From: ocsenergywebmaster@anl.gov
To: mail_ocsenergyarchives; ocsenergywebmaster@anl.gov;
Subject: OCS Alternative Energy and Alternate Use Programmatic EIS Comment 80081
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Thank you for your comment, Carolyn Elefant.

The comment tracking number that has been assigned to your comment is 80081. Once the comment response document has been published, please refer to the comment tracking number to locate the response.

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OCS Alternative Energy and Alternate Use Programmatic EIS
Draft Comment: 80081

First Name: Carolyn
Last Name: Elefant
Organization: Ocean Renewable Energy Coalition
Address: 1629 K Street N.W. Ste. 300
City: Washington D.C.
State: DC
Zip: 20006
Country: USA
Email: loce@his.com
Privacy Preference: Don't withhold name or address from public record
Attachment: /Users/carolynelefant/ORECMMScomments520.pdf

Comment Submitted:
Comments of the Ocean Renewable Energy Coalition are attached as a PDF file.

Questions about submitting comments over the Web? Contact us at: ocsenergywebmaster@anl.gov or call the OCS Alternative Energy and Alternate Use Programmatic EIS Webmaster at (630)252-6182.

BEFORE THE UNITED STATES DEPARTMENT OF INTERIOR
MINERAL MANAGEMENT SERVICE

Alternative Energy on the	)	**OCS EIS/EA**
Outer Continental Shelf	)	**MMS 2007-010**

COMMENTS OF THE OCEAN RENEWABLE ENERGY COALITION (OREC) ON MINERAL MANAGEMENT SERVICE'S DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR ALTERNATE ENERGY DEVELOPMENT AND PRODUCTION AND ALTERNATE USE OF FACILITIES ON THE OUTER CONTINENTAL SHELF

The Ocean Renewable Energy Coalition (OREC), the national trade association for marine energy renewables, including wave, tidal, current, hydrokinetic, ocean thermal and offshore wind, submits these comments in response to the Mineral Management Service's (MMS) Draft Programmatic Environmental Impact Statement (EIS) for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf.

EXECUTIVE SUMMARY

OREC commends MMS for the comprehensive scope of the Programmatic DEIS, which will serve as a valuable resource for marine energy developers siting projects on the OCS. By identifying the universe of potential environmental effects of wave, current and offshore wind projects as well as ideas for mitigation, the DEIS can assist developers in making decisions about project design and siting. Part I of our comments briefly highlight the benefits of the Programmatic DEIS to the marine renewables industry.

At the same time, the DEIS overlooks many measures that will expedite siting of projects and accelerate commercialization of our nation's marine energy technologies

without compromising environmental concerns. Thus, Part II of OREC's comments focus on the following aspects of the DEIS that warrant further discussion:

1. The DEIS should discuss (and indeed approve) a categorical exclusion for test and demonstration facilities and facilities sited on decommissioned oil platforms, particularly in light of the DEIS' findings that impacts of these facilities will range from negligible to minor;

2. The DEIS should recognize and evaluate principles of adaptive management as potential mitigation for uncertain or unknown impacts;

3. The DEIS should clarify that project decommissioning will not be required until the project has operated for a period of 20-30 years and has fully recovered all costs.

4. The DEIS should incorporate principles of proportionality in permitting, by discussing the alternative of creating different regulations for different types of technologies (or at least for different stages of technology);

5. The DEIS should acknowledge not only the adverse impacts of development of marine energy resources, but beneficial effects such as potential increases in tourism, revitalization of economically depressed coastal communities and reduction of harmful greenhouse gas emissions.

The DEIS also raises the following legal and policy concerns, that we address in Part II of our comments:

1. The DEIS should clarify that the 5-7 year window for evaluation of impacts will (a) not prevent developers from applying for permits for technologies that are not covered by the DEIS and (b) will not prevent "phased in" development which might commence within the 5-7 year window, but will be completed outside the time frame of the DEIS window.

2. The DEIS should acknowledge that FERC believes its jurisdiction does apply on the OCS given that the DEIS' summary of applicable laws does not include the Federal Energy Regulatory Commission (FERC) or the Federal Power Act (FPA) as relevant statutes. And the DEIS should also explain that Section 404 of the Clean Water Act only applies in "navigable waters of the United States," *i.e.*, those up to three miles offshore and not to the OCS, as the summary table suggests.

3. The DEIS does not discuss the implications of MMS' delay – now more than one year past the statutory deadline - in issuing regulations for alternate energy projects on the OCS. MMS' delay has stalled development of wave, current and offshore wind projects that can contribute to reduction of carbon emissions and generate significant economic benefits for coastal communities.

I. BENEFITS OF THE PROGRAMMATIC DEIS

OREC is the national trade association for the marine renewables industry. Our members include wave, tidal, current, OTEC and offshore wind development companies, as well as law firms, consultants, engineering firms, investment funds in the United States and overseas, with a shared goal of promoting and advancing the marine renewables technologies in the United States. OREC has participated extensively in the MMS process: we filed 88 pages of comments in response to MMS' Advanced Notice of Proposed Rulemaking (ANOPR) in February 2006, and OREC representatives attended at least four of the scoping sessions conducted nationally by MMS on the Programmatic EIS and provided oral and written testimony.

OREC commends MMS for completion of the Programmatic DEIS, particularly, for the comprehensive scope of the document and for the extensive opportunities afforded for public participation. In OREC's view, the scoping document identifies the universe of the potential environmental effects of marine renewable energy projects, which can guide marine renewable energy developers' siting decisions as they move ahead with study and development of projects. And identification of environmental effects early on gives newer technology developers (wave and current companies) an opportunity to take

effects into consideration at the design phase of the project. In addition, in many cases, the Programmatic DEIS notes that certain impacts are avoidable through careful site selection or consultation with appropriate agencies.

The DEIS serves as a valuable resource for developers and the public, by identifying those impacts that are likely to be negligible or moderate, and those which may be more significant. As such, the DEIS will assist developers in designing and siting projects to minimize environmental effects and can help the public gain a more accurate understanding of the predicted effects of marine renewable projects.

II. OMISSIONS FROM THE PROGRAMMATIC DEIS

A. The DEIS Must Include A Categorical Exclusion For Test and Demonstration Facilities And Facilities Located on Oil Platforms.

1. Impacts of siting test facilities and

The DEIS generally concludes that in most development scenarios, impacts of wind, wave and ocean current projects are expected to range from minor to moderate. *See, e.g.*, Summary Table 7.1.1-1 (summarizing impacts for wind, wave and ocean current projects). In particular, the DEIS found that effects of technology testing activities for wave and current projects are expected to be negligible.[1]

80081-001

2. Need for categorical exclusion

Despite the negligible impacts associated with demonstration projects or test facilities, the DEIS does not explore the alternative of creating a "categorical exclusion" for these projects. Section 1508.4 of the CEQ regulations provide that a "categorical

[1] The DEIS assumed that because offshore wind is a mature technology, with a decade of operating experience gleaned from the European market, that most offshore wind developers will skip the demonstration and pilot phase and move directly to commercial operation. *See, e.g.*, Executive Summary at ES-5.

exclusion" means "a category of activities which do not individually or cumulatively have a significant effect on the human environment…and for which, therefore, neither an environmental assessment or environmental impact statement is required." Based on MMS' Programmatic DEIS, demonstration and test projects qualify for a categorical exclusion under the CEQ regulations.

Establishing a categorical exclusion for demonstration and test facilities will expedite development of wave and current projects on the OCS and accelerate commercialization of these technologies. At present, the emergence of marine renewables technologies, particularly wave, tidal and current, have been stalled because developers have been unable to get projects into the water. Exempting demonstration and pilot projects from a lengthy environmental review process through establishment of a categorical exclusion will cut significant time off the permitting process and will give developers an opportunity to generate data on technology efficiencies and environmental effects based on actual operating experience, rather than through hypothesis or tank test results.

80081-001 (cont.)

A categorical exclusion for demonstration and pilot marine and current projects will not compromise the environment. As discussed, the Programmatic DEIS shows that impacts from testing are negligible. Moreover, MMS' Departmental Manual (516 DM 2.3A(3)) reserves MMS' ability to prepare an EA for categorically excluded projects where they may have significant adverse effects on public health or saety or have controversial environmental affects. Thus, even if a categorical exclusion is established, a backstop EA process is available if necessary.

B. The DEIS Should Recognize and Evaluate Principles of Adaptive Management As Potential Mitigation for Uncertain or Unknown Impacts.

Increasingly, marine renewables developers are incorporating principles of adaptive management. Adaptive management is an iterative process of decision making which addresses uncertainty about impacts through post-licensing monitoring and study, with operational modifications if necessary to minimize project effects.[2] In the context of marine renewables, adapative management is an important tool, because it allows development to move forward responsibly, even where uncertainty about impacts exists. In the absence of adaptive management, marine energy developers might be forced to study project effects for three or five years, merely to try to prove a negative, *i.e.*, that impacts will not result.

Increasingly, resource agencies and environmental decision makers are recognizing that adaptive management can be a useful tool for dealing with unknown impacts. But the DEIS does not identify adaptive management as a potential tool for siting or mitigating projects. The DEIS should include adaptive management as a potential mitigation technique and MMS should incorporate adaptive management principles where uncertainty about possible impacts exists.

80081-002

C. The DEIS Should Clarify That Decommissioning Will Not Be Required Until Projects Have An Opportunity to Recover Their Costs

For offshore wind, wave and current projects, the DEIS examines the costs associated with decommissioning. OREC realizes that regulations regarding potential decommissioning have not yet been issued. However, we use this opportunity to emphasize that in the event that MMS includes a decommissioning requirement in leases

80081-003

[2] *See also* www.en.wikipedia.org/wiki/Adaptive_management.

or rights of way issued for use of the OCS, MMS must do what it can to ensure that projects can operate at least for a sufficient period (typically 20-30 years) to meet obligations under power supply agreements and to fully recover costs, while recognizing, of course, the importance of considering data from Adaptive Management or other information about project environmental impacts. If MMS plans to require decommissioning any sooner than twenty years after a project is completed, marine energy developers will be significantly compromised in their ability to obtain financing, and indeed, requiring premature decommissioning may render financing impossible.

80081-003 (cont.)

D. The DEIS Should Incorporate Principles of Proportionality in Permitting By Discussing the Alternative of Creating Different Regulations for Different Types, or Stages of Technology.

OREC's comments in response to the ANOPR emphasized the importance of proportionality in creating a regulatory process. As OREC explained, smaller and environmentally benign marine renewables projects should not be subjected to the same rigorous review or onerous litany of studies as mature technologies with major impacts.

The DEIS does not go far enough to reinforce the principles of proportionality. And in fact, the DEIS describes that MMS will not issue regulations specific to energy source, *i.e.* wind, wave and ocean current. *See* ES-2-4, Part 2.4.1. While OREC supports streamlined and efficient regulation for wind, wave and ocean current technology, offshore wind is a far more advanced and mature technology than wave and current. With ten years of operational data from Europe, as well as information from onshore wind operation, the potential impacts of offshore wind projects are more easily discernable than those related to wave and tidal. Thus, offshore wind energy developers

80081-004

may be able to readily produce data on project effects that a wave or current developer could not because of lack of operational experience.

In developing regulations, MMS does not necessarily need to distinguish between types of energy sources. But MMS should keep in mind the size of a project and the maturity of the technology in developing its regulations.

0081-004 (cont.)

E. The DEIS Should Acknowledge Not Only Adverse Impacts of Development of Marine Energy Resources But Beneficial Effects Such As Potential Increases In Tourism, Revitalization of Economically Depressed Coastal Communities and Reduction of Harmful Greenhouse Gas Emissions.

The DEIS describes that development of offshore wind, wave and current projects may have adverse effects on tourism. And the DEIS also suggests that construction of marine energy projects could (albeit briefly) contribute to an increase in greenhouse gas emissions.

Yet, while the DEIS points out potential adverse effects, it does not give due coverage to the benefits of marine renewable energy development. For example, a 2004 report, *Offshore Wind, Onshore Jobs*, (online at http://www.greenpeace.org.uk/media/reports/offshore-wind-onshore-jobs) describes how offshore wind creates jobs and can revitalize the economies of coastal communities. And development of wave and current technologies will similarly contribute to economic growth. In addition, many offshore windfarms, such as the Arklow project in Ireland, are tourist attractions, evidence that marine renewables project can increase tourism revenues in certain areas.

80081-005

As for impact on air quality, the DEIS should emphasize the role that marine renewables play in contributing to reduction of carbon emissions. And the value of power from zero emissions technologies like offshore wind, wave and tidal will increase

further if a carbon tax, or carbon caps are imposed. The benefits of development of marine renewables on air quality outweight, or at least, substantially counterbalance the effects of siting projects. These offsetting benefits deserve more recognition in the DEIS.

80081-005 (cont.)

III. LEGAL AND POLICY CONCERNS

A. The DIES Should Clarify That the Five to Seven Year Window Will Not Prevent Development of Technologies Not Addressed in the DEIS or That Fall Outside of the Timeframe Studied.

1. Discussion of what the DEIS covers.

The DEIS is focused on alternative energy technologies and areas on the OCS that the industry has the potential to develop or evaluate from 2007 to 2014. ES-1. The DEIS states that it expects that development will occur nearer to shore with maximum water depth of 100 m or less for wind and wave, and 500 m for ocean current technology. As such, the DEIS does not evaluate development of alternative energy around Hawaii, where the OCS steeply drops off beyond the 3 miles limit of the OCS. Nor does the DEIS examine alternative energy development on the OCS in the Alaska region because of the harsh environment and probability that projects will not be pursued in federal waters. ES-2.

80081-006

The DEIS analyzes offshore wind, wave and ocean current technology in the DEIS because MMS anticipates receiving applications for development of these technologies on the OCS in the next seven years. But the DEIS does not evaluate offshore solar energy capture or hydrogen storage, because these technologies are not yet considered technologically and economically feasible in the marine environment. And

tidal power projects are excluded because these projects are expected to be developed close to shore outside MMS jurisdiction.

0081-006 (cont.)

2. Exclusion from the DEIS should not preclude development

The DEIS does not discuss the implications for technologies that are not considered in the DEIS. However, OREC believes that exclusion of a technology from the DEIS should not preclude its development. The marine energy industry is rapidly advancing, with new innovation and discovery constantly taking place. Some technologies like offshore biomass or offshore solar may be ready for test deployment within five to seven years – and when they are, MMS should allow these companies to move forward with development, irrespective of whether they were studied in the Programmatic DEIS or not.

Likewise, many wave and current projects may proceed in phases, with an initial demonstration or pilot project developed in 5-7 years and plans to add additional units gradually, over the course of a ten year period. The later stages of development will fall outside the 5-7 year period covered by the DEIS. Does this mean that these phases of development will be stalled until another Programmatic DEIS is prepared?

80081-007

As discussed in Part I, the Programmatic DEIS is a useful tool that aids developers and resources agencies alike. But in the absence of a crystal ball, MMS cannot accurately predict how the marine renewables energy industry will progress over the next seven years. For that reason, technologies omitted from the DEIS now, or development of technologies like offshore wind and wave, which are evaluated by the DEIS but which may extend beyond the seven year window should be permitted to move

ahead through a preparation of site specific environmental assessment, rather than deferred until a second Programmatic DEIS is completed.

80081-007 (cont.)

B. The DEIS Should Clarify Whether MMS Takes the Position That FERC's Jurisdiction Does Not Apply on the OCS.

Table 1.6-1 of the DEIS lists certain agencies and federal statutes which have related jurisdiction or apply on the OCS. The DEIS does not include either the Federal Power Act (FPA) or the Federal Energy Regulatory Commission (FERC) in the list.

Right now, MMS and FERC are working on an MOU clarifying jurisdiction on the OCS. FERC claims that it has the authority to license projects on the OCS under the FPA and that Section 388 of the Energy Policy Act of 2005 preserves FERC's licensing authority. MMS argues that FERC's authority is limited to navigable waters, which extend only three miles offshore and do not encompass the OCS.

80081-008

Resolution of the FERC/MMS jurisdictional conflict is critically important to wave and current companies, particularly those which seek to develop projects exclusively on the OCS, or which straddle MMS and FERC boundaries. The DEIS suggests that MMS does not regard believe that FERC jurisdiction applies on the OCS. The DEIS should acknowledge the cooperative efforts toward an MOU clarifying how MMS and FERC will work together and avoid duplicative jurisdiction on the OCS. The DEIS may want to discuss the effects that an additional level of regulation will have on the cost of project development.

D. The DEIS Must Address the Implications of MMS' Delay in Issuing Regulations for the OCS.

Section 388 of the EPAct of 2005 provides that not later than 270 days after the date of enactment of the Energy Policy Act of 2005 [August 9, 2005], the Secretary shall issue any necessary regulations to carry out this subsection. The deadline for compliance passed May 9, 2006, over a year ago.

The delay in promulgating regulations for licensing projects on the OCS has stalled development of marine renewables projects. Offshore wind developers cannot site test towers in the absence of the regulation. Just a few weeks ago, the Delaware Public Service Commission selected Bluewater Wind's offshore wind energy project over a natural gas plant and a coal gasification plant in a competitive bid proceeding. The ability of a marine renewable project to compete with conventional power sources and prevail in a competitive bid process is virtually unprecedented – but if MMS does not move quickly to issue rules, the proposed Delaware offshore wind farm may never be constructed.

The lack of regulations has created confusion for marine energy developers as well. On the west coast, the wave resource is optimal in areas roughly 2 to 5 miles offshore. Several wave energy developers have proposed projects which straddle both state and federal waters. Although FERC will entertain permits to study and investigate the state waters components of these projects, developers cannot explore the entire project until MMS adopts regulations for siting on the OCS.

Delays carry a significant environmental cost. Each day of delay in developing marine energy projects means another day of carbon emissions and reliance on costly

foreign oil. Congress entrusted MMS to develop a regulatory process for alternate energy on the OCS so that our nation could begin to take advantage of the vast renewable energy potential that our oceans have to offer. MMS must act quickly to issue regulations so that we can realize this potential – especially within the narrow seven year time frame covered by the DEIS.

Respectfully submitted,

Carolyn Elefant

Carolyn Elefant, Counsel to OREC

Sean O'Neill /s/

President, OREC
Ocean Renewable Energy Coalition

80081-009

From: ocsenergywebmaster@anl.gov
To: mail_ocsenergyarchives; ocsenergywebmaster@anl.gov;
Subject: OCS Alternative Energy and Alternate Use Programmatic EIS Comment 80082
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Thank you for your comment, Tim Eichenburg.

The comment tracking number that has been assigned to your comment is 80082. Once the comment response document has been published, please refer to the comment tracking number to locate the response.

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OCS Alternative Energy and Alternate Use Programmatic EIS
Draft Comment: 80082

First Name: Tim
Last Name: Eichenburg
Organization: Ocean Conservancy
Address: 116 New Montgomery
Address 2: Suite 810
City: San Francisco
State: CA
Zip: 94105
Country: USA
Email: teichenburg@oceanconservancy.org
Privacy Preference: Don't withhold name or address from public record
Attachment: C:\Documents and Settings\m.locke\Desktop\mms ocs draft peis comments May 21.pdf

Questions about submitting comments over the Web? Contact us at: ocsenergywebmaster@anl.gov or call the OCS Alternative Energy and Alternate Use Programmatic EIS Webmaster at (630)252-6182.

Submitted Electronically May 21, 2007

Chris Oynes
MMS Alternative Energy and Alternate Use PEIS
Minerals Management Service
Argonne National Laboratory
EVS/900
9700 S. Cass Avenue
Argonne, IL 60439

Re: Draft Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf. 72 Fed. Reg. 13307-13308 (March 21, 2007)

Dear Mr. Oynes:

The following comments are submitted on behalf of the more than 170,000 members of the Ocean Conservancy and by The Institute for Fisheries Resources on the Draft Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf. We believe that the PEIS does not adequately address the impacts of marine finfish aquaculture (or ocean fish farming) on the marine environment, and urge fish farming on outer continental shelf (OCS) platforms be precluded until comprehensive environmental standards are in place.

80082-001

The aquaculture industry is the fastest growing sector of the global food economy, and currently provides about 40% of all fish products worldwide.[1] Although still comparatively small, the U.S. aquaculture industry is being promoted as the solution to the growing demand for healthy seafood and declining ocean fisheries. The federal government has called for a five-fold increase in aquaculture production by the year 2025, to create a $5 billion industry.[2] Much of this new growth may occur in the marine environment and put tremendous stress on ocean ecosystems. As noted by three recent reports and numerous scientific studies, unless carefully and sustainably managed, marine finfish aquaculture can exacerbate – not solve – declining ocean fisheries and health.[3]

[1] The Economist, "Fish farming: The promise of a blue revolution." August 7, 2003.
[2] U.S. Department of Commerce Aquaculture Policy, http://www.nmfs.noaa.gov/mediacenter/aquaculture/docs/15_DOC%20Aq%20Policy.pdf (viewed March 18, 2007).
[3] Pew Oceans Commission, *America's Living Oceans* (2003) and *Marine Aquaculture in the United States: Environmental Impacts and Policy Options*, Prepared for the Pew Oceans Commission by Goldburg, R., M. Elliott and R. Naylor (2002); U.S. Commission on Ocean Policy, *An Ocean Blueprint for the 21st Century* (2004); Report of the Marine Aquaculture Task Force, *Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks* (January, 2007). See also the study by the Center for Marine Policy at the University of Delaware that developed a policy framework, and a set of very detailed recommendations fashioned by stakeholders, for a sustainable and precautionary program for planning, siting, zoning, leasing, permitting, monitoring, mitigating, and enforcing offshore aquaculture operations. *An Operational Framework for Offshore Marine Aquaculture in U.S. Federal Waters*, The Mangone Center for Marine Policy, University of Delaware (October 2005).

Section 388 of the 2005 Energy Policy Act provides that OCS facilities may be used for "energy-related purposes or for other *authorized* marine-related purposes, facilities currently or previously used for activities authorized under this Act."[4] Of particular concern, is the draft PEIS suggestion that energy platforms on the OCS may be converted to aquaculture facilities. Offshore aquaculture is currently not a specifically authorized marine-related activity on the OCS, and thus does not qualify for use on OCS platforms under the Energy Policy Act. Moreover, the draft PEIS reviews the possibility of using these OCS facilities for offshore aquaculture, but does not adequately assess or provide mitigation measures to address the impacts of offshore fish farming.

Further, converting these platforms into aquaculture facilities would allow energy companies to avoid the legal obligations typically associated with platform decommissioning. The 2005 Energy Act should not be used to overturn current federal requirements for oil companies to remove platforms after they cease energy operations. Although the MMS has stated that it is, "not seeking authority over activities such as aquaculture, but only the decision to allow platforms to be converted to such uses, if the appropriate agency approves the underlying activity,"[5] there is no adequate federal regulatory program currently in place to issue or mange offshore leases for open ocean aquaculture. Nor is the MMS the appropriate agency to create or administer any aquaculture standards if and when such standards are established. Finally, the PEIS does not address or protect states that have enacted comprehensive standards to address the impacts of marine fish aquaculture, such as California. Siting fish farms on OCS platforms just outside state waters will seriously undermine state policies and resources.

80082-001 (cont.)

I. Environmental Impacts Inadequately Considered in the PEIS

While the draft PEIS promotes aquaculture as a solution to the ocean's diminishing resources, marine finfish aquaculture actually poses significant risks that can exacerbate the decline of marine ecosystems. While not comprehensively analyzed in the draft PEIS, these risks have been specifically acknowledged by the National Oceanic and Atmospheric Administration (NOAA) and in numerous studies and reports not addressed in the PEIS.[6] The PEIS should carefully consider the consequences of these risks and provide ways in which they can be prevented or mitigated.

Fish Escapement

[4] 43 U.S.C. § 1337 (p)(1)(D) (2005) *as amended by* PL 109-58 Sec. 338 (2005) (emphasis added).
[5] 70 Fed. Reg. 77345 (2005). *See* MMS Advance Notice of Proposed Rulemaking, 30 CFR Part 285
[6] Nash, C.E., P.R. Burbridge, and J.K. Volkman (2005), *Guidelines for Ecological Risk Assessment of Marine Fish Aquaculture.* U.S. Department of Commerce, NOAAAS Tech. Memo. NMFS-NWFSC-71. National Marine Fisheries Service, *A Code of Conduct for Responsible Aquaculture Development in the U.S. Exclusive Economic Zone.* Available at: www.nmfs.noaa.gov/trade/AQ/AQCode.pdf. The Code calls for many measures not considered in the PEIS, such as use of best management practices, site evaluations, consideration of effects on local communities, adoption of the precautionary approach, escape prevention, inventory tracking systems, and predator protection. See also, *supra* note 3 and other studies and reports cited herein.

One of the greatest ecological and economic threats associated with the growth of marine aquaculture is the impact of escaped fish to the surrounding ecosystem and coastal communities. Millions of farmed fish escape from fish farms because of storms, human error, and predators. According to the National Marine Fisheries Service (NMFS) and the U.S. Fish & Wildlife Service (FWS), escapes result in harmful interactions with native fish, including competition with wild stocks for food, habitat and mates; transfer of potentially deadly diseases and parasites to wild stocks; and genetic modification of wild stocks through inter-breeding. Even with the prohibition of nonnative species, native farmed fish can weaken the genetic makeup of wild fish populations upon escape.[7]

The PEIS should consider the effects of escaped fish on wild fish stocks and marine environment, and review the design of ocean net pen operations to determine the best methods to prevent the escape of farmed species. If such designs are not adequate or available, closed systems should be required. The PEIS should also consider requiring the use of wild and local broodstock to minimize the genetic consequences of escaped farmed fish, as long as broodstock harvest does not negatively affect wild populations.

80082-001 (cont.)

Pollution

Although only briefly mentioned in the draft PEIS, marine finfish aquaculture presents numerous biological threats to ocean ecosystems. Fish farms, like animal feed lots, produce enormous pollution. The excreta from an average floating cage farm can produce nutrients and fecal matter equal to a city of 20,000-65,000.[8] The potential wastes of a $5 billion U.S. industry – called for by NOAA – would discharge annually the nitrogen equivalent of the untreated sewage of 17 million people.[9] Depending upon pollutant composition and the cumulative effects of similar cages in particular areas, discharges may cause harmful effects on the surrounding environment. Fish farms can change the chemical and biological structure of the sediment under net pens, and in severe cases cause "dead zones."[10] The PEIS should consider alternative methods for eliminating the

[7] Hindar, K. *Interactions of cultured and wild species (draft).* Marine aquaculture and the environment: a meeting for stakeholders in the Northeast., University of Massachusetts, Boston. 11-13. January 2001; McGinnity et al., *Genetic impact of escape farmed Atlantic salmon on native populations: use of DNA profiling to assess freshwater performance of wild farmed and hybrid progeny in a natural river environment,* ICES Journal of Marine Science, 54:998-1008 (1997); Naylor, R and Burke, *Aquaculture and ocean resources: Raising tigers of the sea*, Annual Review of Environment and Resources, 30: 185-213 (2005).
[8] *Hardy, R.W., Fish, feeds and nutrition in the new millennium,* Aquaculture Magazine, *26(1):85-89; See also, What's Behind That Farmed Salmon Steak?* Salmon Nation (2002) *at* http://www.salmonnation.com/farmed.html, citing David Suzuki Foundation, (2002) *Ocean Pollution from Salmon Farming*, http://www.davidsuzuki.org/Oceans/Fish_Farming/Salmon/Pollution.asp.
[9] Goldburg, R. and R. Naylor, *Transformed seascapes, fishing, and fish farming,* Frontiers in Ecology and the Environment, 3:21-28 (2005).
[10] Beveridge, M.C.M, *Cage Aquaculture*, 2d ed. Fishing News Books, Edinburgh, Scotland, 346 (1996); EAO, British Columbia Environmental Assessment Office, *The Salmon Aquaculture Review Final Report*, April 8, 2001, http://www.eao.gov.bc.ca/project/aquacult/salmon/report/toc.htm; Folke C., Kautsky and Troell, *The costs of eutrophication from salmon farming: Implications for management,* Journal of Environmental Management, 40: 173-182 (1994).

release of untreated sewage into the marine environment, including the no action alternative.

Threat of Disease and Parasites

Outbreaks of diseases and parasites are a constant risk because the density of fish in aquaculture operations is much higher than in nature. Disease, pathogens, and parasites multiply rapidly in crowded pens and can spread to wild fish stocks. Pathogens and parasites then swiftly spread from cultured organisms, including shellfish, to wild species.[11] Recent studies from British Columbia show that salmon migrating near fish farms are 73 times more likely to be infected with sea lice than ambient levels; that fish farms affect infestation rates as far away as 75 kilometers;[12] that the rise of salmon farming has coincided with the emergence of native sea lice infestations among wild fish in Ireland, Canada, Norway, and Scotland; and that farm-origin lice can induce mortality levels of wild fish from 9% to 95%.[13] Sea lice have also been found to transfer highly virulent infectious salmon anemia between fish.[14] Infectious haematopoietic necrosis has been found to spread from steelhead raised in Idaho to wild salmonid populations in the Columbia River, and escapement of farmed salmonids is heavily implicated in the spread of whirling disease. Furunculosis disease is also thought to have spread between infected salmon escapees and wild stocks.[15]

80082-001 (cont.)

To control these diseases and infestations, fish farms use a wide variety of antibiotics, pesticides, parasiticides, anesthetics and other chemicals that can enter the marine environment.[16] Vaccines to prevent disease can end up in the environment and must also be carefully considered.[17]

Because of the potentially endemic risk of escapement and the threats posed to wild fish populations (particularly migrating juvenile and adult salmonids) from disease, parasites and pollution, it is particularly important that the PEIS identify coastal areas where marine aquaculture facilities and operations are inappropriate and should be excluded from leasing. The PEIS should also examine optimal fish densities to reduce disease and pollution, the impacts of chemical and biological wastes of fish farms, and ways to reduce and eliminate these wastes. Harm to the public and the marine environment from the use of harmful substances warrant the serious consideration of alternative treatments.

Impacts on Marine Wildlife

[11] Report of the Marine Aquaculture Task Force, *Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks* (January, 2007) at 60.
[12] Krkosek, M., et al., *Transmission dynamics of parasitic sea lice form farm to wild salmon.* Pro. R. Soc. B (2005) 272, 689-696.
[13] http://www.math.ualberta.ca/~mkrkosek/Salmon_mortality_paper.pdf (visited March 18, 2007).
[14] Naylor R, et al, *Fugitive Salmon: Assessing the Risks of Escaped Fish from Net-Pen Aquaculture.* BioScience: 55: 427–437 (2005).
[15] Naylor, R. et al, *Effect of Aquaculture on World Fish Supplies*, Nature, 405:1017-1024 (2002).
[16] Id.
[17] See Report of the Marine Aquaculture Task Force, *Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks* (January, 2007) at 64.

Seals, sea lions and other marine wildlife prey on farmed fish and are targets for predator controls. Recently, fifty-one California sea lions were found dead, trapped in fish farm nets in British Columbia.[18] Acoustic deterrents such as seal bombs and intense underwater loud speakers cause disorientation, pain or hearing loss, and alter the behavior of marine species.[19] Aquaculture operations also may require dredging, drilling, the use of large heavy anchors, and other disturbances to sediment and bottom habitats, which can displace ocean wildlife, smother bottom-dwelling animals, destroy hiding places for young fish, and cause other ecological changes to the sea floor.

For these reasons, the PEIS should critically examine the impacts of fish farming on marine mammals, seabirds and other marine life, and suggest ways to minimize or eliminate such interactions, and consider the no action alternative if those interactions cannot be minimized or eliminated.

Ecosystem and Public Health Impacts from the Use of Fish Meal and Oils

The use of fish products to feed farmed carnivorous fish species can reduce wild fish populations, change the distribution and reproductive success of other species throughout the marine ecosystem, and result in a net loss of fish protein. It can take from 4-10 pounds of wild fish to produce one pound of some farmed fish species.[20] The food conversion ratio for ocean "ranching" is even greater, where juvenile high-value species like bluefin tuna are captured and raised in ocean pens. Farmed fish are fed 12 percent of the world's catch, and consume about 40 percent of the world's fishmeal supply (20 billion pounds of fish).[21] Much of this fishmeal is produced from ecologically important forage fish such as sardines, anchovies, squid and mackerel. In addition, much of it is not harvested in an ecologically sustainable manner, globally or domestically, with grave implications on other wild fish populations, marine mammals and seabirds.[22] For example, the sardine fishery off Baja and Southern California is being pressured by the growing demand from Mexican bluefin tuna ranching operations which require 20kg of wild fish to produce 1 kg of tuna.[23] Moreover, many of the fish taken for the production of fish meal and oil are food sources themselves for human populations – in many instances important protein sources in the coastal areas of developing nations. Increased demand for fish meal and oil can therefore exacerbate food security problems for coastal nations in the developing world.

80082-001 (cont.)

The PEIS should address research showing that farmed fish fed less fish meal-reliant diets can still meet desirable dietary standards. The PEIS should also consider that even

[18] Sandra McCulloch, CanWest News Service, April 21, 2007.
[19] Hastings M.C., et al, *Effects of low-frequency underwater sound on hair cells of the inner ear and lateral line of the teleost fish*, Journal of the Acoustical Society of America, 99(3):1759-1766 (1996); Natural Resources Defense Council, *Sounding the Depths: Supertankers, Sonar and the Rise of Undersea Noise* (1999); Naylor, R. et al, *Effect of Aquaculture on World Fish Supplies*, Nature, 405:1017-1024 (2002).
[20] Naylor, R. et al, *Effect of Aquaculture on World Fish Supplies*, Nature, 405:1017-1024 (2002).
[21] Tacon, A.G.J. and Forster, *Global trends and challenges to aquaculture and aquafeed development in the new millennium*, International Aquafeed-Director and Buyers Guide, 2001:4-25 (2000).
[22] Naylor, R. et al, *Effect of Aquaculture on World Fish Supplies*, Nature, 405:1017-1024 (2002).
[23] Naylor, R. and Burke, *Aquaculture and ocean resources: Raising tigers of the sea*, Annual Review of Environment and Resources, 30: 185-213 (2005).

plant sources such as soy may create problems where the land-based product itself is a source of human protein, where the crop is especially water or land intensive, or where the product is from a crop that has been genetically-engineered for increased pesticide/herbicide resistance. This may increase industrial contamination with risks from subsequent runoff into waterways supporting native fish populations.

Farmed species, depending upon species and diet, can also present increased public health risks to people who consume them. Concentrations of Polychlorinated Biphenyls (PCBs) and dioxins have been found to be significantly greater in farmed salmon species than in wild species due to the use of fish meal and oils that contain high levels of contaminants.[24] Wild fish near fish farms also can accumulate higher amounts of mercury,[25] and drugs can select for resistant bacteria, sometimes even in wild fish consumed by humans.[26]

Impacts on Traditional Maritime Uses and Sensitive Habitats

The PEIS must also consider the impact of the siting of ocean aquaculture operations on traditional maritime uses, such as fishing, recreational boating, diving, wildlife observations (e.g., whale, seabird watching) and maritime shipping. Those impacts include threats to vessel traffic safety, navigation hazards, and access to fishing grounds especially where the total amount of fishing area available to the nation's commercial fishermen and recreational anglers have been reduced.

The PEIS should also examine impacts on areas currently or historically important for commercial or recreational fishing such as essential fish habitat (EFH) and habitat areas of particular concern (HAPC) designated by the Fishery Management Councils;[27] areas designated as marine reserves such as areas under the California Marine Life Protection Act[28] and California Marine Managed Area Improvement Act;[29] areas of special biological significance (ASBS) designated in the California Ocean Plan;[30] marine waters designated as impaired under Section 303(d) of the Clean Water Act; and critical coastal areas designated by the California Coastal Commission.

Best Management Practices

The PEIS does not consider best management practices (BMPs) to reduce the impacts of marine finfish operations. At the very least, BMPs should be developed to obtain:

80082-001 (cont.)

[24] *See* Hites, et. al, *Global Assessment of Organic Contaminants in Farmed Salmon*, 303 SCIENCE at 226-229 (2004); Foran, J. et al. Quantitative Analysis of the Benefits and Risks of Consuming Farmed and Wild Salmon. Journal of Nutrition 135 (2005).
[25] deBruyn, A.. et al., *Ecosystemic Effects of Salmon Farming Increase Mercury Contamination in Wild Fish*, Environment Science and Technology, *40*(11): 3489 – 3493 (2006).
[26] Evrik, A.. et al, *Impact of administering antibacterial agents on wild fish and blue mussels in the vicinity of fish farms*, Diseases of Aquatic Organisms, 18:45-51 (1994).
[27] 71 Fed. Reg. 27406 (2006).
[28] CA Fish and Game Code §§2850-2863.
[29] CA Public Resources Code §§36600-36900.
[30] California Ocean Plan, State Water Resources Control Board (2005), Appendix V.

- A description of the lease site;
- Engineering details of the proposed facilities;
- List of species cultivated and the source of the organisms;
- Maximum stocking densities and volume of production;
- Environmental characterization and baseline assessment of the site including the substrate and benthic flora and fauna, volume and chemical constituents of the discharges, and the potential for bioaccumulation;
- Analysis of the quality of the receiving waters, currents and mixing dynamics, and potential of pollutant transport;
- Available alternatives to the discharge of pollutants;
- Measures to prevent and monitor for escaped fish;
- Description of navigational, commercial and recreational fishing, and other uses of the lease site;
- Description of nearby protected areas and sensitive habitats;
- Financial information sufficient to ensure adequate resources are available to operate the lease and comply with environmental requirements;
- A detailed plan to monitor impacts on water, sediment and biological resources; and
- An emergency response and abandonment plan.[31]

80082-001 (cont.)

II. Impacts on State Waters

The PEIS must also consider the impacts of marine finfish aquaculture on adjacent states. This is especially critical where states have made substantial efforts to address the impacts of fish farming.

California enacted the Sustainable Oceans Act (SB 201)[32] in 2006 to ensure that commercial ocean fish farming is done in a way that protects marine ecosystems and consumers. Substantial efforts to protect state waters from the impacts of fish farming by states like California could be undermined by projects approved under the PEIS just beyond state waters.

SB 201 requires the preparation of a comprehensive Programmatic Environmental Impact Report (PEIR),[33] and finfish aquaculture leases from the California Fish & Game Commission (Commission) that meet rigorous standards to minimize harmful effects on human health and the marine environment.[34] These standards include:

[31] From *An Operational Framework for Offshore Marine Aquaculture in U.S. Federal Waters*, The Mangone Center for Marine Policy, University of Delaware (October 2005).
[32] SB 201, Chapter 36, Statutes of 2006. An act to amend Sections 15400, 5405, 15406, 15406.5,and 15409 of, and to add Sections 54.5 and 15008 to, the Fish and Game Code, and to amend Section 30411 of the Public Resources Code, relating to aquaculture.
[33] Id. §15008(b)(1)-(10).
[34] Id. §15400(b)(1)-(10).

- Leases may only be issued on sites considered appropriate in the PEIR.
- Leases cannot interfere with fishing or other public trust uses, disrupt or harm wildlife and habitats, or otherwise harm the marine environment.
- Operations must minimize the use of fish oil and fish meal, and alternatives must be used where possible.
- Best management practices must include regular monitoring and reporting, and site inspections. Fish stocks can be removed, and facilities closed and terminated, if operations are not in compliance with best management practices or are damaging the marine environment.
- Lessees must conduct baseline assessments of the site prior to undertaking operations, and must monitor the habitat during operation.
- The numbers of finfish raised and densities must be limited to what can be safely raised without harming the marine environment.
- Lessees must minimize the use of chemicals and drugs, and may only use drugs, therapeutic substances and antibiotics as approved by the U.S. Food & Drug Administration for marine finfish aquaculture.
- All farmed fish must be marked, tagged or otherwise identified as belonging to the operator.
- Facilities must be designed to prevent the escape of farmed fish into the wild, and to withstand severe weather and accidents.
- Operators must prevent discharges of pollutants to the maximum extent possible, and must meet all the water quality requirements of the State Water Resources Control Board and the applicable regional water quality control board.
- Operators must provide financial assurances in the form of bonds or other devices to ensure that sites are restored to its original condition upon termination of the lease.[35]
- Lessees are responsible for any damages caused by their operations.[36]

80082-001 (cont.)

III. Legal Requirement to Properly Decommission OCS Platforms

Allowing energy companies to convert oil and gas platforms into aquaculture sites evades current requirements that energy platforms to be removed or "decommissioned" after they stop producing oil and gas.[37] Currently, the only exception to this legal requirement is where companies seek involvement with a state artificial reef program, the state accepts title and liability for the structure, and specific monitoring requirements ensure environmental integrity and economic viability.[38] These protections should not be displaced by a de-facto MMS "rigs-to-reefs" or "rigs-to-farms" program.

Further, recent studies have shown a connection between energy platforms and elevated mercury levels in surrounding sediments, as well as fish.[39] Farmed and wild fish in the

[35] Id. §15409(b).
[36] Id. §15409(c).
[37] 30 C.F.R. §250.1700-64.
[38] 30 C.F.R. §250.1730.
[39] Ben Raines, *Mercury contamination at some rigs on par with Superfund sites*. Mobile Register, April 14, 2002, analyzing data from Kennicutt, M. C., Green, R. H., Montagna, P., and Roscigno, P. F., 1996. Gulf of

vicinity of these rigs may therefore contain higher levels of toxins relative to fish found in natural habitats.[40] Therefore, legal obligations as well as health and safety issues require energy companies to fulfill their responsibility to properly decommission oil and gas rigs.

IV. MMS is not the Appropriate Agency to Administer Aquaculture Standards

The Energy Act gives MMS the authority only over "authorized" marine-related uses.[41] Congress has not specifically authorized offshore aquaculture and has yet to enact a comprehensive offshore aquaculture bill. While the federal government is proposing a five-fold increase in aquaculture production over the next 20 years, MMS should not use this rulemaking as an opportunity to bypass Congressional intent and usurp the roles of appropriate federal agencies with the expertise to address the fishery and environmental issues presented by offshore aquaculture operations. Because marine finfish aquaculture can significantly harm the environment, human health, and the economies of local fishing communities, this authority should be in the hands of the regulatory agencies with the appropriate expertise. The MMS is not that agency. The Energy Act does not authorize the MMS to allow commercial offshore aquaculture operations on OCS facilities until Congress and the appropriate federal agencies have adopted comprehensive standards to adequately address adverse impacts.

80082-001 (cont.)

Thank you for considering these comments.

Sincerely,

Tim Eichenberg and Melissa Locke
Ocean Conservancy
116 New Montgomery Street, Suite 810
San Francisco, CA 94105
415-979-0900
TEichenbrg@oceanconservancy.org
MLocke@oceanconservancy.org

Mitchell Shapson
Institute for Fisheries Resources
P.O. Box 29196
San Francisco, CA 94129
415-519-3366
mshapson@ifrfish.org

Mexico Offshore Operations Monitoring Experiment (GOOMEX), *Phase I: Sublethal responses to contaminant exposure – introduction and overview*. Canadian Journal of Fisheries, Aquatic Sciences. 53: 2540-2553.
[40] A July 2005 report from the federal Centers for Disease Control and Prevention (CDC) concluded that one in ten woman have mercury levels high enough to pose a risks such as mental retardation, cerebral palsy, deafness and blindness to a developing fetuses. In adults, recent studies have found an association between mercury exposures over time and coronary artery disease, including myocardial infarction. Guallar E, et al, Heavy Metals and Myocardial Infarction Study Group. *Mercury, fish oils, and the risk of myocardial infarction*. New England Journal of Medicine, 347 (22), 2002, pp. 1747-54.
[41] 43 U.S.C. § 1337 (p)(1)(D) (2005) *as amended by* PL 109-58 Sec. 338 (2005).

From: ocsenergywebmaster@anl.gov
To: mail_ocsenergyarchives; ocsenergywebmaster@anl.gov;
Subject: OCS Alternative Energy and Alternate Use Programmatic EIS Comment 80083
Date: Monday, May 21, 2007 3:15:04 PM
Attachments: OCS_AlternativeEnergyReviewOAI_80083.doc

Thank you for your comment, John Everett.

The comment tracking number that has been assigned to your comment is 80083. Once the comment response document has been published, please refer to the comment tracking number to locate the response.

Comment Date: May 21, 2007 03:16:11PM CDT

OCS Alternative Energy and Alternate Use Programmatic EIS
Draft Comment: 80083

First Name: John
Middle Initial: T
Last Name: Everett
Organization: Ocean Associates, Inc.
Address: 4007 N. Abingdon St,
City: Arlington
State: VA
Zip: 22207
Country: USA
Email: JohnEverett@OceanAssoc.com
Privacy Preference: Don't withhold name or address from public record
Attachment: /Users/johnever/Desktop/JTE Files/ClimateChange/Energy OCS EIA Review/OCS_AlternativeEnergyReviewOAI.doc

Questions about submitting comments over the Web? Contact us at: ocsenergywebmaster@anl.gov or call the OCS Alternative Energy and Alternate Use Programmatic EIS Webmaster at (630)252-6182.

Ocean Associates, Inc.

Ocean Associates, Inc.
4007 N. Abingdon Street
Arlington, Virginia USA 22207

Phone: 703-534-4032
Fax: 815-346-2574
Email: OceanAssociates@OceanAssoc.com

MMS Alternative Energy EIS
Argonne National Laboratory

May 21, 2007

Thank you for the opportunity to offer this response to the request for comments on the OCS Alternative Energy Draft Programmatic Environmental Impact Statement (EIS).

The analysis and report provides considerable information but, as a decision document, is fundamentally flawed. To determine whether a proposed action is good or bad, the benefits as well as the negatives must be investigated and reported with equal candor. Only then can an informed decision be made. The macro-level benefits of overall OCS alternative energy development and of specific technologies are missing from this report, rendering it of little value as a basis for making decisions involving trade-offs.

Section V says its intent is: "A description of the potential positive and negative environmental, social, and economic impacts that could occur …." However, the outline forces the gathering of information of negative impacts and prohibits (by exclusion of any framework) the analysis and reporting of benefits. The result is easy to imagine and it is confirmed by there being but one benefit reported (without explanation) on page 5-55 (of 366 pages in Section 5): "Marine and coastal birds may also benefit from the presence of offshore wind turbine platforms." The word BENEFIT occurs once while IMPACT occurs 2,208 times in this chapter, almost always in a negative context when it is part of an analysis. Clearly something is wrong with the analysis. Something so apparently negative would never have gotten to this stage. The harm is exaggerated and the benefits not investigated with the same vigor, partly because of the process involved, combined with human nature that looks to see the bad things that might be caused by a decision, and even by the word impact itself, which to most people (including analysts) has a negative connotation. 80083-001

The result of all this is a report that seems to be so politically correct with respect to ecological concerns that the nation's economic well-being can become compromised and tied up in knots.

There are two alternatives I see to correcting this situation. The most extreme is to add two additional Level I sections to the outline in order to enable the analysis and reporting. One would be a new Section before #7. POTENTIAL ENERGY BENEFITS FROM THE OCS. A second would follow the above entitled: POTENTIAL ENVIRONMENTAL, SOCIAL, AND ECONOMIC IMPACTS THAT COULD OCCUR FROM DEVELOPMENT OF OCS ALTERNATIVE ENERGY. Another way, probably better, would be to add a benefits subsection at the same level wherever impacts are presented. Where this is not appropriate, a simple statement following the negatives might say. "No benefits to the XXX have been identified." As it is now, it is clear that possible benefits were not sought by the analysts, whereas negatives were.

All OCS alternative energy impacts are not negative. For example, concern is shown over what might happen to the ecosystems established around oil rigs, if they are removed, but the same consideration was not given to the new habitats that would arise around wind turbine foundations. Also, wouldn't wave energy decrease behind wave energy devices and wind force decrease behind wind turbines, decreasing shoreline erosion and storm damage to property during major events? This is no more speculative than the bulk of the "impacts" presented.

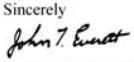
80083-001 (cont.)

The report is biased toward the negative dimension by addressing mostly the worst impacts from the worst case scenarios, leading to an exaggeration of negatives and a near absence of positives.

On a minor point (ES-P6), "Above water, marine and coastal birds as well as migrating inland birds may experience minor to moderate impacts due to turbine collisions". There is likely a better choice of words. I suspect a bird that flies, at speed, into a turbine blade will have encountered a **severe** "impact due to turbine collision"

80083-002

Sincerely



Dr. John T. Everett
President
On the web at http://www.OceanAssoc.com,
http://www.OceansArt.us, and
http://www.ClimateChangeFacts.info

From: ocsenergywebmaster@anl.gov
To: mail_ocsenergyarchives; ocsenergywebmaster@anl.gov;
Subject: OCS Alternative Energy and Alternate Use Programmatic EIS Comment 80084
Date: Monday, May 21, 2007 3:25:35 PM
Attachments: OPTI_Draft_PEIS_Comments_80084.pdf

Thank you for your comment, Cindy Lowry.

The comment tracking number that has been assigned to your comment is 80084. Once the comment response document has been published, please refer to the comment tracking number to locate the response.

Comment Date: May 21, 2007 03:26:44PM CDT

OCS Alternative Energy and Alternate Use Programmatic EIS
Draft Comment: 80084

First Name: Cindy
Last Name: Lowry
Organization: OPTI
Address: 139 William Street #1
City: Portland
State: ME
Zip: 04103
Country: USA
Email: cindyoceanus@aol.com
Privacy Preference: Don't withhold name or address from public record
Attachment: C:\Documents and Settings\sandra young\My Documents\Alliance Files\OPTI\OPTI Draft PEIS Comments.pdf

Questions about submitting comments over the Web? Contact us at: ocsenergywebmaster@anl.gov or call the OCS Alternative Energy and Alternate Use Programmatic EIS Webmaster at (630)252-6182.

OCEANS PUBLIC TRUST INITIATIVE

OPTI

A Project of Earth Island Institute's International Marine Mammal Project

May 21, 2007

MMS C/O
Argonne National Laboratory, EVS/900,
9700 S. Cass Avenue,
Argonne, IL 60439.
Filed Electronically at *http://ocsenergy.anl.gov/*.

Re: Comments regarding MMS Alternative Energy and Alternate Use Draft Programmatic Environmental Impact Statement.

To MMS:

On behalf of the Oceans Public Trust Initiative (OPTI), a project of the Earth Island Institute's International Marine Mammal Project, I hereby submit the following comments to the Minerals Management Service (MMS) regarding the Draft Programmatic Regulations (DPEIS) for the Alternative Energy and Alternative Use Program under § 388 of the Energy Policy Act of 2005. *See* 72 Fed. Reg. 13307-8 (Mar. 21, 2007). These comments reflect OPTI's mission to ensure that the public trust interest in ocean and coastal areas is fully protected by state and federal governments. Under the public trust doctrine, the government has an obligation to ensure that decisions regarding the use of public trust resources are made in the best interest of the public. OPTI's comments will focus on how MMS can meet this obligation in the context of the Draft PEIS. It will discuss the need for a comprehensive PEIS to support a programmatic regulatory program capable of protecting the public's ocean resources while enabling alternative energy development.

As OPTI has stated previously, the organization is a strong proponent of properly sited renewable energy projects. The health of our oceans clearly requires that we move away from fossil fuel use and reduce, if not eliminate, our greenhouse gas emissions. Harnessing renewable, zero-emissions, sources of energy is key, and offshore alternative energy has the potential to contribute significantly to that goal. It also requires, however, sound resource management. 80084-001

CINDY LOWRY, DIRECTOR • 139 WILLIAM STREET #1 • PORTLAND, MAINE 04103 • PH: 207.774.2925 • EMAIL: CINDYOCEANUS@AOL.COM
EII/IMMP Headquarters • 300 Broadway, Suite 28 • San Francisco, California 94133

As the findings and recommendations of both the U.S. Commission on Ocean Policy and the Pew Oceans Commission indicate, our oceans are vital resources that have long been exploited irresponsibly. We can ill afford to allow alternative energy development to move forward without first establishing a sound, environmentally-based national program to ensure future protection of ocean resources.

It is important to recognize that these two advances, offshore alternative energy and an eco-system based, environmentally sensitive regulatory program, are not mutually exclusive. The establishment of a structured development program which accounts for wildlife and alternate public uses of the OCS can also be a program which benefits alternative energy developers. To ensure that this is the case, MMS needs to conduct a national survey of OCS uses and resources. It should then use the information gained from the survey to develop a zoning program that can both protect sensitive environmental areas and focus alternative energy development where it can be most effective and least destructive. A system of development and exclusion zones based on a comprehensive scientific assessment of the OCS, would allow developers to know where and how to pursue alternative energy. Such a system would also allow MMS to meet its public trust obligations and ensure that development is being conducted in the best interest of the public. 80084-002

Unfortunately, the current draft PEIS lacks the comprehensive assessment of the OCS that MMS needs to be able to pursue an optimal national program. It provides some general information about location of wildlife but the scale and detail of the information is not sufficient to be useful in managing the OCS. Without more information about the specific environmental and alternate uses of the OCS, MMS cannot adequately manage the resource in the best interest of the public. For the health of the oceans and for the advancement of a robust alternative energy development system, MMS must commit to conducting a more comprehensive and detailed assessment of the OCS. Failure to do so would be a clear violation of the public trust doctrine. 80084-003

Sincerely

Cindy Lowry,
Director

From: ocsenergywebmaster@anl.gov
To: mail_ocsenergyarchives; ocsenergywebmaster@anl.gov;
Subject: OCS Alternative Energy and Alternate Use Programmatic EIS Comment 80085
Date: Monday, May 21, 2007 3:31:06 PM
Attachments: 070521_AWEA_DPEIS_comments_80085.pdf

Thank you for your comment, Laurie Jodziewicz.

The comment tracking number that has been assigned to your comment is 80085. Once the comment response document has been published, please refer to the comment tracking number to locate the response.

Comment Date: May 21, 2007 03:32:13PM CDT

OCS Alternative Energy and Alternate Use Programmatic EIS
Draft Comment: 80085

First Name: Laurie
Last Name: Jodziewicz
Organization: American Wind Energy Association
Address: 1101 14th Street, NW
Address 2: 12th Floor
City: Washington
State: DC
Zip: 20005
Country: USA
Email: ljodziewicz@awea.org
Privacy Preference: Don't withhold name or address from public record
Attachment: H:\Offshore\MMS process\070521 AWEA DPEIS comments.pdf

Comment Submitted:
Attached please find the comments of the American Wind Energy Association.

Questions about submitting comments over the Web? Contact us at: ocsenergywebmaster@anl.gov or call the OCS Alternative Energy and Alternate Use Programmatic EIS Webmaster at (630)252-6182.

American Wind Energy Association
Comments to Minerals Management Service

Draft Programmatic Environmental Impact Statement for
Alternative Energy Development and Production and
Alternate Use of Facilities on the Outer Continental Shelf
May 21, 2007

Introduction

Wind energy is one of the fastest-growing energy technologies in the world. In 2006, more than 2,400 megawatts (MW) of wind energy capacity was installed in the U.S., with over 11,600 MW installed in the U.S. and 74,223 MW installed worldwide. Wind energy is also one of the cleanest, most environmentally friendly energy technologies that exist today. And continuing policies that encourage renewable energy to compete with traditional fossil fuel generators will only grow the demand for wind energy. As wind energy technology enters mainstream markets, the need for additional economically viable project sites has grown and the global industry is turning more to offshore wind resources.

As recognized by the recent Report of the U.S. Oceans Commission and Section 388 of the Energy Policy Act of 2005 (EPAct), offshore wind projects offer great promise for the American market, especially in the long-term, to provide clean, emissions-free electricity closer to the coastal centers where electricity demand is the greatest. The American Wind Energy Association (AWEA) is pleased to see that the Minerals Management Service (MMS) recognizes at the outset of the draft Programmatic Environmental Impact Statement (DPEIS) that "One consequence of delays in alternative energy production [including offshore wind energy] due to increased permitting times would be that the electricity not produced from OCS [Outer Continental Shelf] alternative energy facilities would be provided from other sources (e.g. coal-fired power plants or natural gas-fired plants) that could result in higher adverse impacts to the environment." (Executive Summary, ES-3) This point is important for two reasons: first that producing electricity from clean, alternative energy sources such as wind is likely to have a net positive effect on the environment, and second, that delaying the deployment of clean, alternative energy technologies results in the possible deployment of less environmentally friendly energy sources.

AWEA encourages MMS to complete the OCS regulations and finalize a PEIS in the timeliest manner possible. Further, companies interested in pursuing new offshore wind projects, such as the project currently under discussion for the Delaware coast, should be allowed to commence and/or complete their regulatory review processes, including review under the National Environmental Policy Act (NEPA), without further delay. Under Section 388, Congress mandated that the MMS rulemaking process be completed in 270 days. While that timeline is

80085-001

already well passed, MMS should endeavor to complete the process as closely to that timeframe as possible so that clean, alternative energy projects can move ahead.

80085-001 (cont.)

AWEA submitted comments on February 28, 2006 and again on June 30, 2006 to the MMS on the Advanced Notice of Proposed Rulemaking and on the Renewable Energy and Alternate Use Programmatic EIS Scoping, respectively (the "Prior Comments"), which are incorporated herein by reference at the end of these comments. AWEA is pleased to see that MMS heeded many of the central concerns of those comments and did not attempt to administratively pre-determine the potential development zones that could be commercially viable, and allowed the alternative energy industries the opportunity to propose them to MMS. As recognized in our Prior Comments (pp. 1, 2, 6) and the DPEIS, offshore wind technology is still in its infancy; and today's turbines can be installed on a technically and commercially viable basis only at a very limited number of offshore sites. (See Prior Comments (pp. 1, 2, 6)) For the foreseeable future, commercial-scale offshore wind projects will require sites that are relatively close to shore, with relatively shallow water depths, favorable current and wave conditions, a good wind resource, and suitable transmission access to the wholesale power grids. Although in the future new foundation designs and other technological achievements may cause additional sites to become feasible further offshore, such developments remain speculative and may not occur on a commercial basis for more than a decade, if at all. (Id.) In the DPEIS, MMS thus appropriately recognizes that it would premature to focus upon any programmatic development that would presume widespread viability on the OCS in the near future. By allowing the wind energy industry, and other alternative energy industries, the opportunity to identify proposed sites that could be commercially viable, MMS is ensuring that these project developers can operate efficiently and that the limited sites available will be developed appropriately.

80085-002

In addition to the need to have industry propose sites that could be developed, it is also encouraging to see that MMS understands the need to maintain the flexibility of site-specific reviews and requirements. As with wind energy projects on land, projects offshore will have numerous differences and should be evaluated by analysis deemed appropriate on a case-by-case basis as much as possible. As noted in our Prior Comments (p. 10), requests for field study "should be reasonable, site-specific, and aimed at answering specific questions, not a rigid one-size-fits-all requirement." This is mirrored in the Bureau of Land Management's (BLM) program, which properly provides that "the amount and extent of ecological baseline data shall be determined on a project basis."

80085-003

NEPA Review/Tiering

Regulations promulgated by the Council of Environmental Quality encourage agencies to tier their environmental impact statements to eliminate repetitive discussions of the same issues (40 CFR 1508.28). Section 1.5 of the DPEIS states that "subsequent project-specific NEPA analyses may tier off, *where appropriate*, the generic analysis provided in the Final EIS." (Emphasis added.) AWEA would like to underscore the importance of allowing projects to "tier off" the PEIS to the maximum extent possible.

The Bureau of Land Management (BLM), also within the Department of the Interior, recently prepared a detailed PEIS to address the impacts of the future development of wind energy resources on public lands. The BLM PEIS process established policies and best management practices as mitigation measures for potential environmental impacts. In many cases, BLM's tiering process has facilitated the processing of site specific wind energy applications, thereby reducing the potential for duplicative environmental review and documentation. AWEA is concerned, however, that some local BLM offices have not permitted developers to appropriately tier off relevant provisions of the PEIS, creating uncertainty within the industry, increasing development costs for individual projects, and impacting project viability and financing. MMS can avoid such outcomes by clarifying that by allowing projects to rely upon the analysis in the PEIS to the maximum extent possible and not require individual projects to needlessly replicate prior research and studies.

80085-003 (cont)

Impact Classifications; General Environmental Conclusions

The conclusions for most analyses in the DPEIS use a four-level classification scheme (negligible, minor, moderate, or major [see Section 5.1]) to characterize the impacts predicted if the activities occur as assumed. In general, the DPEIS appropriately finds that "impacts from all phases of development and production [of offshore wind farms] . . . are expected to be negligible to minor if the proper siting and mitigation measures are followed." (Executive Summary) In this regard, the generally favorable conclusion of the DPEIS are entirely consistent with the recently-available and comprehensive report of the Danish government analyzing the actual operating experience of offshore wind farms over a fifteen year period of field observation and and study - Danish Offshore Wind: Key Environmental Issues (2006) (the "Danish Report"). The Danish Report evaluated the empirical results of a rigorous and long-term "environmental monitoring programme ... established in order to chart the environmental conditions before, during and after the construction of the Horns Rev Offshore Wind Farm and the Nysted Offshore Wind Farm," with scientific study coordinated by an Environmental Group including the Danish Forest and Nature Agency, and with the resulting report independently assessed by the International Advisory Panel of Experts on Marine Ecology. (Danish Report, at. 9-10) Thus, the MMS should take note of the Danish Report as the most comprehensive and current scientific analysis of the actual environmental impacts of offhsore wind, as well as the Danish Report's general conclusion, based upon the empirical evidence, that "The studies have shown that the Nysted and Horns Rev offshore wind farms have had very little impact on the environment, neither during their construction nor during their operation phases." (Id. at 18)

80085-004

Scope of EIS; Purpose of the Program

MMS should recognize that Section 388 of the EPAct amended the OCSLA to specifically include the renewable energy resources of the OCS as among those "which should be made available for expeditious and orderly development." (43 USC 1332) MMS and the Program should thus properly identify the development of the renewable resources of the OCS as a separate and independent purpose important to the national interest and defined by Congressional directive, and thus a purpose for which land-based and non-renewable energy proposals are non-responsive, and thus not reasonable alternatives. The PEIS should thus provide that project proponents conducting future alternatives analyses, as required by NEPA, would be limited to

80085-005

analyzing other alternative energy uses on the OCS, because, as defined in EPAct 2005, the specific purpose of this program is to encourage clean, alternative energy technologies on the OCS.

80085-001 (cont.)

No Negative Implications for Demonstration Projects

Consistent with the view of industry (Prior Comments, at 1, 2, 6) the MMS has appropriately limited the focus of its evaluation to activities that might be initiated within the foreseeable future, i.e., a 5- to 7-year time frame of 2007 to 2014 (Section 1.3.2.) Additionally, for the purposes of wind energy, the MMS has limited the focus of analysis to areas with maximum water depths of 100 meters (Section 1.3.2.), while also recognizing that currently available technologies limit commercial viability of offshore wind projects to substantially more shallow depths, with such limitations dependent in large part upon interaction with site-specific wave conditions. (Id. at 3-1, 3-9, 3-17) The DPEIS also correctly recognizes that the European wind industry has already demonstrated technical and commercial viability of offshore technologies, such that the United States wind industry is prepared to "skip the pilot and demonstration phase and move directly to commercial operations." (Id. at 3-9)

Although AWEA believes it is critical that the Alternative Energy and Alternate Use (AERU) program be developed in a manner that facilitates the permitting process for projects that are currently viable, it is also important that the program not prohibit the development and implementation of new and emerging technologies. AWEA therefore urges MMS to clarify that the scope of its programmatic analysis would not be interpreted to preclude or negatively impact possible future proposals (which would likely be undertaken on a non-commercial demonstration or experimental basis) that would extend beyond the foregoing parameters. For example, during public hearings on the DPEIS, Program Manager Bornholdt stated that if the MMS receives proposals for demonstration projects outside of these depth parameters, the project would be evaluated on its own merits, pursuant to NEPA and other requirements.[1] AWEA suggests that MMS in the PEIS clarify the process that would apply to such projects in any future consideration and, most importantly, provide that such proposals would be able to "tier off" the PEIS to the full extent that the subject information was material and relevant to the evaluation of the proposal.

80085-006

Indeed, the MMS expects to receive applications for demonstration-scale technologies from 2007 through 2014 (Section 2.1.1.), and the MMS recognizes that "new technologies and equipment…will require testing" (Section 3.2). Companies invested in research and development need assurance that they will not be delayed by regulatory barriers once they are prepared to bring their technologies to market, whenever that might occur. The regulatory regime developed by the MMS needs to be flexible to accommodate such new and emerging technologies. MMS should also confirm that the effectiveness and duration of the PEIS is not predetermined to be coterminous with the timeframes established to define the parameters of its study; rather, the PEIS should be presumed to remain in effect until such future time as the MMS determines that it is in need of updating, replacement or its information and analysis is no longer sound.

80085-007

[1] Newton, Massachusetts, April 26, 2007.

Offshore Wind Energy Technology and Marketplace

A number of corrections are needed for some of the market and technology sections of the DPEIS, as noted below.

- DPEIS Sec. 3.2: "Offshore wind turbines have not yet been optimized for energy production at sea, and therefore, as the technology matures, new designs may possibly deviate from this proven land-based architecture." (3-2) This statement is incorrect and contradicts another statement made later in the DPEIS (cited below, page 3-9) In Europe, offshore wind turbines are considered an off-the-shelf technology, and that will likely be the case for offshore turbines in the U.S, as noted in the DPEIS: "European pilot and commercial offshore wind projects have provided information to demonstrate the feasibility of offshore wind power generation. This experience, combined with the fact that a large portion of the costs of development are for offshore activities that require expensive installation equipment, means that developers in the United States would likely skip the pilot and demonstration phase and move directly to commercial operations." (3-9)

80085-008

- DPEIS Sec. 3.2: "In offshore applications, where only two wind directions are likely to predominate, it may be possible to shorten the distances [less than 10 rotor diameters found on land] between turbines arranged in a line. A spacing of seven rotor diameters between units has been used in Denmark." (3-3). AWEA does not believe that, even in those offshore instances where there may be two predominant wind directions, it is likely that shortened turbine spacing intervals would be approporiate or efficient. The optimal spacing between turbines is typically determined on a case-by-case basis, and is driven largely by the efficiency gains achieved by increasing output by mimizing the wake effects related to the nearby turbines, and thereby also reducing unit wear and tear and associated maintenance requirements. Further, it is likely that the larger turbines and rotors designed for the offshore market will have greater wake effect, thereby resulting in associated increases in the recommended spacing of such offshore turbines.

80085-009

- DPEIS Sec. 3.2: "Today, more than 600 MW of offshore wind energy capacity is installed worldwide." (3-4) This figure should be updated to 900 MW, and any future documents or drafts should ensure this figure is current as development is continuing in Europe. (Musial, W, Bonnie, R, et al. (Mar 2007). Large-scale offshore wind power in the United States: Assessment of opportunities and barriers, (in peer review). *National Renewable Energy Laboratory)*

80085-010

- "Periodic maintenance and inspection would be required. Wind turbines, for example, would be inspected and serviced about twice a year . . . Together, such services may average about 1 wk/yr per turbine." (3-25) It should be noted here that periodic turbine maintenance does not imply that the subject wind farm would be out of service. Unlike a traditional thermal plant which must shut down for outages, wind farms would continue production, with the exception of the unit undergoing maintenance.

80085-011

Decommissioning

The DPEIS provides as follows: "Decommissioning entails dismantling and removal of the energy conversion devices, the electric service platforms (or transformers), their foundations, scour protection devices, and transmission cables . . . Monopile foundations would likely be cut off at the mud line followed by the removal of the sediment within it to a suitable depth below the level of the seafloor. Once the sediments are removed, the remaining monopole would be cut off at a depth of approximately 5 m (16 ft) below the mudline." (3-25)

There is, however, abundant reason (environmental and otherwise) and precedent involving other offshore structures suggesting that the monopole should be cut off at the mudline or that much of the structure be left in place to create marine habitat. The same could be said of leaving in place energy service platform (ESP) foundations, scour protection, and transmission cables. The DPEIS document recognizes these issues on the final page of the third section, 3-26, ("It is possible that all or some of the facilities could remain in place"), but states, "Because these activities are considered to be too far into the future and too speculative at this time, they are not analyzed in this programmatic EIS." AWEA believes that it is important that MMS address the issue in further detail at this time. Decommissioning of offshore wind turbine foundations to 16 feet below the surface would cost millions of dollars and cause substantial unnecessary disturbance of the seabed. Also project financiers will want the contingency of those costs addressed up front if no further guidance is provided, such that leaving the issue unresolved will have a real and immediate impact upon the finacial viability of the offshore wind industry.

80085-012

At a minimum, MMS should acknowledge that offshore wind turbine foundations may be authorized by MMS to be left in place during decommissioning as artificial reefs for marine life, just as MMS regulations currently provide for offshore oil and gas facilities. For offshore oil and gas facilities, MMS regulations currently provide that all decommissioning activities must be conducted "in a manner that is safe, does not unreasonably interfere with other uses of the OCS, and does not cause undue or serious harm or damage to the human, marine, or coastal environment." 30 CFR 250.1703(f) Current regulatory authority also expressly provides MMS discretion to approve decommissioning of energy facilities in place as artificial reefs under certain conditions. In addition, MMS has already studied and explicitly acknowledged in its own "Technical White Paper on Wind Energy Potential on the U.S. Outer Continental Shelf", that one decommissioning option for wind turbines is dismantling and using the decommissioned equipment for artificial reefs. Many states have recognized the benefits of artificial reefs and already created a dozen offshore artificial reefs to stimulate growth of marine life. These current artificial reefs are also composed of steel structures like offshore wind turbine foundations. Dredging up large turbine foundations after they have been colonized for decades with marine life would remove a beneficial structure and cause unjustifiable seabed disturbance.

Therefore, MMS should acknowledge that turbine foundations in place for many years could well provide productive artificial reefs and MMS should maintain its discretion to approve the in-place decommissioning of turbine foundations as artificial reefs above the seabed, if the Regional Supervisor concludes that the foundations served a beneficial purpose and would be safe, environmentally benign and would not unreasonably interfere with other OCS uses.

Wildlife and Adaptive Management

In general, the DPEIS properly notes that wind energy impact to wildlife, including avian species, is extremely low at most projects. The PEIS should also give greater emphasis, however, to the fact that any cumulative impact of wind energy projects is particularly low in relation to other sources of bird mortality due to human activities. The PEIS should reference in this regard the recent report from the National Research Council of the National Academies, the Committee on Environmental Impacts of Wind Energy Projects, which concluded that "Clearly, bird deaths caused by wind turbines are a minute fraction of the total anthropogenic bird deaths – less than 0.003% in 2003 based on the estimates of Erickson et. al. (2005)." This report used existing data from on-shore wind energy projects in the U.S. to reach this conclusion but, as AWEA describes below, there is no empirical evidence to suggest that bird deaths offshore would be any more significant.

80085-013

Since it will be impossible to eliminate all uncertainty regarding the post-construction impacts of any offshore wind facility, AWEA recommends that MMS acknowledge the residual uncertainty inherently associated with innovative proposals by incorporating a strategy of adaptive management, as discussed at pages 12-13 of our Prior Comments. Such a strategy of adaptive management would identify thresholds and triggers for specific and responsive actions that would be taken, such as defined operational changes in the event that a specific and predictable mortality event occurs for a species of concern. It is crucial that the resulting remedies have defined boundaries of cost and action, so that the project lending community can make predictable evaluation of the potential financial implications.

The NEPA Task Force Report to the White House Council on Environmental Quality provides the following rationale supporting the proposed adaptive management approach at Sec. 4.2.1: "Using adaptive management, agencies might be able to enhance environmental protection and make cost savings when they implement proposed actions and mitigation strategies. *** Additionally, the traditional 'predict, mitigate, implement' environmental management model implies a high degree of certainty in the accuracy of the prediction step that often does not exist. The biological, physical, and social systems analyzed in the NEPA process are complex, which makes it difficult to calculate the potential impacts of an action with certainty. However, agencies are generally reluctant to admit that they cannot be sure of the impact of their proposed action. An adaptive management approach to the NEPA process helps to address this uncertainty and to mange any associated environmental risk."

80085-014

5.2.9 Marine and Coastal Birds

AWEA believes that Section 5.2.9 can and should include more positive conclusions regarding the limited potential threat to avian species from offshore wind projects, and should discuss such potential threat in perspective to the far greater avian harms arising from other human activities. In particular, Section 5.2.9 should go beyond simply indicating that effects upon marine and coastal birds "would depend upon the specific location of the offshore wind park…." In this regard, reference to the recent Danish Report, a peer-reviewed analysis of empirical operating

80085-015

data obtained through the rigorous monitoring protocols of actual operating offshore wind farms, is particularly appropriate, and Section 5.2.9 should indicate that the operation of no offshore wind farm has been demonstrated to present a serious threat to any avian species.

In material part, the Danish Report confirms that water bird collisions with offshore wind farms are rare events, and that water birds have demonstrated effective avoidance behaviors, such that pre-construction avian presence cannot be presumed to be indicative of post-construction avian presence or risk, as follows:

> "The studies have shown that the … offshore wind farms have had very little impact on the environment, neither during their construction nor during their operational phases. … Development of a technology to measure collisions of birds, the "TADS" or "thermal animal detection system" has been another of the major achievements of this programme. *The TADS provides empirical evidence that waterbird collisions are rare events.* Collision risk modeling and bird tracking by radar as well as visual observations show that many waterbird species tend to avoid the wind farm, changing flight direction some kilometers away to deflect their path around the site. Birds flying through the wind farm tend to alter altitude to avoid risk of collision. Under adverse weather conditions, which were thought to be likely to increase collision risk, results show that waterbirds tend to avoid flying. *The strong avoidance behaviour results in very low estimates of collision risk….*" (Id. at 18)

Also see the Danish Report at 103 ("Deflection behavior was readily visible amongst radar tracks, resulting form birds making gradual and systematic modification to their flight routes in response to the visual stimulation of the [offshore] wind farm….") The DPEIS should thus be modified to reflect the fact that there has never been a documented instance of significant avian mortality involving offshore wind farms, that the most complete and empirical study regarding the actual operation of offshore wind farms shows effective avian avoidance patterns and no significant adverse impact to avian populations.

80085-015 (cont.)

With respect to more specific avian comments, the statement at page 5-51 of the DPEIS that, in contrast to onshore wind parks, there may be a relatively increased likelihood of bird strikes at offshore wind parks, should be deleted or modified. As noted above, the empirical evidence regarding offshore wind farms indicates a contrary conclusion of a "very low estimate" of collision risk with, as noted above, demonstration of significantly reduced actual avian presence during adverse weather conditions in the offshore environment. (Danish Report at 103) Several of the possible avian mitigation measures suggested at page 5-54 should also be correspondingly revised. For example, the empirical evidence does not support the proposed recommendation of raising the rotor-swept area to more than 100 feet above the ocean surface. The European models have routinely utilized lesser heights without any adverse effect reported, as noted above. Further, there is no empirical data indicating that result of raising the height of swept area would not in fact heighten risks, since the Danish data on offshore night activity "provided the unexpected evidence that no movements of birds were detected below 120 m during the hours of darkness, even during the periods of heavy migration." (Id. at 103) Further, and as discussed above, the avian section of the PEIS should refer to adaptive management as the best means of recognizing and addressing the residual uncertainties as to avian and other issues.

80085-016

Radar

Although at some sites wind turbines could interfere with civilian or military radar, the PEIS should indicate that there are mitigation solutions that can be implemented in such event. Any study of wind energy's effects on radar should also explore these solutions. A number of military bases have wind turbines operating on or near them, so turbines and radar can clearly co-exist. It is important to review each project site for potential impacts to the facilities mission and to evaluate the measures available to mitigate any potential concerns, and AWEA recommends reference to the following project evaluations:

- F.E. Warren Air Force Base, Wyoming – two 660-kW turbines
  http://www.afcee.brooks.af.mil/ms/msp/center/Vol11No3/10.asp
- U.S. Navy at Guantanamo Bay, Cuba – four 950-kW turbines
  http://www.defenselink.mil/news/Mar2005/20050329_342.html
- U.S. Air Force Space Command on Ascension Island – four 225-kW and two 900-kW turbines
  http://www.inl.gov/powersystems/ascension_island.shtml
- U.S. Navy at San Clemente Island Base – three 225-kW turbines
  http://www.nelp.navy.mil/pdf_cases/Conservation_Wind_Power_SCI.pdf
- Logan International Airport in Boston, Massachusetts – near Hull, MA turbines
  http://www.ceere.org/rerl/publications/whitepapers/AWEA_Hull_2003.pdf

80085-017

Property Values

A common concern about wind energy projects is the potential to impact nearby property values. The PEIS should note, however, that the empirical evidence gathered in the three most methodical studies conducted to date demonstrates that wind turbines do not negatively affect property values, as demonstrated by studies of sales transactions of properties located in the vicinity of wind projects:

- "Six counties reported that residential properties have views of the wind turbines, but the turbines have not altered the value of those properties." *Economic Impacts of Wind Power in Kittitas County* ECONorthwest, November 2002
  http://www.wind.appstate.edu/reports/kittitas.pdf
- "Although there is some variation in the three Cases studied, the results point to the same conclusion: the statistical evidence does not support a contention that property values within the view shed of wind developments suffer or perform poorer than in a comparable region. For the great majority of projects in all three of the Cases studied, the property values in the view shed actually go up faster than values in the comparable region. " - *The Effect of Wind Development on Local Property Values,* Renewable Energy Policy Project, May 2003
  http://www.repp.org/articles/static/1/binaries/wind_online_final.pdf

80085-018

- "Our analysis of 280 home sales within 5 miles of the Fenner windfarm, in Madison County, New York failed to uncover any statistically significant relationship between either proximity to or visibility of the windfarm and the sale price of homes. Additionally, the analysis in this report failed to uncover a relationship even when concentrating on homes within a mile or that sold immediately following the announcement and construction of the windfarm. Therefore it is safe to conclude, in this community, a view of the windfarm does not produce either a universal or localized effect, adverse or not." *Impacts of Windmill Visibility on Property Values in Madison County, New York* Hoen, Ben. April 2006.

80085-018 (cont.)

5.2.23 Fisheries

AWEA believes that the generalizations made regarding fishing impacts are incorrect and MMS should include a more accurate characterization of the limited potential for fishing impacts, as well as acknowledge the potential for offshore wind parks and commercial fishing to coexist. Section 2.3.23 of the DPEIS states, "For safety reasons or to avoid the potential for gear loss, commercial fishing vessels could be excluded from project areas that may have previously been within normal fishing grounds. Such exclusions could remain in effect during the entire life of the project. However, as long as wind energy projects are not sited in areas containing unique and highly productive seafloor habitats, overall effects of such space-use conflicts on commercial fishing would be negligible to minor." AWEA strongly disagrees with these statements for several reasons:

1) Concerns about impacts to fisheries based on gear loss would be limited to those distinct fishing methods that involve towing some type of net or rake behind a boat, such as long-lining or dragging/trawling (a type of fishing that is most destructive to the habitat and sea bottom).
2) Commercial fisheries such as hook and line, and traps and pots, would not be impacted by offshore wind at all and in fact will likely be more productive, due to the turbine bases acting as fish attraction devices.
3) Concerns about fisheries where gear is being towed behind the boat should be recognized to be less of an issue with the current shallow water state of offshore wind technology. The larger dragging fishing boats are likely to have significant operation further from shore and away from the shallow protected areas where wind farms would be proposed in the foreseeable future.
4) Impacts on commercial dragging fishing methods can also be mitigated or eliminated through greater spacing between turbines (based on longer blade lengths and the need to space turbines farther apart to reduce wind wake and energy losses). This increased spacing allows for movement between the turbines.
5) The depth at which the cabling is buried also affects the availability of commercial fishing in the area. It is anticipated that at a burial depth of at least 2 meters, undersea cables will not impede commercial fishing methods, including dragging. Regular monitoring of offshore cabling should ensure sufficient burial depth throughout the life of the project.

80085-019

AWEA further recommends that MMS acknowledge that offshore wind farms and commercial fishing are not mutually exclusive, and that there is thus no factual basis for a general

presumption (or any related general limitation) that wind farms would necessarily have a serious adverse impact on commercial fishing. In addition, the DPEIS states that, "Wind towers on the OCS would represent additional navigation hazards," to commercial fishing boats. AWEA strongly disagrees with this statement and feels that offshore wind towers would be aids to navigation and in some cases would provide location information to a distressed fishing vessel and something to tie off to while awaiting assistance.

80085-019 (cont.)

2.2.22 Tourism

AWEA would suggest one correction to the impact conclusions on tourism. As stated at page 5-133, "While some visitors might be distracted by industrial views, for others, the opportunity to view OCS alternative energy facilities might be attractive." AWEA recommends that MMS amend the concluding statement to say, "Routine activities associated with OCS developments might result in visual and auditory impacts on tourism and recreation. Except in extreme circumstances, however, impacts are expected to be minor or temporary, and could be anticipated to be positive." There is no evidence to support the idea that the existence of wind farms on- or off-shore negatively affects tourism. In fact, evidence from a number of sites in the U.S. and Europe demonstrates that wind energy projects often draw people to a site or at least would not deter most tourists from visiting an area.

80085-020

We further believe that MMS should avoid using pejorative terms such as "industrial" when referring to aesthetic consideration of wind farms.

Transportation

The PEIS should note the favorable experience of the European offshore wind industry with regard to coexisting with marine transportation. AWEA also notes that concerns regarding potential impacts to marine navigation relating to offshore wind energy projects in the United States were addressed by Congress in Section 388 of the recent Energy Policy Act, which calls for navigation risk assessments to be conducted by the United States Coast Guard. The PEIS should thus note that the Coast Guard will be responsible for such review process.

80085-021

Comments on the Minerals Management Service (MMS)
Advanced Notice of Proposed Rulemaking (ANPR)
Alternate Energy-Related Uses on the Outer Continental Shelf,
Docket No. RIN 1010-AD30

February 28, 2006

Executive Summary

Wind energy is one of the fastest-growing energy technologies in the world. In 2005, more than 2,400 megawatts (MW) of wind energy capacity was installed in the U.S., with 59,322 MW installed worldwide. Wind energy is also one of the cleanest, most environmentally friendly energy technologies that exist today. And continuing policies that encourage renewable energy to compete with traditional fossil fuel generators will only grow the demand for wind energy. As wind energy technology enters mainstream markets, the need for additional economically viable project sites has grown and the global industry is turning more to offshore wind resources.

As recognized by the recent Report of the U.S. Oceans Commission on Ocean Policy and Section 388 of the Energy Policy Act of 2005, offshore wind projects offer great promise for the American market, especially in the long-term, to provide clean, emissions-free electricity closer to the load coastal centers where electricity demand is the greatest. The MMS must realize, however, that offshore wind technology is still in its infancy; and today's turbines can be installed on a technically and commercially viable basis only at a very limited number of offshore sites, such that it would premature to focus upon any programmatic development that would presume widespread viability on the Outer Continental Shelf (OCS) in the near future.

More specifically, unlike the European experience, very few sites on the American OCS possess the unique combination of attributes required for technically and economically viable offshore wind projects. For the foreseeable future, offshore wind projects will require sites that are relatively close to shore, with relatively shallow water depths, favorable current and wave conditions, a good wind resource, and suitable transmission access to the wholesale power grids. Although in the future new foundation designs and other technological achievements may cause additional sites to become feasible further offshore, such developments remain speculative and may not occur for more than a decade, if at all. AWEA thus urges MMS to first facilitate and expedite the permit review of those relatively few OCS wind projects that will be viable in the foreseeable future. To the extent that MMS also finds it necessary to also develop any development "program" or programmatic environmental review that presumes future widespread activity on the OCS, it should do so in a manner that does not delay or impede the permitting of those few projects that are feasible under today's conditions.

One key concern for the U.S. wind industry with regard to offshore wind energy is the timely review of projects. As is clear from the offshore wind energy projects currently proposed, there are numerous ways a project can be delayed, including the intentional misuse of the environmental review process. If undue delay is allowed into the process, offshore wind energy development will simply not develop in the U.S., irrespective of it's potential or merits. Accordingly, a rulemaking that creates a workable framework

must encourage the prompt review of the handful of OCS offshore wind projects that will be viable in the near-term, and then also allow for the future development of offshore wind energy's full potential to provide clean, reliable and competitive renewable energy to the U.S.

Phase two of development for offshore wind, however, may well be in the area of deep-water technology. Several different alternative designs have are being explored, including tripods, quadrupile, guide line support systems to a monopole, and floating foundations with guide lines. None of these designs, however, have yet been tested and will not be commercially viable or insurable in the foreseeable future (if at all), and it could take decades to prove their design capabilities to justify the large capital investments need to build offshore wind projects. Accordingly, while MMS should foster such potential future developments, it must not allow such efforts to frustrate or delay the limited number of projects that could be viable within the foreseeable future.

About AWEA

The American Wind Energy Association (AWEA), formed in 1974, is the national trade association of the U.S. wind energy industry. The association's membership includes turbine manufacturers, wind project developers, utilities, academicians, and interested individuals. More information on AWEA and wind energy is available at the AWEA web site: www.awea.org

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Question #1. Are there regulatory regimes, either in the U.S. or abroad, that address similar or related issues that should be reviewed or considered as MMS moves forward with the rulemaking process?

Most importantly, MMS should refer to the BLM's recent two-stage development of land-based approach for wind energy development as a useful model. Before commencing such process, the BLM first considered a number of projects on an individual application basis, which allowed the agency to gain experience and familiarity with the industry prior attempting to establish any development program. On October 16, 2002, the BLM then issued its Interim Wind Energy Development Policy, which, importantly, was designed to not interfere with pre-existing and ongoing development efforts, and which continued to review permit proposals made by industry (i.e., on a "first come" basis), concluding that "the processing of wind energy right-of-way applications on a first come basis is consistent with the President's National Energy Policy and will encourage the access to public lands for renewable energy resource assessments and development." The same rationale should apply in this case. The BLM then proceeded to undertake a programmatic review with the objective "to streamline the application and review process", with BLM officials publicly stating that such process would "not impede" the continuing review of the approximately 60 applications then pending before the agency. Notably, the BLM's resulting development policy still relies heavily upon the acumen and innovation of American industry to identify potentially viable sites for development, and appropriately recognizes that in the U.S. electrical generation is a highly competitive field that requires integration into American wholesale power markets, which recently have been restructured for the express purpose of moving away from central planning in order to encourage entrepreneurial and innovative approaches.

MMS should also recognize that European models might be of limited application to the U.S. offshore renewable industry. First, many European nations have not yet undertaken the above-referenced approach of restructuring their wholesale power markets towards competitive initiative and entrepreneurial innovation, and accordingly rely more on central planning than would be appropriate for the U.S. markets. Second, as also noted above, the European OCS presents a very different physical challenge for offshore wind, in that its markedly more gradual depth progression yields many more

European sites that are viable with today's technology. The European OCS is thus far more likely to allow the identification of wide areas that could potentially include multiple viable projects sites. In contrast, on the OCS of the U.S., the challenge will be to identify any individual sites that could be viable – a difficult and time-consuming undertaking far more suited to the technical and business acumen of industry.

The MMS should also note that, in this regard, the development of renewable energy on the American OCS is fundamentally different from the U.S. experience with offshore oil and gas, which are not subject to same restraints that seriously limit the number of viable sites. Thus, the MMS will not be able to identify, as it does for oil and gas, wide areas within which numerous potential sites would be viable for renewable projects. Rather, the American approach for renewable energy on the OCS must focus on those individual sites that could be viable within the foreseeable future (and which will likely be both few and dispersed), and the identification of such sites should depend primarily upon to the commercial acumen of the American industry.

Also see the "Program Area: Payments & Revenues" section, below, for discussion of how European models have appropriately recognized the nascent stage of the offshore renewable industry with respect to compensation provisions.

Additional European resources are listed below:

- Crown Estate from the United Kingdom: www.crownestate.co.uk
- *Future Offshore: A Strategic Framework for the Offshore Wind Industry;* Department of Trade and Industry (UK), 2002.
- *Guidance Notes: Offshore Wind Consents Process;* Department of Trade and Industry (UK), 2004.
- *Enabling Offshore Wind Developments;* European Wind Energy Association, 2002.
- *A Framework for Offshore Wind Energy Development in the United States;* Massachusetts Technology Collaborative, GE, U.S. Department of Energy, 2005.

Program Area: Access to OCS Land & Resources

AWEA views the overall process for appropriate access to OCS as follows:

- MMS identifies the entire OCS as available for offshore wind development, within existing statutory requirements, and requests applications for projects at potentially viable sites over the entire area.
- Project proponents approach MMS with proposals for specific areas of development.
- MMS grants Wind Resource Evaluation Leases for 3-year increments to developers so that proprietary wind, substrate, and environmental data can be collected.
- At the end of the Evaluation Lease, a developer has the option to enter into a Wind Power Production Lease for the identified site. No other private interest could develop that lease site unless the original developer chose not to do so at the conclusion of the Evaluation Lease.
- If the developer chooses not to develop the site, any information collected under the Evaluation Lease is available to other pre-qualified companies that may then bid on that proposed project area.

- If the developer does choose to develop the site, MMS and the entity enter into a Wind Power Production Lease. The clock starts and the developer must begin project construction within a set time, or forfeit the right to that lease. MMS should also consider that in the current state of the American power markets, it is unlikely that offshore wind energy projects could be commercially developed on a phased basis. The fully proposed project size and output will often be required in order to amortize the relatively high cost of transmission and infrastructure to the extent necessary to create a commercially viable entity that could attract investment of the requisite capital. Partial projects (or projects where full development remains contingent) will thus typically not be feasible in the commercial American power industry.
- At the end of the project life, if no repowering opportunities exist, the project operator should commence the decommissioning plan.

As detailed in the specific questions below, AWEA suggests that MMS should not focus on geographic regions because the number of viable project sites is small in the near-term. The best use of MMS resources through this rulemaking process in the near term is to create a framework to expeditiously evaluate and approve project leases applications from industry in all areas of the country's OCS.

Wind energy projects need not conflict with other uses of the OCS. Careful project planning can allow for multiple uses of a lease area.

Question #2. Possible development scenarios include phased access rights, which would allow for resource and/or site assessments and research prior to securing additional access rights. Rights could be permitted on a case-by-case basis. Development rights would be secured by a competitive process. An alternative would be to require that interested parties secure the access rights to an area prior to conducting assessments and research. Please comment on these possible options.

- It is economically infeasible for a wind project developer to work to gain access rights in the OCS for resource evaluation purposes (often a multi-year undertaking involving millions of dollars of high-risk investment) if project development rights are later auctioned off in a competitive bidding arrangement.
- Allow developers to submit proposals for a location and sign a Wind Resources Evaluation Lease with provisions that would allow conversion by the developer to into a Wind Power Production Lease at the end of the evaluation term. Competing project proposals, if any, could be decided based on applicant qualification and strength of the proposal.
- Any advance baseline resource or site assessment data collected under the Evaluation Lease should be proprietary to the developer. If the development company later decided, at the end of the Wind Resource Evaluation Lease, that the company did not wish to pursue that site, the data collected could then become available to other pre-qualified companies.
- Leave the primary role of identifying sites to pursue to the applicants, especially in the near-term, where the acumen of industry can best evaluate potential site viability by commercial analysis of factors including engineering, construction, wind resource, transmission, tax impact and wholesale power market considerations. (See the "Program Area: Payments & Revenues" section below for discussion of related compensation issues.)
- Much of the most general information on the seabed conditions, transmission lines, and wind resource information is currently publicly available.

Question #3. In cases where applicants or interested parties' propose activities that would foreclose competing future uses, how should MMS estimate "a fair return," especially if the competing uses would likely be public uses?

- The only activities with potentially competing "return" to the Government would be extractive development activities:
  - Oil & gas
  - Sand & Gravel
  - Stone (for rip rap etc.)
  - Oyster shells (for cement etc.)
  - Dredged material
  - Minerals mining
- "Fair return" to the MMS could be analyzed in part by reference to potential royalty revenues from operations listed above that would be likely to have occurred, but for the placement of offshore wind power installations. As discussed in the "Program Area: Payments & Revenues" section below, however, the better approach would be to adopt a concrete and predictable compensation approach.
- The following activities do not provide royalty revenue to the MMS and should thus not be included in such analysis:
  - Recreational boating
  - Routing of commercial ship traffic
  - View shed considerations
  - Commercial fishing
- "Fair return" for the public must also account for the positive public benefits of renewable energy development, including the following:
  - The inherent benefits of clean, emissions-free electricity should be considered
  - Enhanced electric system reliability resulting from greater fuel diversity
  - Congress, state governments, and other public entities see the importance of encouraging the development of wind energy through mechanisms such as Renewable Portfolio Standards and the renewable energy Production Tax Credit (PTC).
- More specifically, any governmental revenues that would have accrued, but for the renewable energy project, should be considered as one factor to be balanced against the public interest benefits that the project would bring, pursuant to a comprehensive "public interest" balancing test as currently used by other agencies and as discussed in Question #8 below. Such a decisional standard would appropriately recognize that the generation of governmental revenue was not the primary purpose of the Congress in encouraging alternative energy development on public lands or on the OCS.
- MMS and the Department of the Interior are required to encourage the development of renewable energy sources as indicated in President Bush's 2001 National Energy Policy and the subsequent Energy Policy Act of 2005.

Question #4. What constitutes a geographical area of interest?

Two potential interpretations of this question are below:

- The entire OCS, where estimated economically viable wind resources overlay:
  - Reasonable proximity to viable shoreline cable crossing

  - Interconnection with a utility transmission system.
  - Water depths within the economic and technical reach of a developer.
  - Ocean floor parameters that allow for construction of foundations within the economic and technical reach of a developer.
- For a proposed project lease area, the size needs to be at least large enough to allow for enough turbines to amortize the exceptionally high costs of running the transmission cable(s) to shore and then interconnecting with the land-based utility grid system, among other project costs. Given that a development company would first get a Wind Resources Evaluation Lease, the area would also need to be large enough to allow for flexibility when placing the turbines given the data collected. A minimum of 30 square miles would be needed.

Question #5. What assessments should we require prior to competition?

- It is not feasible, and has the effect of turning away qualified bidders, if the MMS were to require potential bidders to conduct individual, pre-bid resource and site assessments (other than a review of publicly available information) prior to bidding, since the undertaking is far too expensive and often requires a multiple years of study.
- As is common, the MMS should pre-qualify potential bidders to ensure that they are capable from a technical and financial perspective. See the relevant portions of the BLM policies in this regard.

Question #6. How should MMS structure the competitive process and the application process used to issue OCS access rights? Should MMS auction access rights or engage in direct negotiation?

- The process should indeed be multi-phased, but designed specifically to remove from consideration unqualified or speculative participants and encourage the truly qualified to continue with the selection process. MMS should pre-qualify companies, as indicated in Question #5.
- It is economically infeasible for a wind project developer to work to gain access rights in the OCS for resource evaluation purposes if project development rights are later auctioned off in a competitive bidding arrangement.
- Allow developers to propose projects as above sign a Wind Resources Evaluation Lease with provisions that would allow conversion by the developer to into a Wind Power Production Lease at the end of the evaluation term.
- Actions that would <u>not</u> spur the development of offshore wind energy:
  - Governmental offering of blocks or general zones of lease access, since for the current stage of offshore wind development, not many economically-feasible sites exist using current technology and these must be identified on an individual site basis; blocks of lease access could in the future be appropriate when offshore wind technology develops further, such that multiple sites within an identified area would be likely to viable.
  - Any programmatic review of resource information that would impede expeditious development of viable sites, or delay the review of pending applications, while the programmatic review was being completed.

Question #7. Should MMS take a broad approach to developing a program, or should efforts be targeted to specific regions?

- Take a broad approach, understanding that the industry should be allowed to identify propose sites for development in the near-term.
- At this early stage of the offshore industry, the best role for MMS is to provide the generic framework to allow development and individual permit review on an expedited basis. Dividing up the OCS regionally would simply complicate the process and could exclude viable sites and frustrate the entrepreneurial initiative needed to advance the industry. What the industry needs at this stage is simply the expeditious review of individual permit applications, rather than the development any governmental development program. Notably, Section 388 of the Energy Policy Act simply calls for the MMS to promulgate any regulations necessary to its permitting function, and the development of any "program" should be of secondary concern, perhaps best considered after MMS and the industry has gained some greater degree of experience.

Question #8. How should MMS consider other existing uses when identifying areas for access?

- The MMS should adopt a "public interest review standard" when weighing the likely benefits versus the likely detriments of any proposed alternative energy project on the OCS, similar to the standard that is used by the Army Corps of Engineers. See Section 10 regulations of the ACOE at 33 CFR 320.4(a)(1). The standard of the Corps' regulations provides, in part, as follows:

  > "The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. Evaluation of the probable impact that the proposed activity may have on the public interest requires a careful weighing of all those factors, which may become relevant in each particular case. The benefits which may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments."

  The regulation then goes on to list numerous factors, including alternative potential uses, to be included in the ultimate balancing decision. Such a standard would thus include existing uses, along with all other relevant consideration, as part of an overall balancing of factors that could impact the public interest either adversely or positively.
- If there is an existing, on-going operation in place at the time a wind energy project is proposed, the competing use may conceivably outweigh a wind project. Such factors should, however, be evaluated in the comprehensive balancing of all relevant considerations pursuant to the public interest standard, as noted above. However, if there were only the potential for a competing use that would be incompatible with a wind project, then any public interest detriment would be far more speculative and should be afforded correspondingly lesser weight versus the benefits inherent in wind energy projects in the evaluation.
- It should also be noted, however, that offshore wind projects are often fully compatible with other uses. The potential degree of conflict should be considered as part of the public interest balancing in each case.
- MMS should also recognize the potential benefits for fish aggregation devices and artificial reefs from offshore wind energy structures.

Question #9. How should MMS balance existing uses within an area with potential wind and current energy projects?

- As an initial matter, any potential detriment resulting from potential conflict with existing uses should be considered and balanced along with the aggregate of likely public benefits and detriments pursuant to a "public interest" review standard, as discussed in Item 8 above. As a general comment, however, precedent exists that demonstrates multiple use of an OCS tract by unrelated entities. That being the case:

  Balance with O&G or Mining Operations
  - Area changes in wind resource and ocean floor conditions within an OCS lease tract may be gradual and allow for the flexible placement of wind power generation structures in such a way so as to promote harmony with other operations on the same OCS tract.

  Balance with other Renewable Energy Operations
  - Ocean current energy projects, by their nature, are not disruptive to wind power generation projects.
  - Ocean current energy projects rely on a "choke-point" through which an ocean current flows at elevated velocity for turbine/generator set placement. Unless a wind power installation is placed in such a way so as to disrupt the up-stream ocean current that in turn reduces the flow through the choke point, it should not be detrimental.
  - Generally speaking, any disruption to current flow by a wind turbine installation diminishes rapidly down-stream from the structure. Spacing considerations relative to turbine placement in the same general area between the two technologies should be an issue that can be successfully arranged.
- Wind power and ocean current power generation projects should find harmony in co-development on and OCS lease. If accommodations cannot be discovered, then MMS must decide based on the overall balancing of the public interest review standard, with consideration to include:
  - Maturity of the technology
  - Relative quality of the resource – wind or ocean current
  - Project revenue to the MMS
  - Viability of the bidders/developers

Question #10. Should MMS require permits for collecting data from vessels? Should we consider this information proprietary? What criteria should we use for holding the information proprietary?

- There is no need for MMS to require permits for vessels, which would be a further potential for delay and complication. Further, because vessels are not a structure attached to the OCS, such activities are beyond the scope of the OCSLA, as amended.
- Data collected during the Wind Resources Evaluation Lease must be proprietary to the company gathering the information, as has been recognized by the BLM. It would be a serious impediment to investment if proprietary information, obtained at great expense, time and risk, were to be released to the public. If that company decides not to move forward with the development of a project, the information could then be public or at least available to other pre-qualified bidders.

Question #11. What criteria (e.g. environmental considerations, energy needs, economics) should MMS consider in deciding whether or not to approve a project? What criteria should MMS consider for different competing projects (i.e. wind versus current) for the same site?

- MMS should adopt a public interest review standard that considers and balances all likely detriments and benefits to the public, as discussed in Question #8 above. It should thus consider

factors including the general public interest in the development of renewable energy sources, the importance of fuel diversity, and the benefits of clean, emission-free energy.

- With respect to internal profitability of private entities, however, many complex and often unpredictable factors, and their interrelation, determine the future economic profitability of any project. These issues include the highly competitive and volatile wholesale electric power markets, the applicant's own business strategies for marketing power and tradable attributes (which strategies will often change in reaction to unforeseeable market developments) and the applicant's own business acumen. Profitability will also depend upon the applicant's own internal financial and tax strategies, including its plans to fully realize the potential benefits of incentives such as the PTC. It would thus be extremely difficult for MMS to undertake a meaningful projection of a project's future profitability.
- The MMS should accordingly adopt the economic review standard of the Army Corps of Engineers under its Section 10 regulations at 33 CFR 320.4(q) ("Economics"), which presumes that projects proposed by private enterprise will be economically viable, as follows: "When private enterprise makes application for a permit, it will generally be assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the marketplace."
- Finally, the potential profitability of OCS generating projects will be carefully scrutinized by the project finance community, which will allow projects to proceed only if they can be shown to present commercially acceptable level of financial risk over the full term of project debt financing, which will typically be in the range of 20 years. In today's restructured wholesale power markets, private entities in the financial community are best suited to evaluate the myriad of complex factors that could affect the potential profitability of proposed projects.

Program Area: Environmental Information, Management & Compliance

The issue of the environmental impacts associated with wind energy projects should not be considered without also accounting for the benefits, or the harmful impacts offset, by developing and using wind energy.

In the face of traditional energy generation's increasing challenges, clean, fuel-free wind energy can offer some help: wind energy produces no emissions, stabilizes energy prices, and provides electricity for our escalating needs. Like all human invention, wind energy has some impacts; but the choice is not a simple trade-off between wind and nothing. Our society, even with increased energy efficiency, demands a steadily growing amount of electricity. And if some of that new electricity does not come from wind, it is likely to come from another source with far more damaging environmental consequences.

However, wind energy projects both on- and offshore will have some site-specific effects. Therefore, it is important that the appropriate site-specific studies be conducted to best assess risk to potentially affected species. It is not appropriate, however, for wind projects to be required to assess cumulative impacts to an extent in excess of that required for other forms of OCS development. Further, as discussed above, the number of commercially viable wind sites on the OCS will be sufficiently limited for the foreseeable future, such that it is highly unlikely that any geographic area of the OCS will include multiple project sites in a proximity that could result in cumulative adverse effects within the meaning of the National Environmental Policy Act (NEPA). Those questions should be addressed at a site-specific level only.

Wind project developers on land routinely conduct pre-construction surveys (as referenced in the BLM wind policies) to understand a project's risk to wildlife at that site. It is reasonable to require site-specific studies for offshore wind projects as well. However, there will always be uncertainty with regard to

project impacts, and truly no amount of pre-construction study will ever completely suspend the ambiguity over post-construction impact, at least in the early stages of the industry. AWEA recommends thus that MMS (i) determine the scope of study on a project specific basis based upon the facts of each case, and (ii) employ the concept of adaptive management that other agencies are now considering (as discussed in greater detail below in Question #16) in order to recognize and constructively address residual factual uncertainty.

For OCS wind projects, an Adaptive Management Plan could predict some specific level of potential impacts of the proposal that would be deemed a significant event. Then, if during operational and post-construction monitoring, those impacts were exceeded by a set amount, defined operational responses (which would be structured so as to allow financial community to evaluate the aggregate potential operational limitation) could be triggered. This approach allows a prescribed path to deal with inherently uncertain future developments in a responsible and constructive manner, and avoids the unrealistic assumption that any degree of pre-construction study will definitively quantify all future events. See Question #16 below.

Question #12. What types and levels of environmental information should MMS require for a project?

- The National Environmental Policy Act (NEPA) already provides for a scoping process needed for environmental reviews.
- MMS already provides some baseline environmental data for oil and gas development, and AWEA requests that the same be done for wind energy, in a way that does not impede the interim review of individual applications:
  - Ocean currents
  - Seafloor depth, grade, material composition
  - Sub-seafloor geology, sampling, and evaluation (for preliminary foundation determination – part of a developer's bid)
  - Location vis-à-vis ship traffic lanes
  - Location vis-à-vis migratory bird flight patterns
- MMS should <u>not</u> create blanket conditions for specific kinds of studies, such as an across-the-board requirement for three years of 24-hour radar data collection. Requests should be reasonable, site-specific, and aimed at answering specific questions, not a rigid one-size-fits-all requirement. For example, in the Record of Decision of the BLM's land-based wind program issued in December of 2005, the BLM declined to adopt rigid avian study requirements and left the study particulars to be determined on a project-by-project basis: "Scientifically rigorous avian and bat use surveys shall be conducted; the amount and extent of ecological baseline data required shall be determined on a project basis." MMS should do the same, and be guided in each case by the informational requirements as defined and limited by the applicable provisions of the NEPA and other statutes defining informational standards.
- Areas of information MMS might pursue regarding an OCS wind application:
  - Impact of foundation installation
  - Impact on migratory bird flight patterns
  - Impact on local fisheries
    - Benefit as Fish Aggregation Devices (FADS)?
  - Impact of workboat/helicopter traffic to service the wind turbine generators
  - Impact of sub-sea power cables
  - Impact of shoreline cable crossing

- MMS should consider a limited range of reasonable alternatives that a project proponent should be required to consider under NEPA. For example, it is not reasonable to compare the impacts of an offshore wind facility to a wide variety of other land-based power plants. In light of Section 388 of the Energy Policy Act and the related recognition of the importance of OCS energy resources, the MMS should regard the development of OCS renewable resources as a separate and independent purpose important to the national interest, such that the range of reasonable alternatives to an OCS wind proposal would be properly limited to other alternatives located on the OCS.

Question #13. What types of site-specific studies should MMS require? When should these studies be conducted? Who should be responsible for conducting these studies?

- Site-specific studies could be similar to those required by the Bureau of Land Management.
- The requirements contained in the 3800-page Cape Wind Draft Environmental Impact Statement are an example of an excessive exercise aimed at delay and would halt future offshore wind development if required from every project.
- Attached in Appendix A and B are AWEA's comments to the U.S. Fish & Wildlife Service's Interim Guidance to Avoid and Minimize Wildlife Impacts from Wind Turbines ("Interim Guidance"). These comments detail many of the drawbacks associated with requiring specific studies or measures at sites without regard for the site-specific issues. AWEA strongly urges MMS not to adopt the Interim Guidance or specific parts of it because of industry's major concerns with the document. Also, when the Interim Guidance was drafted, it did not apply to offshore wind projects, so it should not be made to do so now.
- MMS should also determine the scope and amount of study in a way that assures the timely and cost-effective regulation that was plainly intended by the Congress. The Council on Environmental Quality (CEQ) similarly indicates that the NEPA process should not be misused as a tool for blocking projects by delay alone. In particular, CEQ's regulations at Section 1502.7 state that an Environmental Impact Statement (EIS) "shall normally be less than 150 pages and for proposals of unusual scope or complexity shall normally be less than 300 pages," and the CEQ's 40 Questions Release at item 35 indicates that "The Council has advised agencies that under the new NEPA regulations even a large complex energy project would require only about 12 months for the completion of the entire EIS process." The MMS must accordingly limit attempts to turn the review process into a delay tactic, and limit proceedings to those necessary to afford the "hard look" intended by the NEPA.

Question #14. What should be the goals and objectives of monitoring, mitigation, and enforcement?

- MMS should account for the evolving nature of the U.S. offshore wind energy and develop goals and objectives that allow for continuing innovation of the technologies needed. Any monitoring, mitigation and enforcement goals should consider the higher costs in the near-term of developing this resource.
- MMS should aim for the greatest mitigation for maximum energy yield. The MMS monitoring, mitigation and enforcement objectives can largely be met in a responsible and predictable manner through adaptive management techniques of the type discussed in Item 16, below, so as to both

foster the intended development of OCS resources and assure sound operations on an ongoing basis.

Question #15. What types of impacts are of concern? What are effective approaches for mitigating impacts? How can mitigation effectiveness and compliance with Federal environmental statutes be assessed?

- Given that any offshore wind development on the OCS would have to comply with NEPA, many of these issues would be addressed under that project-specific Environmental Impact Statement (EIS) or Environmental Assessment (EA) process.
- It is impossible to eliminate all doubt about a project's environmental impacts, so AWEA recommends that MMS acknowledge that uncertainty and incorporate the strategy of adaptive management into regulations, as discussed in Questions #11 and 16.
- Adaptive management at a wind project would identify thresholds and triggers for specific actions to be taken, such as defined and limited operational changes if a specific level of mortality is exceeded for a species of concern.
- It is important that the adaptive management strategies and remedies be identified prior to construction, using site-specific studies to inform the plan. It is also important that adaptive management have defined boundaries of cost or actions required, so that developers and the financial community can have predictable expectations of what may be asked of a project.
- Site-specific information is the key to effective identification and mitigation of possible impacts from a project.
- Public involvement is critical early in the process to identify potential issues at a site.

Question #16. What regulatory program elements lead to effective enforcement of environmental requirements?

- AWEA strongly urges MMS to adopt polices of adaptive management in order to address the inherent uncertainty of future events and provide for the effective enforcement of environmental provisions. In this regard, the NEPA Task Force Report to the CEQ provides the following rationale supporting the proposed adaptive management approach at Sec. 4.2.1:

  "Using adaptive management, agencies might be able to enhance environmental protection and make cost savings when they implement proposed actions and mitigation strategies. *** Additionally, the traditional 'predict, mitigate, implement' environmental management model implies a high degree of certainty in the accuracy of the prediction step that often does not exist. The biological, physical, and social systems analyzed in the NEPA process are complex, which makes it difficult to calculate the potential impacts of an action with certainty. However, agencies are generally reluctant to admit that they cannot be sure of the impact of their proposed action. An adaptive management approach to the NEPA process helps to address this uncertainty and to mange any associated environmental risk."
- Permit conditions could include site-specific monitoring requirements.
- Ongoing O&M conditions could also be included within either leases or permits.

Question #17. How should environmental management systems be monitored (by the applicant, the MMS or by an independent third party)? What should be the MMS roles versus the roles of industry for ensuring appropriate oversight and governance?

- If industry would be responsible for the cost of this type of program, introducing a third-party review body would greatly increase costs.
- One standard process already used throughout the power industry is Internal Environmental Compliance Auditing. The company submits a plan for self-auditing and regular environmental reporting, as is described in more detail below:

  MMS should require developers to employ environmental auditing practices, including self-reporting and certification to MMS. Environmental assurance consists of activities established to evaluate environmental performance, verify compliance with company policy and legal and regulatory requirements, and communicate results to corporate management. It is one element in an effective environmental management system established to direct and control the fulfillment of an organization's environmental responsibilities.

  The principal mechanism for verifying environmental assurance is the environmental audit. An environmental audit may be defined as a management tool comprising a planned and systematic, documented, periodic and objective evaluation of the performance of the organization, management systems and equipment designed to protect the environment with the aim of: 1) facilitating management control of environmental practices; and 2) assessing compliance with existing environmental regulatory requirements and company policies. The audit program needs to be consistent with the ASTM E2107 standard, Standard Practice for Environmental Compliance Regulatory Audits.
  (http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/E2107.htm?E+mystore)

  The objectives of the Environmental Auditing Program designed to accomplish the following:

  - To assess the developer's compliance with federal, state and local environmental laws and regulations.
  - To evaluate the effectiveness and efficiency of the developer's environmental management systems.
  - To identify environmental risks beyond regulatory requirements, providing evaluations of the developer's actual and potential environmental exposure.
  - To transfer environmental best management practices internally.
  - To assess the appropriateness of resources devoted to assuring continued environmental compliance.
  - To provide corporate management with information concerning environmental compliance status and associated exposure.
  - To assess and increase employees' awareness of environmental requirements.

Program Area: Operational Activities

The European experience with offshore wind energy should be looked upon to guide American efforts. Europe currently has about 600 MW of offshore wind energy capacity in operation. The standards and requirements for offshore wind energy projects in Europe should be invaluable to MMS as this program is developed. AWEA strongly recommends that MMS consult with the appropriate European agencies to gain additional understanding of these standards and possibly adopt similar standards. Unless and until

the European standards are adopted, the U.S. offshore wind industry could be on hold for years waiting for new standards to be developed.

Question #18. What options should MMS consider as alternatives to facility removal? Are there unique issues (such as liability) associated with those options?

- As is common today on land, project proponents should be required to submit a decommissioning plan.
- Removal would be the case only if no "repowering" opportunities are available. In the wind energy industry, repowering refers to the situation where older turbine technology is removed and replaced with newer, more efficient turbines. At some of the earliest wind projects in California, repowering removes 10-15 old turbines and replaces them with one larger and more efficient machine. Given that offshore wind energy technology is still developing, repowering may be a real option for projects in the future.
- Assuming that the turbine/generator and tower sets will be decommissioned and removed from the lease at the end of the projects commercial life, a few possibilities relative to the foundations exist:
  - As with oil & gas offshore structure abandonment, wind turbine generator structures may be cut and recovered below the sea floor so as not to pose a hazard to navigation.
  - Wind turbine generator foundations may be *appropriately delineated and marked* and allowed to remain either at a certain height above sea level or cut and recovered at a depth that will not constitute a hazard to navigation to take permanent advantage of the installations as Fish Aggregating Devices.
  - Alternative, follow-on uses may be developed for wind turbine generator foundations as the case may be.

Question #19. What engineering challenges should be considered when operating in an OCS environment?

- Offshore wind technology faces numerous engineering challenges. An obvious point is how offshore wind turbines differ from offshore oil and gas platforms. Perhaps not so obvious is how the American experience will likely differ from the European experience so far due to significant differences in the bottom substrate conditions and rapid drop-off of the OCS. These challenges and others indicate that there will probably be fewer feasible sights off American coasts than exist off of Europe's shores.
- Current offshore wind system designs have been adapted from land-based versions and deployed in shallow waters off northern European coastlines over the past dozen years. To date, monopile and gravity foundation designs have been suitable for this environment. Offshore wind technology is evolving toward larger-scale and fully marinized systems that may someday be deployed in a wider range of water depths across a wider range of geographical areas, but such future developments remain speculative and will not be commercially viable in the foreseeable future.
- Offshore wind systems must be tailored to the marine environment. For the support structure, variable site conditions in terms of water depth, wave spectra, currents, sea bed geology, and other factors will require the availability of multiple design options, each one suitable to a particular class of design criteria. Offshore system designs are in the early stages of

development—with new technologies emerging—that will need to be fully tested and successfully demonstrated before an offshore wind industry can emerge and realize its potential.

- Designs that ensure structural integrity while minimizing the amount of materials/energy invested in are critical to the economic viability of offshore projects. Moreover, these structures must also be designed to minimize their impacts (during construction, operation, maintenance and decommissioning) on the marine habitat, organisms, migratory birds and mammals.
- Maintenance poses an additional challenge. Ocean conditions often prevent safe access by boat or helicopter without seriously endangering personnel. Engineers will be challenged to design and build turbines that are extremely reliable and minimize the need for unscheduled onsite maintenance.
- Increasing the efficiency of transmission between the wind generators and the energy service platform (ESP) and the ESP and the grid will be another engineering challenge/goal.
- Grid integration is another major engineering challenge. Assuming that offshore wind farms will be considerably larger than their onshore counterparts (especially in the Northeast), wind farm developers and operators will need to work closely with the operators of the regional grid to ensure that the large amounts of variable electricity they generate can be accommodated.

Question #20. What safety issues exist when operating an energy production facility on the OCS?

- Many, if not most of the same safety concerns associated with construction, operation and maintenance of offshore oil and gas rig construction apply to offshore wind projects.
- Issues of importance surround normal oil & gas offshore operations, to wit:
  - Supply boat, work boat and crew boat operations
  - Offshore crane operations
  - Personnel transfer from boat to facility
  - Helicopter operations
  - Weather shut down
  - Evacuation procedures
  - Cold water survivals
- Maintenance offers some especially challenging issues during – in particular attempting to disembark from boats onto the turbine during choppy sea conditions.
- Other safety issues include the possibility of sea going vessels colliding with wind turbine towers and/or Energy Service Platform.
- Care must be taken to ensure that wind farm design and positioning pose no threat of interfering with aviation radar or flight paths.
- The MMS should look to the Guidelines developed and published by the British Wind Energy Association (BWEA). BWEA developed the Guidelines, created course curriculum, and instituted training for all personnel involved with the operation and maintenance of offshore wind turbine generators. Their experience is based on the offshore oil & gas operation and maintenance experience in *extreme* conditions of the North Sea.
- The American Wind Energy Association is working to publish and distribute to the industry Safety Guidelines which are envisioned to encompass offshore operations

- MMS should avoid recommending actions that are reckless and unworkable, such as some suggestions for the currently proposed offshore wind projects to have permanently-manned barges at project sites to monitor wildlife.
- Further, workboat, supply-boat, and crane safety requirements currently being enforced by the MMS on the OCS for oil & gas ventures should be applied in the same manner.
- Finally, progress reporting should be instituted for all OCS ventures for lease compliance purposes as well as to ensure safe practices.
- Wind turbines offshore could also have some positive safety effects, namely:
  - Safe pull-out for smaller vessels in trouble
  - Surveillance cameras in turbines for homeland security or other purposes
  - Aids to navigation

Question #21. How should operational activities be monitored (e.g. annual on-site inspections with verification of operating plans)? Is there an appropriate role for the applicant and independent third party certification agents? Describe existing models that could serve as a prototype inspection and monitoring program.

- Requiring third-party verification and monitoring will greatly increase costs and adversely affect project economics.
- Conventional power generation experience points to a very successful and industry-wide self-reporting program, and there is no apparent reason for a different rule in this case.
- Current regulations already cover some common issues for offshore operations, such as having a spill response plan.
- Some operational monitoring can be done remotely, as is the case with wind projects onshore.

Question #22. Are there special considerations that MMS should examine in developing an inspection program that covers a diverse set of renewable production facilities? If so, what are they?

- The scope of activity for renewable energy facilities will be much less than what is required for oil and gas programs. Wind projects require less labor and fewer trips out to turbines, and the environmental concerns do not include large oil spills and other significant impacts.

Program Area: Payments & Revenues

As MMS has recognized in its ANPR, Congress has left MMS considerable discretion to determine what constitutes a "fair return" to the United States and to structure of the mechanisms designed to ensure such fair return. Section 8(p) of the Outer Continental Shelf Lands Act, 43 USC 1337 ("OCSLA"), as added by Section 388 of the Energy Policy Act of 2005, relating to alternate energy-related uses on the Outer Continental Shelf, requires the Secretary to ensure that any activity carried out provides for "(H) a fair return to the United States for any lease, easement or right-of-way under this subsection." 43 USC 1337. The OCSLA does not define what constitutes a "fair return," but delegates the details of any fees or charges to the Secretary: "[t]he Secretary shall establish royalties, fees, rentals, bonuses, or other payments to ensure a fair return to the United States for any lease, easement, or right-of-way granted under this subsection." Id. Finally, for all but the pre-enactment projects identified at section 388(d),

MMS must issue such leases, easements and rights-of-way on a "competitive" basis, unless the Secretary determines after a public notice that there is no competitive interest.

In adopting compensation provision, however, MMS should also be mindful of other policy statements in OCLSA regarding the development of resources on the outer Continental Shelf. Specifically, OCSLA affirmatively encourages the development of such resources by declaring the OCS to be:

> a vital national resource reserve held by the Federal Government for the public, ***which should be made available for expeditious and orderly development***, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs.

43 USC 1332 (emphasis added). Thus, the Secretary must balance three potentially competing interests: (1) maximizing the aggregate amount of revenue generated by such royalties, fees, rentals, bonuses, or other payments; (2) ensuring expeditious and orderly development of OCS resources; and (3) generally issuing leases, easements and rights-of-way on a competitive basis. AWEA believes that a wise regulatory program will result in the achievement of all three aims, thereby maximizing the public benefits from the development of an offshore alternative energy industry.

As MMS has recognized in Question #24, the offshore alternative energy industry is in its infancy. Regardless of the form of royalty, fee, and rental rates applied per project, the offshore alternative energy industry will in the aggregate generate the maximum amount of revenue only if it is allowed to fully develop and reach commercial maturity. Therefore, the payment structure should recognize the nascent state of the industry and be designed to encourage the development of these activities until the technologies are better established.

In this regard, MMS should review the policies of other nations that waive any royalties, fees, rentals, bonuses, or other payments during the first ten years of operation of an offshore alternative energy project. The provincial government of British Columbia has taken this approach in a recently adopted program that applies to both onshore and offshore wind projects constructed on Crown land. The British Columbia program provides for rent and royalty relief during the first ten years of production by the establishment of an initial rent-free "grace period." See British Columbia, Ministry of Energy, Mines and Petroleum Resources, Wind Power Policy Supports Alternative Energy Industry, *available at* http://www2.news.gov.bc.ca/news_releases_2005-2009/2005EMPR0046-000928.pdf (October 14, 2005). Similarly, Denmark recognizes the public interest benefits provided by the offshore alternative energy industry by not requiring lease or royalty payments for offshore wind projects. See Danish Energy Authority, Denmark, Tender Conditions Subject to Negotiation Concerning Windfarm Concession at Rodsand, Denmark (13 October 2005) *available at* http://www.ens.dk/graphics/Energiforsyning/Vedvarende_energi/Vind/havvindmoeller/Udbud/Tender_conditions_Roedsand_ny_udgave.pdf (2005).[1] Notably, Congress has created similar royalty relief programs in order to encourage the production of oil and natural gas from deep-water sites. See 43 USC 1337.

MMS should also consider appropriate incentives and regulatory certainty by creating a royalty and rental program that establishes limited payment obligations that can be easily calculated by potential project developers and investors. After year ten, MMS might apply a royalty rate of 1% to 2% of gross revenue. In both rounds of the United Kingdom tender process for offshore wind sites, the Crown Estate has set a royalty rate of £0.88/MWh, and amount that was expressly designed and intended to equal 2% of gross revenue. See the Crown Estate, United Kingdom, Round 2 Tender Procedures & Criteria *available at* http://www.thecrownestate.co.uk/87_round_2_tender_procedures_criteria_04_02_08.pdf (2002). Likewise, Ireland has provided developers with the option of selecting a fixed lease payment of €3800 per

MW or 2-2.5% of gross revenue. See Department of Communications, Marine and Natural Resources, Republic of Ireland, Offshore Electricity Generating Stations - Note for Intending Developers (revised May 2001) *available at* http://www.dcmnr.gov.ie/Marine/Coastal+Zone+Management/Forms+and+Downloads/ (2001). It is also noteworthy that Congress has specified similar fixed royalty amounts for the offshore oil and natural gas leasing program. See 43 USC 1337.

An alternative to this type of royalty payment that AWEA would support would be a straight fee for the lease of the seabed, similar to the BLM lease rate for wind projects on BLM-managed land.

Finally, for those leases, easements and rights-of-way that are to be issued on a competitive basis, the MMS might use a bonus bid program that establishes bonus payment obligations (in addition to any royalty arrangements) that can be easily calculated by potential project developers and investors. After year ten, MMS could apply a per MWh bonus to each project based on the project developer's bonus bid. It may also be noted that Congress has provided for a similar bonus bid system for the offshore oil and natural gas leasing program at 43 USC 1337.

Question #23. What should the payment structure be designed to collect? Should payments be targeted at charging for use of the seabed? Should payments try to capture the opportunity costs of other activities displaced by the activity? Should the payment structure be designed to capture a portion of the revenue stream, and if so, under what circumstances?

- *Unlike* extractive development leases, where the MMS acts as the "owner" of the mineral wealth located on or beneath the seafloor (which includes activities surrounding contracting for a developer, and collecting royalty relative to the value of the mineral extracted and sold), the MMS does not own the wind resource above the ocean surface, so that there is no removal of a public resource for which a cost must be "collected."
- Wind energy projects require subsidies in the form of the renewable energy Production Tax Credit (PTC) to compete with fossil fuel generation. Therefore, any payments or royalties collected should be small and account for this fact.
- BLM uses a combination of a modest flat rate for leasing the land and a royalty on top of that. While potentially feasible in the long-term, requiring royalties of offshore wind projects in the near-term will likely discourage developers from pursuing projects, possibly halting continued development of the technology here in the U.S. and we direct you to the more extensive discussion and recommendations set forth in the "Program Area: Payments & Revenues" section above.

Question #24. Offshore renewable energy technologies are in their infancy. Should the payment structure be designed to encourage the development of these activities until the technologies are better established?

- Yes. See the "Program Area: Payments & Revenues" section above for European recognition of such infancy.
- If MMS believes that offshore wind energy is something to support, the agency's position should recognize that a longer-term, if not permanent, extension of the PTC, as well as other financial support, is required.

Question #25. What methods are used by the renewable energy industry to quantify the risk and uncertainty involved with estimating the size of a renewable energy resource, and evaluating its profitability?

- The wind resource on an OCS lease tract can be estimated initially using generalized wind data that is available to the MMS. This generalized information should be refined by the MMS and placed in the data room for pre-qualified bidders to examine.
- Once a bidder has been selected and a lease agreement has been signed, the Lessee will then need to make a much more detailed evaluation of the wind resource on the OCS tract by constructing an ocean floor foundation and erecting an instrumented, temporary, meteorological tower – ideally with the instruments at the hub-height of the proposed wind turbine generators (e.g., 80 meters). Wind data will be collected over an appropriate period (e.g., typically at least1 year minimum -- potentially a multi-million dollar undertaking)
- Computer models will be employed to further refine the parameters of the wind regime on the OCS tract.
- Oscillatory wind patterns will be applied to take into consideration yearly variations – all resulting in a fairly well defined wind resource.
- Conversion of the wind resource via the wind turbine generator's power curve is well known and allows the Lessee to forecast revenue over the reasonable life of the project (e.g., 20 years).
- As noted above at Question #11 and elsewhere, however, the wind resource is only one of the many attributes of any potential site that are critical to its potential commercial viability.

Question #26. What measures of profitability are commonly used as renewable energy investment decision criteria? How do bonus bids, rents, royalties, fees and other payment methods impact the profitability of these projects?

- As with most other project-based investments, the construction of a cash flow pro forma is an important tool. It allows the delineation of the projects operations and maintenance schedule vis-à-vis revenue income and debt service payments. The standard equity investment criterion that is derived from the cash flow pro forma is the Discounted Cash Flow Rate of Return – which allows comparison to alternative investments, whereas debt participation will turn upon debt coverage ratios calculated over the range of likely variable events. All project expense items, including rents, royalties and fees, would enter into such calculations.

Question #27. Are there economic models available to calculate the profitability of renewable energy proposals?

- No. As is common with most project development and financing activities, the cash flow pro forma (the financial model) for each proposal is held in high confidence by all developers/bidders since the assumptions illuminated therein represent the competitive edge of a participant. As such, the financial model for each project is unique, constructed in-house, and is highly proprietary. As set forth in detail above at Item 11, the financial profitability of any proposed projects involves the technical and financial evaluation of wide range of factors including engineering, construction and procurement costs, operating costs, and projections as to the future performance of the often volatile wholesale power markets, as well as the internal financial and business strategies of the applicant. For this reason, it would be impracticable for MMS to

attempt to predict the future profitability of any proposal. Accordingly, AWEA strongly urges MMS to structure compensation streams in a way that do not require such a determination, as set forth above in the "Program Area: Payments & Revenues" section.

Question #28.Increased reliance on renewable energy offers both economic and environmental benefits. What are the public benefits to society and do they differ from market driven benefits

- The Energy Policy Act of 2005 encourages the production of energy in the U.S., and wind energy should be part of that portfolio. In particular, Section 211 of the Act states a "view of the Congress" that the secretary of Interior should authorize within 10 years 10,000 MW of non-hydro renewable generation on Federal lands – an aggressive national goal to which OCS resources can contribute.

More generally, public benefits to society include:

- Extends domestic gas/coal supply
  - *No fuel resource depletion*
  - *Moves power plant siting away from populated areas*
  - *New energy technology development*
- Diversifies nation's energy portfolio
  - *Important during times of drought*
  - *Important during times of high fuel prices*
  - *National defense strategic reserve, reducing reliance on imported fuels in times of hostilities with fuel exporting regions*
- Reduces thermal cooling water needs and impacts
  - *Decreases water demand for cooling water needs at existing thermal generation plants*
  - *Decreases the release of thermal cooling water.*
- Relief from long-term unstable climatic conditions
  - *Smoothes good/bad year fluctuations vis-à-vis hydropower availability*
- Enhancements to market stability
  - *Wind power has a smoothing effect on demand for power generation fuels*
- Reduces pollution
  - *No air pollution*
  - *No water pollution (thermal or toxic)*
  - *No global warming pollution*
  - *Helps non-attainment areas*
  - *Minimal fuel transportation spill risks*
- Reduces environmental impact from mining or drilling for fuel
- Reduces vulnerability of energy systems to terrorism
  - *Wind plants are made up of many individual generators; destroying one or even several has little effect*
  - *No public vulnerability (e.g., breaching of dam or nuclear containment)*
- Promotes numerous societal benefits and needs
  - *Marine science*
  - *Public education*
  - *Economic development*
  - *Tourism*

- *Recreational fishing/ artificial reef development*
- *Increased bio-diversity*
- *Taxes/ PILOTS*
- *Multi-use options (mariculture, cooperative ocean energy technologies)*

Market driven benefits include:

- No liability/costs associated with;
  - *SOx (≈$290/ton to $800/ton)*
  - *NOx (≈$2,200/ton)*
  - *particulates,*
  - *mercury*
  - *regional haze*
  - *greenhouse gases*
- No liability/costs associated with;
  - *flammable or hazardous fuels*
  - *high-pressure steam*
  - *make-up water*
  - *cooling water*
  - *nuclear waste handling, transport, & storage*
  - *plant waste/residue*
- No hidden long range liability
  - *coal -- black lung disease and other health-related costs*
  - *power utilities – PCBs & asbestos*
  - *class-action lawsuits from downwind population*
- No fuel resource extraction and transportation issues or costs
- Reduced exposure to changing oil and gas prices
  - *Unaffected by world oil prices and supply*
  - *Unaffected by world politics as it applies to oil producing countries*
  - *Unaffected by refinery outages or feedstock shortfalls*
  - *Unaffected by US oil & gas production rates or reserve determinations*
- Reduce exposure to more restrictive environmental standards
  - *Unaffected by implementation of tighter air & water quality standards*
  - *Unaffected by increasing costs associated with emissions compliance*
  - *Unaffected by penalties for emissions non-compliance*
- Security of power supply
  - *Not subject to fuel price fluctuations*
  - *Helps smooth fuel risk by expanding the generation portfolio*
- Extends domestic gas/coal supply
  - *No fuel resource depletion*

Question #29. In section 8 (p) of the OCSLA as amended by Section 388 of the Energy Policy Act, the Secretary must require the holder of a lease, easement or right of way granted under that subsection to furnish a surety bond or other form of security. What options should MMS consider to comply with this requirement?

- *Unlike* the surety bond or other security required for a fossil-fired power generation installation, the bond MMS should require for wind power generation projects need not cover such high cost remediation items as:
  - Removal of hazardous wastes
  - Removal and fuel and fuel containment structures
  - Removal of fuel delivery structures and systems
- The surety bond or other security should cover:
  - The cost of non-compliance with lease terms to the extent deemed necessary to the Secretary
  - The cost of decommissioning and removing the wind turbine generator and tower sets at the end of the lease term, to the extent required (see Question #18)
  - The cost of site restoration at the end of the lease term (see Question #18)
- The form of security other than a surety bond can include:
  - Performance bond;
  - Letter of Credit
  - Assigned interest-bearing annuity
  - Deposit in escrow or sinking fund
  - Insurance policy with MMS as Loss-Payee
  - Corporate guarantee (qualified entities only)

Coordination & Consultation

Question #30. While MMS considers this ANPR an appropriate start at consultation with interested and affected parties, what other efforts could be undertaken at this early stage of program development?

- It is critical for MMS to hold discussions with technically knowledgeable and experienced industry parties in Europe and the U.S. to gain an understanding of the potential and limitations of offshore wind energy technology, and the resultantly limited number of viable project sites on the American OCS in the foreseeable future. Indeed, such limitation should be fundamental to the MMS, as it is at the heart of fundamental differences from both the European offshore wind industry and the American offshore oil and gas industries.
- MMS should consider meeting with counterparts in Europe to gain more information.
- In any event, however, it is critical that no such efforts delay or obstruct the expeditious progress on individual project proposals.

Question #31. Should a broad approach be taken to developing a program or should efforts be targeted to specific regions with commensurate coordination and consultation?

- MMS should take a broad approach for consultation and not focus solely on specific regions.
- MMS should strive to create an efficient, standardized permitting regime for the entire country, not regionally specific. As noted above, what the industry needs at this initial juncture is the timely and efficient processing of project applications, and not any governmental development program, which may be based upon a false expectation over the short term potential in this nescient industry, and delay real progress on those relatively few sites that are viable today.

Question #32. Would the establishment of Federal/state cooperatives for targeted areas be useful? Similar to the process for OCS oil and gas program formulation, should we solicit comments on which areas of the OCS should be included or excluded from the program? After establishing where there is consensus in support of program activities, should coordination and consultation efforts be directed to those areas? Conversely, should such efforts be curtailed or abandoned for areas recommended for exclusion?

- MMS' role should be to develop a framework to evaluate an offshore wind project lease for a particular area for which an application is made, not to designate appropriate and inappropriate areas for development.
- Congress has already carefully considered and identified those OCS areas that should be categorically excluded from renewable energy development at Section 388(a)(p) of the Energy Policy Act, which excludes "any unit of the National Park System, National Wildlife Refuge System, National Marine Wildlife Refuge System, or National Marine Sanctuary System, or any National Monument." Any other areas should be open to consideration, on a case-by-case basis, under a public interest review standard, as discussed above.
- There is a real danger of conducting a long process to identify go- and no-go areas and then concluding with "developable" areas that cannot be feasibly developed. The identification of viable sites is best left to the acumen, innovation and risk analysis of industry.

Question #33. What are the critical stages (e.g. site evaluation, application, competitive sale) for consultation with affected parties?

- AWEA encourages public and affected party consultation for specific sites for the stages identified (site evaluation, application).
- Affected parties would include:
  - Any Co-redevelopers of the OCS lease area
    - Commercial shipping companies operating in the area
  - Recreational boaters
  - Residents in the view shed
  - Federal, state and local agencies overseeing the tidelands
  - Military agencies using the area for transit or exercise
  - Fisheries representatives
- States have a well-defined scope of authority over proposed offshore wind projects on the OCS through the Coastal Zone Management Act, as well as control over transmission lines that must cross state waters to reach the land-based electrical grids. States should not exercise more control over wind energy facilities than they do over fossil related activities on the OCS, as defined under the CZMA.
- Many states, especially in the Northeast, have energy facility siting boards to guide the siting of electricity generation projects. These bodies, which were legislatively created for the express purpose of making the always-difficult decisions regarding the siting of energy facilities, would be the best for consultation on these issues. Also, where a state energy facility siting board has approved associated facilities located within state jurisdiction, such an approval, and the related findings as to project need and other issues, should be afforded recognition and deference by the MMS.

- It may be appropriate for states to seek a combined review process with MMS. This would achieve the need for expedited energy project review (as stated in Executive Order 13212, http://ceq.eh.doe.gov/nepa/regs/eos/eo13212.html) and allow for input.

Question #34. Should procedures for consulting with interested and affected parties be codified in the regulations? In general? In detail?

- The minimal level of engagement could be detailed by MMS with specific timelines – otherwise it is not attractive to producers.
- The Army Corps of Engineers has consultation agreements with relevant agencies that include timelines. Timeliness is key.

Question #35. What processes can MMS use to provide for balance between consultations and the time and burden to the projects?

- Develop timely leasing and permitting schedules that include NEPA flexibility.
- Identify where interested parties can provide input.
- Provide a schedule for the process and the relevant time associated with each step.

Question #36. Are there specific aspects of the new ROW rule issued by the Bureau of Land Management that should be reviewed by MMS for consideration in its rulemaking?

- Yes, as discussed above, the BLM rule addressed is in many ways applicable to future development on the OCS and should be closely considered by the MMS.
- Notably, site-specific determination of the appropriate level of wildlife studies is a key aspect of the BLM regulations.

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[1] Project developers would have to pay rent for use of an electric service platform installed by the Danish Energy Authority.