

Wind Project Development at Eldorado Air Force Station

The Department of Defense (DOD) needs to satisfy multiple renewable energy (RE) goals and mandates that dictate that RE must account for a portion of the DOD's total electricity consumption. Installations receive additional "credit" for consuming electricity from RE projects sited on Federal land. Overlaid on this challenge is 1) the unavoidable fact that RE resources are not readily and equally available across DOD installations and 2) on-site RE project development can create conflicts with the installation's mission and training requirements.

The Air Force's Civil Engineering Support Agency (AFCESA) is taking a unique approach to address these issues. The Eldorado Air Force Station in central Texas has a strong wind resource and no current on-site mission activity, making it a prime location for a wind energy project. Conversely, it also has challenges. There is no on-site demand for any wind-generated electricity, so the energy will be transmitted to one of the active Air Force installations in the vicinity. In addition, the site is extremely small and has existing buildings, and while the radar mission is currently inactive, it may be re-activated in the future.



Project Overview

The AF expects to use third parties to develop renewable energy projects on its behalf and therefore recognizes the need for detailed, site-specific resource, environmental, and interconnection studies in order to secure the best proposals from industry.

Resource Assessment

With the help of DNV and WindLogics, a 60-m met tower was installed at the site, one year of data was collected and analyzed, and a comprehensive resource and energy assessment was completed.

Interconnection

Renewable energy resources are not readily and equally available across DOD installations. Eldorado AFS has a wind resource, but there is no on-site demand for any wind-generated electricity, so the energy would be transmitted to one of the four active Air Force installations in the vicinity. Preliminary discussions with the local utility indicate this is feasible. The local utility is cooperative and open to working with the Air Force.

Environmental Concerns



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 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 was installed without modifications.

Challenges

The project has three main challenges:

1 Texas may be big, but the site is small

The site is extremely small, only 120 acres, with buildings and other structures. Leasing nearby land and removing existing buildings are options that have been discussed that would allow additional turbines to be sited, increasing the project's potential for economies of scale. Neither option appears feasible currently. Leasing land would eliminate the benefit of building on Federal land and drive up the cost of the project.

2 The "R" word

Currently, the radars are inactive, but placing turbines in front of the radar faces or removing the radar buildings is not possible.

3 Texas Power Market

Estimated prices from a small wind project at Eldorado AFS are expected to be higher than current rates in the Texas market. Current power prices are at historic lows due to a glut of low cost natural gas supplies.



Turbines B and F are one potential project layout. Turbines A, G, C, D, and E are another potential project layout. But only Turbine G is behind the range of the radar. Locating turbines in "front" of the green lines coming from the radar faces of the triangular building is not allowable.

Going Forward

Given the site's size constraints, the uncertainty of the site's future use, and low power prices in Texas, the project has been put on hold. Mission and economic conditions may change in the future, so the AF intends to re-evaluate the project on a regular basis.



If the site's radar mission is permanently discontinued, more turbines could be sited. A larger project would help project economics. Also, if Texas power prices rise, the project's economics will compare more favorably.

In the meantime, PNNL is working with the AF to identify other sites that may have potential for wind project development and do not have the same challenges as Eldorado AFS.

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