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Testimony
before the Joint Hearing of the
Subcommittee on Fisheries, Wildlife and Oceans
and the
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
U.S. House of Representatives
on
Renewable Energy Opportunities and Issues on the Outer Continental Shelf

submitted by

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April 24, 2007

Thank-you Chairwoman Bordallo, Chairman Costa, and Subcommittee Members for the opportunity to testify before this joint hearing of the House Subcommittee on Fisheries, Wildlife and Oceans and the House Subcommittee on Energy and Mineral Resources on "Renewable Energy Opportunities and Issues on the Outer Continental Shelf." My name is Porter Hoagland. I am employed as a Research Specialist at the Marine Policy Center, a social science research unit of the Woods Hole Oceanographic Institution in Woods Hole, Massachusetts. I have worked and studied as a marine policy analyst focusing on the economic and regulatory issues relating to the conservation and management of coastal and ocean resources for more than 25 years. This testimony represents my own views and not those of the Woods Hole Oceanographic Institution.

I have been asked to discuss the current regulatory structure for offshore wind, wave and current projects, what Federal agencies are in charge, the role of States, and what Congress can do to clarify the existing regulatory structure. My current understanding of the regulatory structure relating to renewable energy projects on the US outer Continental Shelf (OCS) draws from my recent work with colleagues on the design of a national policy framework for the siting of coastal ocean wind power. Concerning this work and in portions of this testimony, I would like to acknowledge the help of my colleagues, Ms. Mary Schumacher and Dr. Hauke Kite-Powell at Woods Hole and Professor John Duff at the University of Massachusetts Boston. I would also like to acknowledge the sponsors of this research, including the Massachusetts Technology Collaborative, the Goldman Sachs Group, Inc., and the Johnson Endowment at the WHOI Marine Policy Center.

Our recent work seeks to clarify the national, regional, and local decisions about the siting of wind power facilities in the US coastal ocean. Its main conclusions are general enough to be of relevance to the siting of offshore wave and current projects as well. One of our main goals has been to identify and characterize the common features of a land and resource management

system that are appropriate for the siting of wind power in the US coastal ocean. In our full project report[1], which I would be happy to make available to the Subcommittees, we identify 16 common features of an "access system" for coastal ocean wind power, and we discuss their usefulness and efficiency. My testimony today will focus mainly on the findings of our study relating to those access system features that may help Congress clarify the regulatory structure.

Ocean Space as the Relevant Resource

In the context of renewable energy facilities, the relevant resource to be allocated is ocean space. With respect to ocean wind power, ocean space may be characterized by its average wind speed, wind consistency, distance from electrical transmission facilities, distance from electrical consumers, and exposure to adverse weather conditions, among other qualities. The existence of quality differences across ocean areas implies that, like good cropland, ocean space with the right qualities may be a scarce natural resource. As a consequence, ocean space useful for wind farming or other renewable energy production may have economic value. Further, ocean space may have value for other human uses, including commercial fishing, marine aquaculture, recreation, environmental conservation, shipping, among many others. Consequently, there may be significant opportunity costs from a decision to allocate ocean space for renewable energy development (or, alternatively, for other purposes).

There is no private market for ocean space. Specialized institutions must be devised, if they do not yet exist, for allocating ocean space for renewable energy development. The existence of institutions to establish legal interests in ocean space and to provide a means for enforcement against any infringement of these interests is critical. Such legal interests are one key component of an "access system" for allocating ocean space that is needed to enable the development of renewable energy in the ocean as a productive industry. The features of an access system may influence the extent to which the siting of ocean renewable energy is economically efficient.

The siting of renewable energy facilities does not involve an exclusive use of ocean space in all cases. It is necessary to determine which other uses are compatible with wind farming and which are excluded or diminished. For example, some types of aquaculture and recreational fishing may be compatible with wind farming, while certain kinds of commercial fishing (dragging the seafloor with trawl nets) and the aesthetic appearance of the seascape may not. In making decisions about exclusivity and compatibility, it is critical to quantify tradeoffs in economic terms, where feasible. Importantly, the economic concept of "resource rent," representing the value of ocean space as a scarce resource, should be utilized in analyzing such tradeoffs.

It is relatively straightforward to estimate resource rents associated with commercial activities and progressively more difficult to estimate the value of uses that are further removed from markets, such as recreation, aesthetics, or the benefits of environmental amenities. Consequently, the opportunity costs of allocating areas for specific uses or for specific combinations of uses can be uncertain. Similarly, there is uncertainty about the non-market values of modifications in seabird or subsea habitat when a renewable energy facility is sited. Even the opportunity costs of displacing commercial uses, such as shipping and fishing, can involve uncertainty in their calculations.

[1] Hoagland, P., M.E. Schumacher, H.L. Kite-Powell and J.A. Duff. 2006. Legal and regulatory framework for siting offshore wind energy facilities. Project No. 2004-OWEC-01. Westborough, Mass.: Offshore Wind Energy Collaborative Pilot Projects Grant Program, Massachusetts Technology Collaborative (30 June).

It is important for a disinterested party to undertake economic studies, such as studies to estimate resource rents and non-market values. Although stakeholders, such as prospective developers or nongovernmental organizations, may wish to conduct or sponsor their own analyses, there is the clear possibility of bias built into assumptions and hidden in the results. Typically, the government would conduct policy analyses or contract for studies to be undertaken by independent analysts. Although arguably more credible than analyses conducted by stakeholders, the government, too, may not be a completely disinterested party. Therefore, the results of such analyses should be subject to a scientific peer-review.

Current Regulatory Structure, What Federal Agencies are in Charge, and the Role of States

The federal "permitting" process has until recently been based upon section 10 of the 1899 US Rivers and Harbors Act (RHA), which assigns jurisdiction to the US Army Corps of Engineers (ACoE) to regulate obstructions to navigation in the navigable waters of the United States and on its outer Continental Shelf (OCS). While navigational issues still are paramount, recent legislative developments would seem to acknowledge that the RHA is inadequate for making decisions about the exclusive use of the ocean for permanent activities such as offshore wind power generation.

Section 388 of the Energy Policy Act of 2005 [P.L. 109-58], which was signed into law by President George W. Bush on August 8, 2005, assigns responsibility for the design and implementation of an access system for siting ocean wind energy to the Minerals Management Service (MMS) in the US Department of the Interior. MMS is now in the process of drafting interim regulations under the authority of the Outer Continental Shelf Lands Act Amendments of 1978 to grant leases, easements, or rights-of-way for siting facilities that produce, transport, or transmit energy from sources other than oil and gas, including ocean wind energy facilities. These rights are to be granted on a competitive basis, unless a determination of "no competitive interest" is made.

Additional provisions of the Energy Policy Act require MMS to establish financial terms that ensure a fair return to the United States for the granting of these rights and to set up a revenue-sharing program with coastal states for grants within three nautical miles of a state's submerged lands, analogous to the existing 8(g) program for OCS mineral leasing. MMS is now to act as the lead agency in coordinating the actions of other agencies in siting decisions.

Another important component in the development of MMS policy has been the drafting of offshore administrative lines from adjoining coastal states. These administrative lines will serve a number of important functions, such as helping MMS determine which states have prevailing interests in extended offshore areas because of the growing number of commercial activities on the federal OCS; providing a basis for accurate delineation of OCS planning areas; assisting in development and evaluation of "affected State" status under the Coastal Zone Management Act and the OCS Lands Act; assisting in the required comparative analysis by MMS to determine an equitable sharing of developmental benefits and environmental risks; and helping define appropriate consultation and information sharing between MMS and coastal states.

While this assignment of authority to MMS renders moot the question of the adequacy of the RHA as a legal means for providing access, the issues that arise with coordinating responsible agencies will not disappear. In particular, an RHA §10 permit for potential obstructions to navigation will still be required among other approvals or reviews by numerous federal and state agencies. Further, there is now a requirement that energy-related activities authorized under

these new provisions "are carried out in a manner that provides for . . . prevention of interference with reasonable uses of the EEZ." The Secretary of the Interior is accorded discretion in determining what uses are to be classified as reasonable.

Based upon our review of access systems in Europe and on the US public lands, we find that an access system needs a lead agency that is responsible for resource assessments, area selections, and allocations for specific resources. A lead agency with a "place-based" orientation is more likely than one with a "functional" orientation to allocate access to and to manage an area under its jurisdiction within a framework of multiple-use planning that takes the opportunity costs of alternative uses (including non-uses) into account. At least in principle, such an agency is better suited to advance a complex mix of policy objectives, such as energy diversification, environmental protection, resource conservation, and a fair return to the public, among others.

Because MMS now has primary responsibility for regulating offshore renewable energy development on the OCS, MMS also has lead agency responsibility under the National Environmental Policy Act (NEPA) for conducting environmental assessments and drafting environmental impact statements. Further, as lead agency, MMS has the responsibility for coordinating permitting and environmental review undertaken by other federal agencies under a wide variety of other laws and policies.

At the federal level, such permitting and review includes, but may not be limited to the following: Section 7 consultations triggering potential biological assessments under the Endangered Species Act for interactions with protected species (NMFS); permits for harassments or incidental takes under the Marine Mammal Protection Act (NMFS); conservation assessments for potential impacts on essential fish habitat under provisions of the Magnuson-Stevens Fishery Conservation and Management Act (NMFS and the regional Fishery Management Councils); permits for dredge and fill activities under provisions of Section 103 of the Ocean Dumping Act and Section 404 of the Clean Water Act (ACoE and EPA); taking into account under section 106 of the National Historic Preservation Act of any impacts on historic resources deemed eligible for listing on the National Register of Historic Places (NPS); and permits for private aids to navigation (USCG).

Even when the proposed location for an offshore wind energy facility is in federal waters, a number of state agencies will also play some role in the siting process. Among other possible sources of state jurisdiction, state and tribal governments have standing as "stakeholders" under the NEPA requirements for environmental impact review; and, under the Coastal Zone Management Act, most uses of coastal federal waters must be consistent with any affected state's definition and authorized uses of its "coastal zone."

This long list of review authorities ostensibly may appear to be both confusing and evidence of a lack of integration in marine policy. Moreover, the amount of interagency coordination and the number of required approvals has been blamed for retarding the nascent industry's growth. Notwithstanding these concerns, to a large extent, the multiple approval process cannot be circumvented easily, and it cannot be easily harmonized further by administrative reorganizations, mandates for regional management, or devolution of authority to coastal states. What is critical is that a lead agency—here MMS—serves as a facilitator of this process, establishing a form of "one-stop shopping" in ocean-space allocation decisions. At this juncture, this seems to be the direction that MMS is taking.

The development of renewable energy facilities in the ocean, particularly wind power, also is influenced by a number of other public policies. These policies continue to be in a state of flux, thereby increasing the level of regulatory risk faced by entrepreneurs who are thinking about constructing a wind farm in the coastal ocean. Among these policies are the reinstatement of the federal production tax credit and the enactment by states of renewable portfolio standards.

Recommendations for Congressional Clarifications of Existing Regulations

In our study of the design of an appropriate access system for renewable energy in the ocean, we have analyzed the economic implications of 16 generic features of access systems. Among these features, the following issues stand out as candidates for Congressional clarification of regulations: multiple-use decision-making; financial terms and subsidies; environmental monitoring I finish with a recommendation concerning sustainable financing of ocean management.

Multiple-Use Decision-making. Most modern access systems incorporate methods of resolving existing or potential conflicts among alternative uses. All of the access systems in our database incorporate provisions for consideration, at some level of detail, of alternative uses of the ocean in areas where ocean renewable energy facilities might be sited. The need for methods of resolving multiple-use conflicts arises from the recognition that allocation decisions may result in opportunity costs in terms of displaced uses, including such "non-uses" as habitat protection or the supply of ecosystem services. This need is a reflection also of the incompleteness of property rights for alternative uses of ocean space as a public resource and the absence of markets for allocating ocean space as a resource.

Policy objectives for US offshore renewable energy development, which relate to the prevention of interference with other "reasonable" uses and the consideration of other uses of the sea and seabed, appear to require MMS to conduct multiple use decision-making with respect to the siting of renewable energy facilities. MMS appears to be moving in the direction of analyzing the economic opportunity costs of siting renewable energy facilities in the ocean, although there is no explicit mandate from Congress to do so.

An important need is for the development of estimates of "non-market" values. For example, the siting of an ocean renewable energy facility may involve a change in the seascape. Both coastal residents and tourists may benefit from an unimpeded view of the ocean, but this view is not a commodity that typically is traded in established markets. Environmental economists have developed methods for estimating non-market values, and these methods can be applied to estimate the economic losses (or gains) associated with changes in the aesthetic properties of seascapes. Areas where additional research is needed include the selection of the most appropriate analytical methods and the development of estimates of potential non-market damages from siting ocean renewable energy facilities.

Notwithstanding the cumbersome nature of traditional non-integrated management, an access system should incorporate methods of resolving existing or potential conflicts among alternative uses. In practice, estimating the opportunity costs of allocating areas for specific uses or for specific combinations of uses can be very uncertain. Nevertheless, as part of the process of conflict resolution, Congress might specify that economic policy analysis be incorporated into an access system so that the government can begin to systematically integrate estimates of opportunity costs into its decisions about allocating ocean space. Such a comparison is needed especially where renewable energy has been selectively subsidized.

Subsidies and Other Financial Terms. In general, exogenous subsidies encourage the development of ocean wind power in the United States. Within the maritime boundaries of coastal states, the federal production tax credit (PTC) and accelerated depreciation, state renewable portfolio standards policies, system benefits funds, and property and sales tax abatements can lower the relative costs of wind power construction and operation. Only the federal subsidies (PTC and accelerated depreciation) would appear to apply to developments in the US exclusive economic zone, however.

The rationale for such subsidies is to level the playing field for renewable power, with respect to electric utilities that rely upon fossil fuels. Fossil fuel burning plants receive implicit subsidies when they are not required to account for the external costs of pollution, such as through releases of carbon dioxide or other pollutants. Little work has been undertaken to estimate the scale of the subsidies enjoyed by fossil fuel burning plants and to understand the extent to which subsidies for renewable energy do, in fact, level the playing field. Congress might encourage the development of economic models and the compilation and analysis of data to understand whether the renewable energy subsidy appropriately levels the playing field.

Policy discussions calling both for subsidies for renewable energy and charges (royalties or other) for the use of ocean areas are apparently inconsistent. Does it make sense both to promote ocean wind, for example, with a production tax credit and accelerated depreciation on the one hand and exact a royalty on the production of electricity from this same source on the other? This question also raises issues of the relative incentives faced by wind farm developers in choosing onshore versus offshore sites.

This issue may be resolved, at least conceptually, by considering a sequencing of subsidy and royalty. In effect, we might consider one form of a variable royalty, known as a "Brown tax." A Brown tax comprises an initial subsidy, while cash flows are negative (say, through the initial expenditures to characterize the relevant environmental parameters and to optimize the operations of a renewable energy facility), followed by the payment of royalties as cash flow turns positive. Because wind power is subsidized with a production tax credit and accelerated depreciation rules, these subsidies can be thought of as the "negative" royalties that apply during the early phases of ocean wind development. Over time, these subsidies may be phased out, and positive royalties could then be invoked.

A potentially useful institution for implementing a variable royalty is known as a Townsend-Young "evergreen lease." An evergreen lease is renegotiated after approximately one-half of the tenure has been completed: say, at ten years on a 20-year lease. Evergreen negotiations for a renewable energy lease might involve an increase in royalty payments, in line with the sequencing of a Brown tax. Although the precise details of a variable royalty/evergreen lease method would need to be ironed out, and the nature of incentives thereby created would need to be scrutinized carefully, this kind of an institution may make sense for both the government and energy producers where rents are expected to increase over time due to expansion in demands for both ocean space and electricity.

As a further consideration, we might expect that many areas of the ocean initially will be provided to industry on a first-come, first-serve basis for the siting of renewable energy facilities. As ocean space becomes increasingly scarce, however, methods of competitive bidding and allocation will come into play. Under an access system that mandates a competitive process for allocating ocean space for renewable energy development, prospective developers will bid away

any subsidies as well as resource rents. The bidding away of subsidies implies that the economic efficiencies embodied in a competitive access system may defeat the purpose of other policy objectives that encourage the development of renewable energy through subsidies.

The existence of these issues suggests that there is a need for Congress to encourage experimentation with innovative financial institutions that would achieve both the development of renewable energy in the ocean and a return for the use of ocean space as a public resource.

Monitoring. A strong argument can be made for including provisions in an access system that promote the collection of environmental monitoring data prior to the allocation of legal interests. Such data can improve our understanding of the value of ocean space as a resource for the specific purpose of siting renewable energy facilities. Further, such data can help us to get a sense of the opportunity costs of siting renewable energy facilities in the ocean. Environmental monitoring data could be collected by the government and released publicly or through a permitting program for prospective wind farm developers. Alternatively, prospective developers might be encouraged to pool their resources to conduct environmental monitoring efforts in areas that show promise for wind power development. A policy to pool monitoring efforts would reduce the waste associated with duplicate monitoring efforts in the same location.

Congress might usefully require the implementation of a national environmental monitoring effort to assess the characteristics of ocean space as a resource. This national effort could be integrated into complementary efforts on the development of regional and national capacities in ocean observation systems.

The external effects of ocean renewable energy facilities are not normally a function of output (electricity) but instead of the placement of the structures. Once rock piles, towers, turbines, or floating facilities are in place, both the view and, potentially, the habitat have been altered. Short of removing the structures, there is little that can be done to mitigate adverse effects. As a consequence, relative to the more common types of pollution-generating facilities, there would appear to be a reduced need for the ongoing monitoring and enforcement of ocean renewable energy facilities.

The siting of the first generation of wind farms in the ocean may be understood as a kind of scientific experiment. The understanding gained from these initial experiments undoubtedly would be of use in subsequent decisions about the location, scale, and patterns of ocean wind farm development. Congress might encourage the undertaking of research efforts to design and evaluate the results of these first-generation experiments.

Sustainable financing. I'd like to add one final word about the sustainable financing of ocean management. One of the key recommendations of the US Commission on Ocean Policy was the need to assign returns to the public from the use of its marine resources, such as bonuses, rentals, and royalties for offshore oil and natural gas, to help fund oceanographic research, monitoring, and conservation and management of the marine environment. As I mentioned above, under the Energy Policy Act, MMS is to establish financial terms that ensure a fair return to the United States for the granting of rights to renewable energy development. Further MMS is to establish a revenue-sharing program with coastal states for grants within three nautical miles of a state's submerged lands. Following this policy, and other precedent embodied in the use of OCS revenues for the Land and Water Conservation Fund and the National Historic Preservation Fund, Congress should require that remaining revenues from the siting of renewable energy facilities be used for sustainable financing of ocean management.