Friends of Penobscot Bay

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Diana Heyder
NEPA Division
Department of Energy
Golden Field Office 301- 891-5698
15013 Denver West Parkway
Golden, Colorado 80401

March 21, 2017

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

Dear Ms. Heyder
Friends of Penobscot Bay (FOPB)is a citizens association dedicated since 1993 to protecting and restoring the living marine resources of Penobscot Bay and the greater Gulf of Maine. FOPB is writing in response to the Department of Energy's Notice of Scoping for an Environmental Assessment of the likely effects of its May 2016 decision to award $40 million to the University of Maine to produce and install two full scale floating ocean windmills in Maine's Deepwater Offshore Wind Test Site.

Friends of Penobscot Bay is a Maine non profit and is an affiliate of the Waterkeeper Alliance. Our oversight includes development initiatives in Penobscot Bay and in surrounding waters, from industrial areas in tidal Penobscot River, to midbay Penobscot Bay aquaculture in midbay and the outer bay and to offshore energy facilities such as these proposed off Monhegan Island and in waters beyond the state boundary.

Previous Wind related activities
In 2010 and 2011 FOPB executive director Ron Huber engaged in *pro se* litigation concerning this same project: Huber v Maine Bureau of Parks and Lands, before the Knox County Maine Superior Court. *Decision 7/27/11.* The suit appealed BPL's decision to designate the state offshore wind test center in state waters off Monhegan. Huber was granted standing and challenged the adequacy of the state's review of the likely impacts to (1) irreplaceable scenic assets of values of state and national significance, (2) to marine biological resources and (3) to seabirds ,shorebirds and migrating land birds.

We thank the Department of Energy for seeking comment from the interested public to aid DOE in determining whether the proposed action warrants issuance of an Environmental Assessment with a Finding of No Significant Impact, or requires preparation of an Environmental Impact Statement.

AT ISSUE. We strongly believe that sufficient uncertainties exist, both onsite and offsite, to warrant preparation of an environmental impact statement prior to DOE making a final decision as to whether the Maine Aqua Ventus 1 project is appropriate, needs amendment, or should be rejected.

In particular, two fundmental changes to the project render much of the information gathered in support of the project outdated and not representative of the present plan.

A. MAV now proposes to site the prototype windturbines off Monhegan for ***twenty years*** of "testing". The environmental assessment was drafted to the original plan as approved by the Maine Bureau of Parks and Lands of **a five year** testing process before deployment to sites in the EEZ. The BPL officials told FOPB that they have not been informed of this proposed change as of February 2017

B. The height and breadth of the floating wind turbines has increased, leading to anticipatable increases in direct & indirect impacts to avian and bat species and to econmically significant viewsheds from the expanded rheight and reach of the blades.

Inm addition there will be a concommittant increase in windshadow impacts, particularly reduced energy at the water surface reduced Ekman upwelling and and downwelling currents to the seasonal water column energetics & coastal current stability within the floating turbines' wind shadows, with impalication for lobater larva transport and for other specides movement
2.

The Department of Energy Potential impacts to the human environment that would be caused by the proposed project include direct, indirect and cumulative impacts to
* Aesthetic & Visual Resources
* Air Quality
* Biological Resources including benthic, avian and bat species, and protected species.
* Hydrologic resources
* Cultural Resources
* Floodplains and wetlands
* Geology sediments and soils.
* Noise
* Ocean & Land Use (Scenic tourism industry, Commercial fishing, recreation, navigation, transportation & traffic)

Our comments are followed by citations and excerpts or complete copies of relevant peer reviewed research, followed by information gathered by competent bird naturalists, that are worthy of consideration in the Department's assessment of whether to require preparation of an environmental impact statement or be satisfied with an Environmental Assessment based on what FOPB considers *inadequate* information

Scope of Review
We urge the DOE to consider as broad a geographic and temporal scope as possible, including direct, indirect and cumulative impacts to:

- Economically irreplaceable scenic and sonic resources of both mainland and island communities.

- Changes from seasonal water column energetics & coastal current stability within the floating turbines' wind shadows.

- Living marine resources resident within the test site's two square mile footprint.

- Living marine resources seasonally transiting the site due to prevailing currents.

Aesthetics & Visual Resources

Unavoidable adverse impacts to a nationally significant scenic Monhegan viewshed.

The beaches and pathways of Lobster Cove and Christmas Cove, along the southern end of Monhegan, possess high quality nationally significant scenic resources .

They are reachable only by footpath and are popular scenic destinations for tourists visiting the island since the 19th century 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, Christmas cove and distant islands and mainland shorelines 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 Gulf of Maine and broad skies the clear starfields, presently claim the night here.

While Lobster Cove and Christmas Cove meets state standards defining a “Scenic Resource of State and National Significance” as defined by Title 35-A, section 3451, the state of Maine has failed to complete its scenic inventory of the southern and midcoast Maine coast, including Monhegan characterizing the visually assets of various portson fo the island.

While the proposed MAV project would dominate Lobster Cove's viewshed and soundshed, the Bureau of Parks and Lands and the Maine State Planning Office have decined to consider these impacts of any significance failed to update their rules on scenic viewpoint evaluation for ocean windfarms and rules on developing a scenic inventory, though required to do so by the Legislature.

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

During the daytime, the turning blades will modify the optical environment of dawn with flicker, 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 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 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.

In summary, we conclude that the modifications in duration of project and size of project pegawattage, have rendered earlier information gathered about these impacts out of date. NEPA requires information to be competent to be used in tanalysis. The amount of changes to the project greatly increase its likely effect on everything from larval lobster distribution along the Maine coast to reduced puffins and other migratory fowl exploiting Monhegan island in their wanderings; to degraded scenic visual and sonic resources, from island visitors and residents using the scenic beachest, to the Lincoln county mainland waterfronts.

Hydrographic water resources impacted

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 column; ocean surface circulation (particularly at gyres); vertical water motion; mixing of upper ocean layers;

Operation of ocean windturbines creates an **in-situ forced 1 meter/day upwelling process** in the water column beneath that facility's windshadow, impacting summertime's stratified waters with horizontal water movement *(Brostrom 2008) D*ownwelling of oxygen rich waters to the lower water column and upwelling of nutrient rich but oxygen poor from those waters.

By artificially and continuously impacting the natural Ekman Transport within the windturbine complex's energy footprint, ocean windfarms are moored or monopiled in-place energy *sinks.* Creating anthropogenically generated artificial gyres,and other perturbations of the water column and nearby water currents.

Result: The Gulf of Maine's marine ecosystems have evolved and adapted to seasonally predictable gyres and eddies. The addition of year-round in-place upwelling artificial gyresof several square miles in size 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, particularly in light of the 400 percent increase in the length of the project and its greatly expanded reach or fetch.

Fisheries

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

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.

Birds 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 ocean wind turbines 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 and Christmas Cove, two public beaches on Monhegan whose economically 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 windturbines would be deployed - summer and autumn.

We believe that 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. The prosent MAV project with its proposed increases in length of project from five to twenty and in the size and height of each turbine, only compound the error in our view. We believe that an impartial review of crowdsourced data of participants in IBird and EBird bird counts of Monhegan Island will reveal the true abundance and seasonality of birds and bats .

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.

Previous ecological studies carried out may not be represetative of the new parameters of the project Nothing is known about the difference in impacts between the 1/3 size, temporarily sited floating turbines of the 2011 EA and the present proposal. This needs to be examined.

While 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, they do presume a much shorter time on site than previously considered. However, the expectation among Monhegan residents was that deployment of full sized ones would take place well offshore in the EEZ.

In summary, deployment of two full scale floating turbines is a reasonably anticipated to have adverse impacts 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.

Alternatives to the proposed project.

The state of Maine has 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 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 now has an opportunity to reexamine the record of the BPL's decision, and the court 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.

Other alternatives include reduced time at the Monehegan Test site, decreased height and width of the site.

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 apparent issues, we do not believe it possible for the Department to decide otherwise.
To summarize: We ask that the DOE consider as broad a geographic scope as possible and 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 as it transits the floating windfarm site, thence to other existing oceanographic structures of the Gulf of Maine that could be impacted by deployment of the test and full sized floating turbines.

3. Impacts to Gulf of Maine nutrient flows and to overall seasonally significant geographic concentrations of finfisheries, due to unavoidable alterations in existing Gulf of Maine current dynamics and in summertime water column structure f within the wind shadowe "footprint" of floating deepwater turbines.

4. 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.

5. Impacts to irreplaceable scenic economic resources by deployment of the turbines for 20 years off of Monhegan Island, as opposed to the original proposal to host test turbines for part of each year for up to five years, before moving them to sites in the Excluxsive Economic Zone. Similar reasonably anticipatable impacts to scenic economic resources when deploying in one of the other two locations chosen by the state of Maine as deepwater twindpower test areas.

6. Impacts to Atlantic puffins and other seabirds known and documented to maigrate and forage within the Monhegan offshore wind test site off

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

Sincerely

Ron Huber

Ron Huber
Friends of Penobscot Bay

References

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* Huber v BPL. ME Superior Court decision re Monhegan offshore **windsite 6/24/11 LINK**
* Notes on a Fall Migration at Matinicus Rock 1949