Wind energy can power much of East Coast, study says

September 28 2010, By Renee Schoof

Nysted wind farm in the Baltic Sea off Denmark. Photo by Jeremy Firestone, University of Delaware

The strong winds off the Atlantic Ocean could become a cost-effective way to power much of the East Coast -- especially North and South Carolina, Delaware, Massachusetts, New Jersey and Virginia, a new study released Tuesday says.

The report by the conservation advocacy group Oceana argues that offshore wind could generate 30 percent more electricity on the East

Coast than could be generated by the region's untapped oil and gas. It predicts that wind from the ocean could be cost competitive with nuclear power and natural gas to produce electricity.

The study appears just as new developments are starting to push U.S. efforts to catch up with Europe and China on tapping the energy in offshore wind. Great Britain last week opened the world's largest wind farm, and China built its first pilot offshore wind farm in 2008, using turbines from the nation's largest wind turbine producer, Sinovel.

The Department of Energy earlier this month issued a draft plan for creating a U.S. offshore wind energy program.

"Offshore wind energy can help the nation reduce its greenhouse gas emissions, diversify its energy supply, provide cost-competitive electricity to key coastal regions, and stimulate economic revitalization of key sectors of the economy," the study says.

The nation's first offshore wind farm, Cape Wind in Massachusetts, has received all its permits, but is embroiled in lawsuits. Three offshore wind projects are in the permitting process -- one off Rhode Island's Block Island, another off Atlantic City, N.J., and a third off Rehoboth Beach, Del. A pilot project is planned in Lake Erie, off Cleveland.

Opponents say the wind project could alter the habitat, risking migratory birds, sea mammals and other wildlife. In addition, they say that government subsidies tilt the economics of wind farms to give the appearance that they're economically feasible.

Oceana opposes offshore drilling and presented its study as a better alternative.

The authors based their costs for offshore wind -- 10 to 13 cents per

kilowatt hour -- on a 2007 study, but it's also the target price that the Department of Energy has set for the next two decades.

"In 20 years we assume we'll use up all the oil, but we won't use up all the wind," said Oceana's Jackie Savitz, one of the authors.

The study concludes that offshore wind could generate 127 gigawatts of power, or 48 percent of the electricity in the top 11 states with the best wind -- which it ranks in order as Delaware, Massachusetts, North Carolina, New Jersey, Virginia, South Carolina, Rhode Island, Maryland, Florida, New York and Georgia.

The total amount of wind power assumes that one-third of the areas with strong winds (Class 4 or higher) would be developed in the area three to 24 nautical miles from shore and less than about 100 feet deep.

The Oceana study said that North Carolina has the largest offshore wind capacity -- 37.9 gigawatts, or enough to power 12.8 million homes. That's more energy than the state needs -- or 112 percent of its need, according to the report.

It estimated South Carolina could get about 64 percent of its electricity from wind, or enough to power 5.9 million homes. Florida could get 16 percent of its electricity from wind, enough to replace its use of oil for electricity.

The top-ranked states, Delaware and Massachusetts, could get more than 130 percent of their energy from wind power. Georgia, ranking 11th, was projected to get only 3 percent of its electricity from offshore wind.

The report also argues that offshore wind would result in fewer environmental impacts than nuclear energy, natural gas, coal and oil would bring.

Oceana's study didn't factor in any tax credits for wind or a fee placed on emissions from fossil fuels. It found that coal-fired electricity would be cheaper as long as carbon dioxide emissions remain free. If coal plants had to capture the heat-trapping gas and bury it, however, coal's price advantage could disappear. In addition, the study said the cost comparison doesn't factor in public health benefits from reduced emissions of smog, soot and mercury.

While Oceana argues that the country could get more energy for less money from offshore wind than from offshore oil and gas, the calculation is tricky because oil and gas prices vary so much over time.

That variation, however, works to wind's advantage, said Jim Lanard, director of the Offshore Wind Development Coalition, a lobby group formed in July.

"The beauty of renewable energy is that the fuel, either the sun or the wind, is free. As a result, developers can establish a fixed stable price for a long period of time, and that allows them to get a long-term contract," he said.

The first U.S. offshore wind farms will be expensive because they'll have to pay for up-front costs of things such as vessels and other infrastructure, Lanard said. However, the effort will quickly gain economies of scale and bring prices down, he said.

The Department of Energy's new plan to promote offshore wind will mean large investments in research and development to bring U.S. costs down.

"That's what this nation needs from an energy security and an environmental security perspective -- and also national security, so we don't have depend on foreign sources of energy," he said.

Oceana also argued that offshore wind would create more jobs than offshore drilling, including manufacturing jobs. Transportation costs are high for the large turbine parts, and a local market would encourage the development of a local supply chain, Savitz said.

Britain's 100 turbines off Kent have a capacity of 300 megawatts, enough to supply more than 200,000 homes. Britain also has several other offshore projects in the pipeline as a way of reaching its target of 15 percent of its energy from renewable sources by 2020.

China National Offshore Oil Corp. is beginning to build an offshore wind farm off Shandong Province, and other companies are in the early stages or projects or studying the possibilities.

"Chinese wind turbine manufacturers are investing heavily to grab a share of the market," the Communist Party's main newspaper, People's Daily, reported earlier this year.

More information: Wind and Water Power Program: bit.ly/a1sawe
A guide for all ages by U.S. scientists: "Climate Literacy: The Essential Principles of Climate Science": www.climate.noaa.gov/education/
National Research Council (science adviser to the government since 1916) report on the science of climate change: bit.ly/cL1pdp