

## Offshore Wind Energy

By the end of 2010, 10 countries had wind projects installed in offshore waters: Belgium, China, Denmark, Finland, Germany, Ireland, the Netherlands, Norway, Sweden, and the United Kingdom. The U.K. alone has more than 1,340 megawatts (MW) of offshore wind capacity. The total for all of Europe is, 2,964 MW, with an additional 3,000 MW under construction.

In October 2010, Secretary of the Interior Ken Salazar signed the lease for the Cape Wind project proposed in Nantucket Sound. This final approval is just one demonstration that the U.S. is moving forward in harnessing its offshore wind resources.

However, long-term stable policies at the national level are necessary to provide the certainty needed for project financing and U.S. manufacturing growth.



### U.S. offshore wind resources

Offshore wind resources in the United States are not only vast; they are located near fast-growing electricity demand centers, as coastal areas are among the most heavily populated parts of the country. Offshore wind farms therefore offer something that is extremely valuable for our economy, environment, and national security: a source of clean, domestic, inexhaustible energy with which to meet fast-growing electricity demand. Wind farms are also likely to be built in areas with large regional power markets that facilitate smooth and cost-effective integration of wind into the overall electric system.

### Economic opportunities from offshore wind

In May 2008, the U.S. Department of Energy report, *20% Wind Energy by 2030*, found that offshore wind capacity could provide 54 gigawatts (GW) of the 300 GW needed to provide 20% of our nation's electricity from wind energy by 2030. Offshore wind development could spur manufacturing, job creation, and assembly and transport activity in coastal regions, thereby contributing to the clean technology economy.

### Challenges for offshore wind

Offshore wind power in the United States is still in its infancy, compared to land-based wind. Offshore wind projects must strike a viable balance between technological and economic challenges. Offshore technology has had to adapt to more challenging environmental elements in order to be successful. The latest generation of offshore turbines are now equipped to meet the challenges of the saline environment and tough weather conditions, which can limit access for routine maintenance. Offshore turbines can take advantage of economies of scale, for they now reach up to 5 megawatts in nameplate capacity, some with blades over 196 feet in length. Additional technological advances for offshore turbines include anchoring systems for larger turbines and direct-drive gearboxes to reduce weight and increase reliability.

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### Timeline of recent U.S. offshore wind energy developments

- The Energy Policy Act of 2005 granted the Minerals Management Service (MMS) authority over various energy projects on the Outer Continental Shelf (OCS), including offshore wind energy.
- In April 2009, the MMS released its final rule governing the development of wind and certain other energy projects on the OCS. These rules were a great step forward for the offshore wind industry as they allow proposed offshore wind projects to move ahead in the development process.
- In June 2009, the MMS awarded five exploratory leases for offshore wind site testing off the coasts of Delaware and New Jersey.
- Three developers have Power Purchase Agreements for their offshore wind projects for electric utilities to purchase the energy produced. Developers include NRG Bluewater Wind for its Mid-Atlantic Wind Park, Deepwater Wind for its Block Island Wind Farm and Cape Wind for the Cape Wind project.
- Cape Wind received its signed lease from the Department of Interior (DOI) in October 2010.
- In 2010 and into 2011, DOI has issued requests for interest (RFI) for offshore wind farms off the coasts of Delaware, Massachusetts, and Maryland.
- In November 2010, DOI established the “Smart from the Start” program to reduce the estimated seven-nine year permitting timeline for an offshore wind project. Maps were released in February 2011 showing areas off the coasts of Delaware, Maryland, New Jersey and Virginia where DOI will conduct environmental assessments to help speed the permitting process.
- A multi-agency “National Offshore Wind Strategy” was released in February 2011.

### Policy needs for offshore wind in the U.S.

Like their onshore counterparts, offshore wind energy developers and manufacturers need policy certainty to fully develop America’s homegrown energy resources. Specific policies include long-term tax incentives, robust market drivers like a federal renewable electricity standard to support demand, an improved federal permitting process, and federal investment in key research and development challenges.