

Penobscot Bay Watch

POB 1871, Rockland ME 04841

October 18, 2010

Department of Energy Golden Field Office
NEPA Division
Attn: Kurt Rautenstrauch
116117 Cole Boulevard
Golden, Colorado 80403

Re: Scoping - University of Maine Deepwater Offshore Wind Test Site, Gulf of Maine

Dear Mr. Rautenstrauch

Penobscot Bay Watch is a citizens association dedicated since 1993 to protecting and restoring the living marine resources of Penobscot Bay and the greater Gulf of Maine. Our oversight includes discharge licenses and major development initiatives in Penobscot Bay and surrounding waters, including proposals for industrial ports in upper Penobscot Bay and offshore energy facilities such as those proposed off Monhegan Island and beyond. To that end we participate in state and federal permitting and licensing processes as appropriate.

We are writing in response to the Department of Energy's Notice of Scoping for An Environmental Assessment of the effect of funding the University of Maine Deepwater Offshore Wind Test Site. The Department of Energy (DOE) has invited comment from the interested public to supply information that will aid the department in determining whether the proposed action warrants issuance of a Finding of No Significant Impact, or requires preparation of an Environmental Impact Statement.

Having reviewed the complete record of information used by the Maine Bureau of Parks and Lands in its decision making process designating the site under present consideration, as well as numerous other sources of information about the

resources at risk, we strongly believe that sufficient uncertainties exist, both onsite and offsite, to warrant preparation of an environmental impact statement prior to the Department of Energy making a final decision as to whether the Monhegan site is the most appropriate of the alternatives. Given the facts, we do not believe that it is remotely possible for the Department to decide otherwise without making a mockery of NEPA.

While the amount of funding is not specified in the notice, over the past year and a half, the University of Maine *"has been awarded nearly \$40 million in funding to pursue research in deepwater offshore wind energy technology,"* according to Elizabeth Viselli of the University of Maine's DeepCWind Consortium. At least twenty million dollars of that are the subject of this Environmental Assessment, if not all forty millions.

We note that, while the public notice describes the proposal to "construct, deploy, and retrieve 1/3-scale floating wind turbines within the deepwater offshore wind test site", the University of Maine states that these funds also "will be used to build, deploy and test a full-scale prototype of a 5 megawatt floating wind turbine" source: Elizabeth Viselli.

Unless the DOE will specifically disallow these funds to be used for that second purpose, then the impact of the deploying and testing (i.e. operation) of the full sized floating turbine must also be factored into this Environmental Assessment.

SCOPE OF REVIEW

We ask that the DOE consider as broad a geographic scope as possible.

1. Impacts to both the two square mile footprint of the demonstration test site and to the ill-defined but foreseeable footprint of the site farther offshore where the full-sized floating wind turbine will be deployed as part of this expenditure of DOE funds.
2. Impacts to the Eastern Maine Coastal Current, the Western Maine Coastal Current and other existing oceanographic structure of the Gulf of Maine that will be impacted by deployment of the test and full sized floating turbines.

3. Impacts to Gulf of Maine lobster larvae migration from alterations in existing Gulf of Maine current dynamics caused by deployment of floating deepwater wind turbines in hydrodynamically sensitive areas.

4. Impacts to Gulf of Maine nutrient flows and to overall seasonally significant geographic concentrations of finfisheries, due to alterations in existing Gulf of Maine current dynamics and alterations in thermal structure of the water column of the footprint of floating deepwater turbines.

5. Impacts to irreplaceable scenic resources of state and national significance from deploying this test project off of Monhegan Island, as opposed far lesser impacts from deploying in one of the other two locations chosen by the state of Maine as deepwater test areas, but relegated to later development, if at all.

6. Impacts to Atlantic puffins and other seabirds known and documented to overfly the area of the proposed wind test site off Monhegan.

7. Impacts to land birds known and documented as seasonally migrating through the location off Monhegan proposed for the University of Maine's deepwater wind site

AT ISSUE

Below we will describe general and site specific issues of unavoidable adverse impacts, followed by citations and excerpts or complete copies of relevant peer reviewed research, followed by information gathered by competent bird naturalists, that is worthy of consideration in the Department's Environmental Assessment.

1. Unavoidable adverse impacts of artificially modified ocean wind on oceanic processes. Winds play in key role in many natural marine processes, including the natural Ekman Transport of energy from air to water; ocean surface circulation (particularly at gyres); vertical water motion; mixing of upper ocean layers; upwelling of deep, often nutrient-rich, anoxic waters to the surface, and downwelling of oxygen rich waters to the lower water column

The operation of an ocean windfarm's turbines creates an in-situ forced 1 meter/day upwelling process in the water column beneath that facility. (1)
Brostrom 2008

By artificially and continuously impacting the natural Ekman Transport within the windturbine complex's energy footprint, ocean windfarms, by their very nature as moored or monopiled in-place energy *sinks*, appear to act as anthropogenically generated artificial gyres, capable of generating eddies and other perturbations of the water column and nearby water currents, with implications for additional

The Gulf of Maine's marine ecosystem has evolved and adapted to seasonally predictable gyres and eddies. The addition of year-round in-place artificial gyres to the hydrodynamics of the Gulf of Maine is highly likely to have discernable impacts on its surface water characteristics and currents, with consequences for transport of lobster larvae and those of other animal species, as well as for the timing of Gulf of Maine phytoplankton blooms.

It is the duty of the Department of Energy to determine the significance of those impacts and those consequences before setting out any locations for development of offshore renewable energy .

2. Unavoidable adverse impacts to a nationally significant scenic Monhegan viewshed.

Lobster Cove on the southern tip of Monhegan, possesses nationally significant scenic resources. It is reachable only by pedestrian footpath and is one of the most popular destinations for day tripping tourists visiting the island,. It is also a place of pilgrimage for generations of fine artists, who annually in their hundreds paint the views of and from Lobster Cove, where the deep waters of the Gulf of Maine are cut by the granite shieldwall of the continent, and by barely glimpsed archipelagoes far to south'ard. The deep dark of the Atlantic ocean, and the clear starfields, presently claim the night here.

The proposed deployment of prototype small and full sized wind turbines at this site for an indefinite number of years and renewals will unavoidably adversely impact this nationally significant viewshed:

During the daytime, the turning blades will modify the optical experience of dawn, from numerous places on the island, and throughout the day will command the visual attention of all who gaze to the south upon the Gulf of Maine

viewscape, including those visiting publicly-accessible Lobster Cove, artist and casual tourist alike.

At night the safety lights atop the turbines, blinking and occasionally flared by the passing blades, will similarly command the attention of those viewing the evening skies and starshed south of Monhegan.

It is not known what the sonic impact of the prototype turbines will be on the public and the artists enjoying Lobster Cove, however, sonic pollution both in the audible spectrum and "infrasound" are problems that challenge people living similar distances from landbased wind.

3. Unavoidable adverse impacts to a unique island bird population and to an internationally nationally significant migratory bird route along the Atlantic Seaboard.

Birds living on or transiting Monhegan - and the site where the full scale 5 megawatt ocean wind turbine will be deployed, if outside the Monhegan test center's waters - will be adversely impacted if the project's wind turbines are funded, built, deployed and operated. Birds have been counted off Monhegan and other outer Penobscot Bay islands since the 1940s

Lobster Cove, the public beach on Monhegan whose nationally significant scenic viewshed is reachable only by pedestrian footpath, is also very popular as a location for ornithologists desiring to count migrating birds heading north or south in great numbers during the same times of year that the prototype windturbines would be deployed - summer and autumn.

Maine Bureau of Parks and Lands erroneously concluded in its decision approving the Monhegan Deepwater Test Area that little impact was likely to birds from development and operation of this project. That decision is under review by Maine Superior Court

To the contrary, however, the records of recent and historic professional and amateur ornithologists experienced with the bird life of Monhegan and the waters south of the island show a very heavy use of the island and those waters by a large number of residential and migratory bird species.

* Bird sitings on Monhegan. September 14 to September 28, 2010 . Bryan Pfeiffer professional bird naturalist, author and consultant, identified 122 bird species during a visit to Monhegan from September 14th to September 28, 2010. (List below)

* Maine eBird, sponsored by Audubon and Cornell Laboratory of Ornithology, recorded 202 bird species during 2009 & 2010. (List below.)

* Bird sitings on Monhegan, July2 2010 to October 16, 2010 These are primarily from Lobster Cove, the public beach on Monhegan whose nationally significant scenic viewshed includes the location slated for the proposed Monhegan Deepwater Wind Test Area. Migrating birds heading south along the atlantic flyway pass over Penobscot Bay then stop at Monhegan in great numbers during the times of year that the prototype windturbines would be deployed - summer and autumn.

They were made by ornithologist Tom Magarian and submitted by him to the Maine-Bird online forum & archive. (List below) Magarian is a professional ornithologist who works with New Jersey Audubon. He has been tasked to carry out radar sitings of birds off Lobster Cove, Monhegan. The visual observations he recorded (see below) are a supplement to those readings, by this highly qualified individual. His email address: tmagarian@alumni.unity.edu

Because the funds being released by Department of Energy will be used to build, deploy and test both one or more 1/3 scale test prototypes, *and "a full-scale prototype of a 5 megawatt floating wind turbine"*, according to Elizabeth Viselli of the University of Maine-led DeepCwind Consortium, the environmental assessment needs to acknowledge the potential impacts of both size turbines on birds.

Nothing is known about the proposed location for deploying the full scale 5 megawatt floating turbine. Neither the Bureau of Parks and Lands designation of the deepwater wind test area off Monhegan, nor the enabling law MRSA 12 §1868. Identification of offshore wind energy test areas" limit the size of prototypes that may be deployed in the test center's waters. However, the expectation among Monhegan residents is that deployment will be limited there to 1/3 sized prototypes, not full sized ones.

Unless the University proposes to renege on its informal agreement with the Monhegan community to limit deployments off their island to 1/3 sized prototypes, it will have to either choose one of the other two wind test areas, or consider some hitherto undisclosed location elsewhere. If so, then a range of alternative locations needs to be selected, examined and ranked, prior to final determination and the releasing of funds to the University of Maine, as construction and deployment of this full size windturbine will take place only with the authorization of the DOE funds under present consideration.

4. Unavoidable adverse impacts to Fisheries

Direct impacts upon commercial and recreational fisheries and pleasure sailors include the exclusion zone directly around each windturbine, as well as, for fishers with bottom tending gear, cable areas and other seafloor installations of the wind project.

Direct impacts to important fishing feeding and breeding and nursery areas, if turbines are deployed there. Indirect impacts by deploying windturbines in migratory pathways of fish, shellfish or prey species, due to the upwelling and thermal modification of ocean hydrology per *Brostrom 2008* and other researchers cited in above.

In summary, because deployment of a full scale 5 megawatt floating turbine is a reasonably anticipated outcome of the DOE releasing these funds, the adverse impacts that it could likely have on birds and fish inside and outside the immediate footprint of the offshore test area needs to be considered. The Environmental Assessment will be deficient if it does not acknowledge and include the reasonably foreseeable impacts to managed and protected resources.

Viable alternatives to the proposed project.

The state of Maine identified eight sites in Maine state waters as potentially appropriate for hosting Maine's Offshore Wind Energy Test Areas. These sites were winnowed down to three locations in 2009; of those three, the easternmost site, two miles south of Monhegan, was chosen on December 14, 2009 to host the Maine Offshore Wind Research Center.

The state's decision to locate the Offshore Wind Research Center off Monhegan is being contested in Maine Superior Court as of October 18, 2010. The petitioner

suggests that the Bureau of Parks and Lands has underemphasized likely impacts to Monhegan scenic and bird resources, due to a pre-made decision to locate the University of Maine deepwater test site off Monhegan Island for logistical reasons.

The Department of Energy has an opportunity to reexamine the record of the BPL's decision, coupled with and tempered by additional information that extends the Bureau's overly narrow definition of scenic, fishery and avian resources at risk to one more consistent with natural resource conservation and scenic resource preservation standards under federal law.

Irreversible and irretrievable commitments of resources.

Because the project being considered for funding by the Department of Energy would build and deploy floating renewable energy facilities that would be anchored or moored in place, irreversible and irretrievable commitments of resources will be far fewer than those of fixed monopile wind turbines, such as those approved off southern Massachusetts.

Should the site prove unsuitable due to unacceptable adverse impacts to living and/or non living marine resources, the floating facilities can be towed to different locations or returned to shore, for, maintenance, modification or recycling.

Conclusion. We strongly believe that sufficient uncertainties exist, both onsite and offsite, of the nature and extent of the adverse impacts of this project to warrant preparation of an environmental impact statement prior to the Department of Energy making a final decision as to whether the Monhegan site is the most appropriate of the alternatives. Given the facts, we do not believe it possible for the Department to decide otherwise.

We ask that the DOE consider as broad a geographic scope as possible. that it consider:

1. Impacts to both the two square mile footprint of the demonstration test site and to the ill-defined but foreseeable footprint of the site farther offshore where the full-sized floating wind turbine will be deployed as part of this expenditure of DOE funds.

2. Impacts to the Eastern Maine Coastal Current, the Western Maine Coastal Current and other existing oceanographic structure of the Gulf of Maine that will be impacted by deployment of the test and full sized floating turbines.

3. Impacts to Gulf of Maine lobster larvae migration from alterations in existing Gulf of Maine current dynamics caused by deployment of floating deepwater wind turbines in hydrodynamically sensitive areas.

4. Impacts to Gulf of Maine nutrient flows and to overall seasonally significant geographic concentrations of finfisheries, due to alterations in existing Gulf of Maine current dynamics and alterations in thermal structure of the water column of the footprint of floating deepwater turbines.

5. Impacts to irreplaceable scenic resources of state and national significance from deploying this test project off of Monhegan Island, as opposed far lesser impacts from deploying in one of the other two locations chosen by the state of Maine as deepwater test areas, but relegated to later development, if at all.

6. Impacts to Atlantic puffins and other seabirds known and documented to overfly the area of the proposed wind test site off Monhegan.

7. Impacts to land birds known and documented as seasonally migrating through the location off Monhegan proposed for the University of Maine's deepwater wind site

See attachments, below.

Sincerely

Ron Huber

Ron Huber

Penobscot Bay Watch

Attachments (pdf files)

* On the influence of large wind farms on the upper ocean circulation by Goram Brostrom, Norwegian Meteorology Institute. 2008

- * Goram Brostrom. August 2010 . Personal communication
- * Weather response to a large wind turbine array D. B. Barrie and D. B. Kirk-Davidoff University of Maryland Department of Atmospheric and Oceanic Science, Atmos. Chem. Phys. Discuss.: 29 January 2009
- * "Potential climatic impacts and reliability of very large-scale wind farms 2009" by C. Wang and R. G. Prinn
- * Bird sightings off Monhegan's Lobster Cove, July 2, to October 16, 2010, _by Audubon ornithologist Tom Magarian
- * Maine eBird Monhegan listings 2009-2010. Cornell Laboratory & Audubon
- * Bird Observations, Monhegan, September 2010 Bird naturalist Bryan Pfeiffer
- * Notes on a Fall Migration at Matinicus Rock, 1949 Rosario Mazzeo
- * Gulf of Maine Circulation
- * Gulf of Maine Fishing Grounds