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Grid and Military Impacts of Wind Projects: Myths and Facts

MYTH: Wind turbines are an unproven and untested technology.

FACT: Wind turbines provide variable but reliable power.

There is currently very little wind energy generated in North Carolina, but the turbines are heavily relied upon in other parts of the country. At the end of 2014, the United States had a total of 65,879 megawatts of wind energy capacity,¹ and wind energy has accounted for one-third of all US electric capacity additions from 2007 to 2013.² Nine states generated over 10% of their energy from wind in 2013, with Iowa generating 27% of its electricity from wind that year.⁴ Sixteen states had over 1,000 megawatts of installed wind capacity at the end of 2013.⁵ Texas has 12,000 megawatts of installed capacity, set a load record by generating 39% of its instantaneous load from wind energy in March of 2014,⁶ and has an additional 7,000 megawatts under construction.⁷

MYTH: Wind energy is complicated and costly to add to the grid.

FACT: The cost of adding wind energy to the grid is comparable to other generation sources.

To simplify costs associated with adding variable power resources to the grid, the US Energy Information Administration (US EIA) recommends comparing generation sources with a levelized avoided cost of energy (LACE) metric that takes into account the cost of integrating new resources into the grid. The US EIA predicts that by 2019, wind, on average, will be the lowest cost electric generation technology on an unsubsidized LACE basis.⁸ In Texas, where grid operators have extensive experience managing variable generation, the Electric Reliability Council of Texas is planning for a 56% increase in wind capacity to compete in the wholesale electricity market by 2017.⁹

MYTH: Wind energy requires 1-to-1 backup power to operate.

FACT: Wind energy needs a comparable amount of back-up as conventional energy sources.

Each generation technology has characteristics that affects the entire grid system's ability to provide reliable and adequate electricity. Increasing penetrations of wind leads to the need for a slightly higher



immediate back-up than conventional sources: an estimated 3% increase in immediate back up for 9.4% wind and 3.6% solar penetration compared to no renewables. Better forecasting and demand response efforts can improve immediate systems flexibility and reduce the need for additional reserve margins.¹⁰

MYTH: Wind energy projects harm the military and national security.

FACT: There are real compatibility issues, but the military works with the wind industry to assess and overcome impacts.

Concerns have been raised that radar interference may negatively impact training operations if wind energy projects are improperly sited.¹¹ The military has opportunities at the state and national level to make sound determinations about a wind energy project's potential impact on military operations and national security.

At the national level, the Department of Defense Siting Clearinghouse participates in the Federal Aviation Authority review of tall structures and makes decisions about whether or not a project presents an unacceptable impact on military readiness.¹² An additional level of local oversight is mandated by North Carolina House Bill 484. The bill requires wind permit seekers to do a preliminary review of adverse military impacts before seeking a permit. The bill also provides installation commanders opportunities for input at nearly every step of the siting and permitting process.¹³ Most projects do not present unacceptable impacts, but when conflicts are identified, the Department of Defense works with the developer to find reasonable and affordable mitigation solutions.

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