

# Penobscot Bay Watch

King Harald V  
The Royal Palace  
Drammensveien 1  
N-0010 Oslo Norway

**SENT** December 10, 2011

Your Majesty

We write asking that you bring your influence to bear to require that Norway's energy company Statoil suspend its application to develop deepwater windpower off the coast of Maine, USA, **until after** an international committee of oceanographers considers the implications of the findings of Norwegian researcher Göran Broström, and others, and develops standards to ensure ichthyoplankton-safe placement of deepwater ocean wind parks. We further ask that Your Majesty be the one who convenes this international colloquium.

Our world is on the verge of intensive shallow and deepwater ocean wind development off nearly every coastal nation. While deepwater wind energy extraction will help our species' struggle to escape the carbon era, it must be introduced precautionarily, lest expensive mistakes be made in the first flurry of exploitation.

For, invisibly sharing those waters, and using a host of shallow and deepwater currents to migrate - often great distances - are the younger life stages of the lobsters, scallops, mackerel and other seafish and shellfish we harvest. Many of Maine's lobsters, for example, originate in Canada's Bay of Fundy, while many of Maine's atlantic bluefin tuna arise in the Gulf of Mexico.

In their planktonic stages, these animals are susceptible to changes in the velocity, temperature or chemical composition of the water column they travel through. A thermocline or sudden change in chemical composition can be as arresting as a rock wall to travelling lobster larvae, and to the planktonic young of many other species.

According to Dr. Brostrom's 2008 research study "**On the influence of large wind farms on the upper ocean circulation.**" (*Göran Broström, Norwegian Meteorological Institute*), wind energy extraction by ocean windmills generates large localized upwellings of seawater beneath them "*sufficiently enough that the local ecosystem will most likely be strongly influenced by the presence of a wind farm*". His report goes on to quantify the creation of these vertical thermoclines of benthic water.

Your Majesty, one may visualize the induction of vertical upwelling water currents by ocean windmills as mirroring the “wind shadow” of reduced-velocity wind found below and downstream of those operating ocean windturbines.

Professor Peter Jumars, head of the University of Maine School of Marine Sciences, has cited Brostrom’s findings as an unresolved issue much in need of review prior to introduction of utility scale deepwater wind turbines in his department’s DeepCwind ocean wind project report.

He told me at the December 8, 2011 meeting in Maine that Statoil’s proposed four deepwater wind turbines may be of sufficient capacity to induce an upwelling phenomenon of the type predicted by Doctor Brostrom. But as an academic, his influence is limited. His chief oceanographer has twice been spurned in her efforts to obtain grants to examine the oceanographic impacts of deepwater windpower, benign or otherwise. It is likely that the oceanographers of many other coastal states and nations also lack resources to guide deepwater windpower siting.

We believe that Your Majesty is one of the few people on Earth whose call would be taken seriously for such a colloquium of ocean wind and hydrology scholars to be organized to review this upwelling issue with the degree of scientific scrutiny necessary.

Then, if needed, standards could be established that would safeguard against inappropriate siting. If the impacts are shown to be substantial and significant, then they will become part of the review process. If the impacts are found not significant, then an issue of seeming import will be laid to rest.

In closing, we ask you as leader of your county, and as a world leader in ocean windpower development, to call for suspension of deepwater windpark licensing until such time as siting standards are developed that evaluate the impact of the proposal on existing water currents and ichthyoplankton. Many who otherwise support ocean windparks will be grateful to you for your caution and foresightedness in ensuring that both seafood and electricity comes in abundance from the world’s oceans.

Sincerely

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