

Seminar Abstract:
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Information on offshore wind resources may be needed by diverse stakeholders, including developers, state regulators, coastal community governments, and advocacy groups. However, a full-blown analysis of offshore regions can be expensive and time-consuming. This study builds on methods demonstrated in previous research in Delaware and North Carolina and is an example of a low-cost, preliminary analysis that can be performed by an interested stakeholder promptly and with modest resources. Nevertheless, the method still provides results which take into account exclusion zones and wind resource and electricity price fluctuation through the year. Therefore, it can quickly provide a starting point for first-cut development assessment, state resource evaluation, or planning for alternative marine uses.

The analysis uses existing bathymetric data, delimiting available areas out to depths consistent with prototyped bottom-mounted tower technology. Areas with competing ocean uses are then excluded. The remaining available area is used to calculate the maximum number of turbines, hourly wind speeds, and therefore power capacity that could be installed based on spacing of 10 x 5 rotor diameters. To estimate power generation data, wind speed is extracted from NOAA buoys near the waters off Maryland—because wind speeds are fairly uniform in this area, extrapolation from buoy data was judged sufficient for the intended purpose of a quick, first-cut analysis. A 5 MW turbine power curve, and log-law extrapolation to hub height, are utilized to estimate hourly power output. In the final report the potential output will be compared with Maryland load, and the estimated cost of power will then be compared with prevailing wholesale electric prices in Eastern Maryland.