

Met Tower Siting Challenges on DOD Land

In order to help further expand the United States wind energy industry, developers must start to explore a greater diversity of projects. The Department of Defense (DOD) needs to satisfy multiple renewable energy goals and mandates which dictate that renewable energy must account for a portion of each DOD installation's total electricity consumption. These goals and mandates are described in EPL Act Section 203, Executive Order 13423, and the National Defense Authorization Act.

These two objectives are complementary as projects on DOD land can provide the new opportunities that developers are seeking. While the DOD's 2005 Renewable Energy Assessment Report identified 109 DOD installations as having wind energy project potential, it also acknowledged that mission conflicts, environmental concerns, and other limitations will impact this potential.

Siting met towers is one of the first steps in wind energy project development. This poster describes some of the challenges encountered and lessons learned by Pacific Northwest National Laboratory (PNNL) and Det Norske Veritas (DNV) in assisting DOD clients to site met towers.



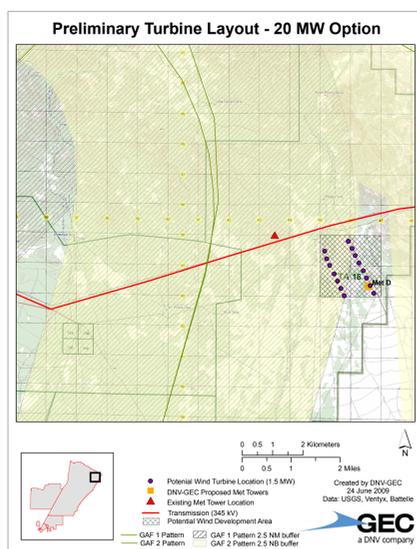
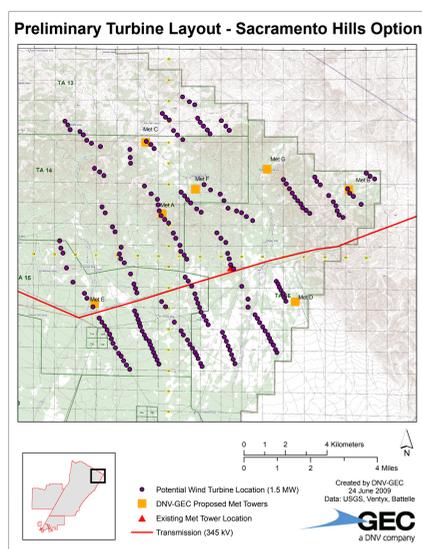
Challenge 1:

The client is not the only stakeholder.

- The development of an energy project at a DOD installation is typically the responsibility of the Directorate of Public Works or the Base Energy Manager. This person or department has limited authority with respect to land use decisions that impact training.
- Many parties, including DOD and others, may be using the installation's land and air space.
- What appears to be "open land" is not because of training and air operations. The Air Force controls 170,516 square nautical miles for military training routes and 409,188 square nautical miles of restricted airspace (Caley 2010).
- A potential wind energy project draws a lot of attention and every stakeholder wants his say.

Challenge 1 Example: Fort Bliss, Texas

PNNL arranged for 20 people from various agencies to attend a site visit to identify potential met tower locations. Fort Bliss has enough land space to potentially hold 200 MW. After the site visit and lengthy review and discussions with Fort Bliss Range Control and neighboring Holloman AFB, a mutually acceptable met tower location was identified in a mission and training conflict-free area ultimately large enough for only 10 to 20 MW.



Lesson Learned 1: Extensive and diligent communication is required to coordinate with all direct and indirect stakeholders. Land use decisions must consider training and mission impacts, the input of all stakeholders, and ultimately come from installation command.

Challenge 2:

DOD land is culturally and environmentally sensitive.

DOD land includes more than 30 million relatively pristine acres that are often critical habitat for plants and animals (Kaufman 2010).

Challenge 2 Example: Eldorado Air Force Station, Texas



Based on discussions with the U.S. Fish & Wildlife Service conducted as part of the site feasibility study, PNNL identified that the black-capped vireo, an endangered species, may inhabit the inactive Eldorado Air Force Station. Consequently, the Air Force client quickly implemented a survey to verify the presence of the species. No suitable habitat for the bird was found indicating that it is unlikely the bird is present on site. The met tower project could proceed without modifications.

Lesson Learned 2: The DOD is a responsible land steward who will ensure the necessary steps are taken to protect its property and the environment. Anticipate possible schedule delays to accommodate the necessary environmental review and permitting processes.

Challenge 3:

DOD safety requirements and precautions may exceed industry standards.

Challenge 3 Example: FAA-style light and paint at Fort Wainwright, Alaska

Although not required per FAA criteria for this project, Fort Wainwright desired 24-hour visibility of its met tower for its own on-site air operations. This was achieved by adding a navigation light to the top of the met tower and painting the tower with alternating bands of red and white. The navigation light required a special power system consisting of a wind generator, solar PV panels, and a battery pack because no AC power was available at the site and a simple solar-powered light would have been ineffective during the long, dark Alaska winters.

Lesson Learned 3: Do not assume "industry standards" are adequate for DOD land.



Acknowledgements:

PNNL is one of the US DOE's ten national laboratories. Alice Orrell's work focuses on providing renewable energy assessments and wind power project development support for DOD clients.

DNV provided preliminary site assessment and met tower location selection; wind monitoring equipment procurement and installation; and, data collection, quality control and analysis for the projects featured in this poster.

References:

- Caley N. April 2010. *Siting Issues Go Beyond Wildlife Impacts*. North American Windpower, Volume 7, Number 3. Zacklin Publications, Waterbury, Connecticut.
Kaufman L. February 21, 2010. *A Base for War Training, and Species Preservation*. New York Times, New York, NY.