



NORTH CAROLINA Solar Center

Advancing Clean Energy for a Sustainable Economy

Wind Energy | www.ncsc.ncsu.edu

Wind Energy in North Carolina

U.S. Wind Industry

Wind energy development is growing rapidly in the United States, with utility scale projects installed in 37 states as of 2010. The U.S. wind energy industry had a record setting year in 2009 with the installation of 10,000 megawatts (MW) to bring the cumulative capacity to over 35,000 MW by the end of that year. Due to the lack of national long term policies supporting wind energy, the installations for 2010 dropped down to near 2007 levels with a total of approximately 5000 MW installed. Despite this drop in installations, there are over 40,000 MW of wind energy projects in the U.S. as of the end of 2010 – making the U.S. second only to China in total installed capacity.

Currently, wind energy accounts for about 2% of the U.S. electricity production, but the potential is much larger. The National Renewable Energy Laboratory (NREL) estimates that the U.S. onshore wind potential is over 10,000 gigawatts (GW) in areas with capacity factors at or above 30 percent. For offshore wind, the Department of Interior estimates that over 4,000 GW of offshore wind potential exist in the oceans and Great Lakes. Only a portion of this potential will be necessary for wind energy to supply a substantial part of the U.S.'s electricity needs. The Department of Energy's 20% Wind Energy by 2030 report determined that it would require approximately 300 GW of wind development, including 54 GW of offshore wind, to supply 20% of the U.S. electricity needs in the year 2030.

Aside from the many environmental benefits of wind energy – including improved air quality and water savings from the energy sector - communities across the country are excited about wind energy's economic development potential. As of 2009, the wind industry supported 85,000 jobs over all 50 states and by 2010 there were nearly 400 American manufacturing facilities for wind energy components.



Middelgrunden offshore wind farm - Copenhagen, Denmark

North Carolina Wind Industry

North Carolina has great onshore wind resources - both in the mountains and at the coast. The Department of Energy's (DOE) potential scenario for reaching 20% of the U.S. electricity needs with wind by 2030 includes North Carolina as one of only eight states with over 10 gigawatts (GW) of wind energy capacity installed. This capacity would include both offshore and onshore wind, but the reality of this scenario happening in North Carolina will be based on land-use decisions and policies for wind development over the next 20 years. Based on 2010 estimates from the National Renewable Energy Laboratory, North Carolina has an onshore wind resource of 1500 megawatts (MW) for sites with potential capacity factors of 30% or greater.

The economic development potential from onshore wind for North Carolina is substantial. Based on DOE estimates, if N.C. were to have just 1,000 MW of wind development, it would create 1,628 direct jobs during the construction phase and then 243 new direct long term jobs. The cumulative economic benefit to N.C. for construction and 20 years of operation for this wind energy would be \$1.1 billion from jobs, lease payments, increased tax revenue, indirect benefits (for example – revenue for companies that support the wind development) and induced benefits (for example - in-

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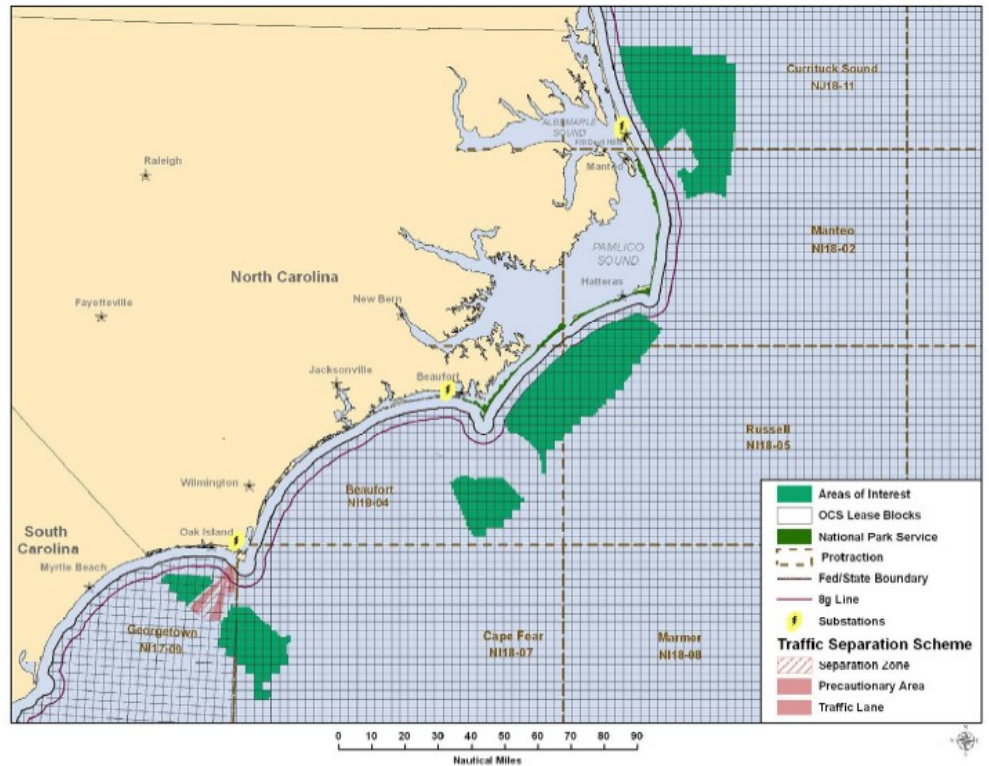
creased spending in the surrounding community). North Carolina has the potential to increase these benefits if North Carolina manufacturing facilities were to supply the turbine components.

Two companies have filed applications for a Certificate of Public Convenience and Necessity with the North Carolina Utilities Commission for onshore wind energy facilities. In May 2011, the Utilities Commissions approved the 300 MW Desert Wind Project proposed by Atlantic Wind, LLC and planned for Pasquotank and Perquimans Counties. In September 2011, Pantego Wind Energy LLC submitted an application for an 80 MW project in Beaufort County.

Offshore Wind in North Carolina

The United States does not currently have any offshore wind projects in place, but approximately 5,000 megawatts (MW) are proposed in the oceans and in the Great Lakes. Nearly 78% of the U.S. population lives in the 28 coastal states, so the proximity to this demand makes offshore wind an excellent option for these states. With the sea breeze effect, in which the winds over the ocean blow during the daytime, offshore wind can line up with daytime peak electricity demands. The U.S. can learn from the European experience of installing over 3200 MW of offshore wind in the last 20 years. In February 2011, the Department of Energy and the Department of the Interior announced a National Offshore Wind Strategy, which is designed to support offshore wind deployment of 10 GW by 2020 and 54 GW by 2030. Of that 54 GW, 10 GW is projected to be offshore from North Carolina.

North Carolina has exceptional offshore wind resources – in fact, National Renewable Energy Laboratory estimates show that N.C.'s potential is higher than any other East Coast state. North Carolina is moving forward with efforts to bring offshore wind to the state through the Bureau of Ocean Energy Management's North Carolina Offshore Renewable Energy Task Force. The Task Force consists of state, federal, local and tribal government representatives coordinating efforts to facilitate commercial leasing for renewable energy on the Outer Continental Shelf offshore from North Carolina. Three meetings of the Task Force have taken place in 2011 to identify suitable lease sites and efforts are underway to prepare a Call for Interest for selected leasing sites. The map above shows the lease blocks, nearly 500, that are still under consideration for potential offshore wind development in North Carolina.



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N.C. Wind Working Group

The North Carolina Solar Center coordinates the North Carolina Wind Working Group (NCWWG), an open forum for collaboration and education on the benefits of wind development in the region. In 2008, the NCWWG created a model wind ordinance (can be found at www.dsireusa.org) for North Carolina counties that are interested in creating policies to promote responsible wind energy development. Many North Carolina counties have since used the model ordinance as a guide for their own, including the counties in which the proposed Desert Wind project is located – Perquimans County and Pasquotank County.

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