland Security, and being interpreted by the FAA, threatens to derail the installation of billions of dollars worth of clean, renewable, domestic wind energy in the U.S. (*Chicago Tribune* May 31, [“FAA takes the wind out of wind farms”](#))

This summer, a number of wind energy projects plan to begin construction, erecting and commissioning the wind turbine towers. The de facto moratorium being placed on these projects by security concerns means that the towers, generators, and blades will arrive at the project sites but cannot be installed. Companies are operating on extremely tight timetables and do not have flexibility to halt construction indefinitely. There is nowhere to store the wind energy project components while this study is completed. Workers on these job sites, and the accompanying revenue boost to local economies from their salaries, will be left on hold without permission to continue with construction.

The deadline for completion of the study has passed, but the industry has no information on whether it has been completed or not. And once the study is finalized, what will be the resolution? Billions of dollars have been invested to bring these wind energy projects close to completion, and even larger investments are lined up for next year. This action effectively blocks the industry’s ability to build projects, to contribute to the nation’s economy, environment, and energy security, and to realize the President’s vision for wind energy to provide 20% of the nation’s electricity.

The problem and the potential solutions

The wind industry is in a confusing and uncertain position because it is unclear how many projects will be affected. The broad-brush approach being taken by some in the U.S. government that stops all development over a multi-state region pending outcome of a study ignores industry and military operational experience. A number of U.S. government installations have both wind turbines and functional radar, and the British military has a track record of successfully addressing this challenge.

Any study and accompanying policy on wind turbine impacts to radar must therefore also explore the solutions used elsewhere in the world and look at ways of mitigating the problem, rather than just prohibiting wind development in large areas. Wind turbines are installed at U.S. Air Force bases and near airports in the U.S. and elsewhere, and experience at those sites demonstrates this is a solvable challenge.

These military and civilian installations have wind turbines and functional radar:

- F.E. Warren Air Force Base, Wyoming – two 660-kW turbines
<http://www.afcee.brooks.af.mil/ms/msp/center/Vol11No3/10.asp>
- U.S. Navy at Guantanamo Bay, Cuba – four 950-kW turbines
http://www.defenselink.mil/news/Mar2005/20050329_342.html
- U.S. Air Force Space Command on Ascension Island – four 225-kW and two 900-kW turbines
http://www.inl.gov/powersystems/ascension_island.shtml
- U.S. Navy at San Clemente Island Base – three 225-kW turbines

http://www.nelp.navy.mil/pdf_cases/Conservation_Wind_Power_SCI.pdf

- Logan International Airport in Boston, Massachusetts – near Hull, MA turbines
http://www.ceere.org/rerl/publications/whitepapers/AWEA_Hull_2003.pdf

Wind projects are relatively close to Long Range Radar facilities in:

- Mt. Laguna, California (twenty-five 2 MW turbines)
- McCamey, Texas (322 turbines totaling 356 MW)

British solutions to wind turbines and radar

Studies in the United Kingdom and elsewhere show that while wind turbines can cause “clutter” on radars, there are engineering solutions that can be implemented or should be explored further. In the UK, the Ministry of Defense registered concerns on many wind projects, but in November 2005, Wing Commander Nicky Loveday said, “We have been learning about things that we thought were a major problem for us. We have had to step away and say: actually it really isn’t a problem for the air defence community” (*Windpower Monthly*, November 2005).

A June 2003 study from the British Department of Trade and Industry (DTI) concluded that there are hardware and software mitigation efforts that can be implemented to reduce or eliminate the effects of wind turbines on radars. These solutions include adding radars, adding filters to the radar software, or altering the layout of a wind project. These solutions vary in cost based on the site-specific situation.

Conclusion

The industry is strongly supportive of responsible, effective actions designed to identify and address any problems with radar caused by wind turbines. Overly broad restrictions that shut down the industry, threatening jobs, local economic revenue and the growth of clean, renewable, domestic wind energy are neither productive nor appropriate. We look forward to working with the U.S. government to address this issue so that the wind industry can get back to work for the benefit of America’s economy, environment and energy security.

At Dyess Air Force Base near Abilene, Texas, wind turbines are compatible with military operations.



Photo credit: Abigail Vander Hamm