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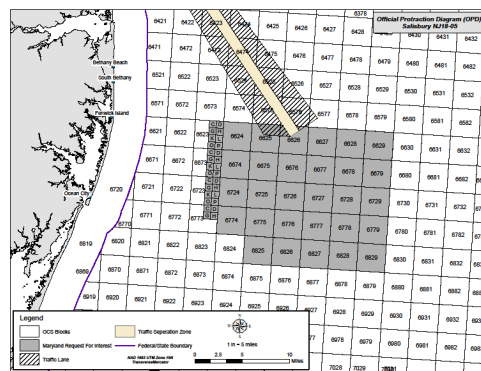
MARYLAND OFFSHORE WIND ENERGY ACT OF 2011: FACTS & FIGURES

- The Maryland Offshore Wind Energy Act of 2011 requires development of 400 to 600 MW of offshore wind capacity, approximately ten nautical miles off of Maryland's coast. This would require the installation of between 80 and 200 wind turbines, depending on project scope and turbine capacity. Development of offshore wind at this scale means:
 - **JOBS:** Based on a recent report from the U.S. Department of Energy's National Renewable Energy Laboratory, a 500 MW project would create **2,000 manufacturing and construction jobs for 5 years** and an additional **400 ongoing supply and O&M jobs** thereafter.ⁱ Additional projects, both in Maryland and in the region, would lead to a significant new sustainable industry for Maryland workers.
 - **LOCAL ELECTRICITY SUPPLY:** Maryland imports approximately 30% of the electricity we consume every year.ⁱⁱ This leads to significant transmission congestion and high line losses, which raises rates for Maryland ratepayers.ⁱⁱⁱ A 500 MW project would supply enough electricity to power **79% of all the homes on the Eastern Shore of Maryland, or more than half of the homes in Baltimore City.**^{iv}
 - **PRICE STABILITY:** During the period from 1999 to 2009, energy costs to Maryland ratepayers roughly doubled.^v While offshore wind capital costs are high compared to traditional fossil fuel generation, the **fuel cost is zero**, rendering the operational costs highly competitive. Using the Delaware offshore wind contract as a model, the initial rate impact for a 500 MW project is expected to be approximately \$1.44 on residential monthly bills in 2016^{vi}—or roughly the amount of money that could be saved by changing two 60-watt bulbs to Compact Fluorescents—and declining every year thereafter.^{vii} The Act requires a long-term contract which will enhance the stability of Maryland energy prices and provide a reliable hedge against volatile fossil fuel prices.
 - **CLEAN, RENEWABLE POWER:** A 500 MW offshore wind project will reduce emissions of the greenhouse gas, CO₂, by 945,000 tons per year and promise improved public health outcomes, cleaner air and cleaner water.^{viii} The Maryland Renewable Portfolio Standard (RPS) requires that Maryland get 20% of its electricity from renewable sources by 2022. In 2008, the last year on record, Maryland imported over 90% of renewable energy required to comply with this policy.^{ix} **Development of an offshore wind project will generate enough clean energy to satisfy between 10 and 15 percent of Maryland's 2022 renewable energy goals.**^x
 - **SIGNIFICANT ECONOMIC IMPACT:** The economic impact of offshore wind expands well beyond 2,000 manufacturing, construction and assembly jobs per year for five years, and 400 O&M jobs per year over 25 years. Based on a regional employment model analysis by the Maryland Department of Business & Economic Development, the total economic impact of offshore wind

over five years is more than \$1.9 billion, 8,200 job-years and \$14 million in state tax revenues. This figure includes direct and indirect effects.^{xi}

Background on Off Shore Wind

- Areas of the Outer Continental Shelf off the coast of Maryland are ideal for development of offshore wind energy. Maryland's coast lies along the "Mid-Atlantic Bight". The U.S. Department of Energy classifies the wind resource here as "outstanding".^{xii} The shelf here slopes gradually and contains vast areas below 30 meters in depth.^{xiii} This makes it ideal for deployment of monopile turbine foundations.
- While there are no currently operating offshore wind farms in North America, commercial scale facilities have been operating in Europe since 1991. An estimated 3,160 MW of capacity are currently operating worldwide, with another 15,000 MW expected to be deployed by 2014.^{xiv}
- The Maryland/Federal Offshore Wind Task Force recommended a 207 square nautical mile (nm) area beginning 10 nm East of the Maryland's Atlantic Coast. This area falls under the jurisdiction of the U.S. Department of Interior (DOI). The accompanying map indicates the potential leasing area; each numbered block represents a potential of 100-180 megawatts (MW) power capacity.



Federal RFI Planning Area

Maryland's Progress to Date

- Maryland agencies began planning for offshore wind development in 2009. The Maryland Energy Administration (MEA) collaborated with the Department of Natural Resources (DNR) and other State agencies, the Nature Conservancy, the University of Maryland's Center for Integrative Environmental Research (CIER), and Towson University to develop the *Maryland Coastal Atlas* – an online interactive tool for advanced marine spatial planning. This tool helped State agencies, offshore wind developers, and affected stakeholders to determine areas of potential conflict due to ecological, navigational, military, fisheries and other uses. The *Coastal Atlas* is a publicly available tool and can be found here: <http://www.dnr.state.md.us/ccp/coastalatlasc/ocean.asp>.
- At the request of Governor O'Malley in 2010, DOI's Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) created the Maryland State/Federal Offshore Wind Task Force. The Task Force, comprised of officials from State and federal agencies as well as elected officials from Maryland's coastal communities, developed siting recommendations for offshore wind deployment. BOEMRE accepted these recommendations, making Maryland the second State in the nation to have a Request for Interest (RFI) issued for wind leases off its shores.^{xv} Eight offshore wind developers responded with development proposals, and twelve stakeholders submitted comments. Further planning will develop an approach to mitigate potential impacts on marine navigation, ecology, fisheries and other uses.

- Maryland continues to work with regional and federal partners, including the Obama administration and the U.S. Dept of the Navy, to develop additional procurement strategies to leverage State efforts. This type of partnership promises additional economic development benefits.

Illustrative Images

The following photographs are of offshore wind power generation facilities of currently in operation around the world, and are representative of the scale considered for the waters off of Maryland's Atlantic coast. These photographs are all available in the public domain, with some rights reserved under individual Creative Commons Licenses.



Thanet Offshore Wind Farm by Nuon

<http://www.flickr.com/photos/nuon/5032602590/>



Burbo Bank, Offshore Wind Turbine by the Danish Wind Association
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Thanet Offshore Wind Farm by Nuon

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For more information, please contact Ian P. Hines of the Maryland Energy Administration at (443) 694-3651 or by email at ihines@energy.state.md.us.

ⁱ US Department of Energy (US DOE). National Renewable Energy Laboratory (NREL). Musial, W., Ram, B. (2010). *Large-Scale Offshore Wind Power in the United States: Assessment of Opportunities and Barriers* (September 2010. NREL/TP-500-40745) <http://www.nrel.gov/docs/fy10osti/40745.pdf> retrieved 1/13/2011

ⁱⁱ Maryland Public Service Commission (MD PSC), *Ten-Year Plan (2009 – 2018) of Electric Companies in Maryland*. 9 <http://webapp.psc.state.md.us/Intranet/Reports/2009-2018%20Ten%20Year%20Plan.pdf>, retrieved visited 1/13/2011.

ⁱⁱⁱ *Id.*

^{iv} Average MD home use = 12.62MWh/yr. US DOE. Energy Information Administration (EIA). *State Electric Profiles, Table 8. Retail Sales, Revenue, and Average Retail Price by Sector, 1990 Through 2008*. http://www.eia.doe.gov/cneaf/electricity/st_profiles/maryland.html retrieved Jan. 14, 2011

Total population of Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico and Worcester counties = 169,585. US Census Bureau 2010 projected. *Maryland at a Glance*. Maryland State Archives. <http://www.msa.md.gov/msa/mdmanual/01glance/html/pop.html> retrieved Jan. 14, 2011

Persons per Maryland home = 2.61 US Census Bureau, *State and County Quick Facts*. 2000 <http://quickfacts.census.gov/qfd/states/24000.html>, retrieved 1/14/2011

Total Eastern Shore of Maryland Household Energy Consumption = 2,173,089 MWh/year

Total Baltimore City Household Energy Consumption = 3,084,517 MWh/year

Offshore Wind Annual capacity Factor = 39.3% MD PSC. *Analysis of Options for Maryland's Energy Future, Levitan Interim Report*, Kaye Scholer, LLP, Levitan & Associates, Inc and SEMCAS Consulting Associates. 2007.

http://webapp.psc.state.md.us/Intranet/Reports/Levitan%20%20Associates_Analysis%20of%20Options%20for%20Maryland%27s%20Energy%20Future_11.30.07.pdf retrieved Jan. 14, 2011

500MW Offshore Wind = 1,721,340 MWh/year

^v Costs over the period from 1999 to 2009 went from 7.04 to 14.22. US DOE. EIA. Electric Power Annual 2009 - *Average Price by State by Provider* (EIA-861). http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html retrieved Jan. 13, 2011

^{vi} Maryland Energy Administration. Projection represents \$1.61 monthly residential bill impact reduced by \$0.17 of price suppression effects on Locational Marginal Prices (LMP).

Maryland Energy Administration, GDS Associates, Inc. *Analysis to estimate potential impacts of Offshore Wind power on Customers in Maryland*. December 9, 2010. Based on an analysis conducted by the Brattle Group, supply of an additional 500 MW of nameplate capacity into the PJM grid from a wind project offshore Maryland would result in a reduction in residential rates of 17 cents per month due to price suppression effects on Locational Marginal Prices (LMP). When coupled with likely impacts from projects expected to be developed in New Jersey and Delaware, residential rates would be reduced by 61 cents per month.

Cite: *Newell, Sam. Principal, The Brattle Group, Feb. 10, 2011.*

^{vii} Maryland Energy Administration, GDS Associates, Inc. *Analysis to estimate potential impacts of Offshore Wind power on Customers in Maryland*. December 9, 2010.

^{viii} DOE, EIA. 2009. "U.S. Carbon Dioxide Emissions in 2009: A Retrospective Review".

<http://www.eia.doe.gov/oiaf/environment/emissions/carbon/> accessed Jan 31, 2011

^{ix} MD PSC. *Renewable Energy Portfolio Standard Report – 2010 With Data for Compliance Year 2008*.

http://webapp.psc.state.md.us/Intranet/psc/Reports_new.cfm, retrieved Jan. 14, 2011

^x MD PSC. *Ten-Year Plan (2009-2018) of Electric Companies in Maryland* - Maryland Energy Sales Forecast, 2010.

<http://webapp.psc.state.md.us/Intranet/Reports/2009-2018%20Ten%20Year%20Plan.pdf> retrieved Jan. 17, 2011

^{xi} Department of Business and Economic Development analysis (January 14, 2011). Assumptions: 2,000 manufacturing/construction/assembly jobs per year for 5 years; 2011-2016. 400 O&M jobs per year; 2013-2030

^{xii} US DOE. NREL. *United States Wind Resource Map* (NREL 06-May-2009 1.1.9)

http://www.windpoweringamerica.gov/pdfs/wind_maps/us_windmap.pdf last visited 1/13/2011

^{xiii} Maryland Department of Natural Resources *Maryland Coastal Atlas*, <http://www.dnr.state.md.us/ccp/coastalatlantlas/ocean.asp>, retrieved Jan. 13, 2011

^{xiv} BTM Consult, APS. *Danske virksomheder har en meget stærk position på leverancer til Offshore Vindkraft anlæg*. Press Release. November 22, 2010.

http://www.btm.dk/public/Press_DK_Offshore_2010.pdf retrieved Jan 19.

^{xv} US Department of Interior. Bureau of Ocean Energy Management, Regulation and Enforcement. "Commercial Leasing for Wind Power on the Outer Continental Shelf (OCS) Offshore Maryland—Request for Interest (RFI)" 75 Fed. Reg. 68824-68828 (November 9, 2010) http://www.boemre.gov/offshore/renewableenergy/PDFs/stateactivities/MD_DEFFiles/FederalRegisterdocument.pdf, retrieved Jan. 13, 2011