The Creation of a Regulatory Regime for Offshore Wind Energy in the United States

By

Margaret E. Peloso

Date: _____

Approved:

_____
Dr. Richard Barber, Advisor

Masters project submitted in partial fulfillment of the
requirements for the Master of Environmental Management degree in
the Nicholas School of the Environment and Earth Sciences of
Duke University

2006

Abstract

The Energy Policy Act of 2005 empowered the Secretary of the Interior through the Minerals Management Service to regulate the development of renewable energy on the Outer Continental Shelf of the United States. The goal of this paper is to review the development of offshore wind energy and develop a set of recommendations for the Minerals Management Service as it proceeds with the development of regulations for renewable energy generation on the Outer Continental Shelf. In creating recommendations for the Minerals Management Service, the historical uses of the Outer Continental Shelf, proposals for wind energy development in the United States, and wind energy development in Europe were reviewed. A substantial portion of this Masters Project was submitted to the Minerals Management Service in the public comment period that closed on February 28, 2006. A copy of the comments as submitted to the Minerals Management Service is available from the author upon request.

Table of Contents

Introduction to Offshore Wind Energy

Introduction

Wind power is undergoing rapid global expansion. Concerns about climate change and decreasing supplies of fossil fuels have spurred the rapid growth of wind energy in the last 20 years. However, the development of wind power as a significant source of energy has been limited by the availability of land with sufficient wind speeds to sustain commercial production. Seeking the further expansion of the wind industry, developers began to look offshore in the early 1990s. Since that time, the use of offshore wind energy has grown quickly in Northern Europe. Denmark is the world leader in wind power and currently supplies 18% of its energy from wind powered generation.[1] The United Kingdom and Germany are also aggressively pursuing the development of offshore wind energy production to meet their carbon reduction requirements under the Kyoto Protocol of 1997 and to enhance domestic energy security.

Offshore wind energy has not developed as quickly in the United States. At this time, there are several proposals for offshore wind farms in the US, but none has begun construction. The first proposed wind farm in the United States, the Cape Wind Project, has been the subject of protracted, contentious debate and reveals the obstacles to the development of offshore wind energy in the US. Primary among these impediments was the lack of an appropriate regulatory regime to govern the development of offshore wind energy. The Energy Policy Act of 2005 aims to solve this problem by granting the Secretary of the Interior and the Minerals Management Service (MMS) the authority to govern offshore wind energy development. While this Congressional decision takes

[1] Danish Energy Authority, Windturbines- Introduciton to Basic Facts, http://www.ens.dk/sw14294.asp (last visited Feb. 11, 2006).

advantage of the Minerals Management Service's substantial expertise dealing with Outer Continental Shelf energy extraction, it must be recognized that the development of offshore renewable energy installations is a fundamentally different endeavor. Therefore, the Minerals Management Service must be prepared to think innovatively in creating a new governance regime for the development of offshore renewable energy projects.

The aim of this paper is to create an implementation plan for the extension of the Minerals Management Service's authority to govern offshore wind energy. This chapter will proceed by explaining the basic principles, costs, and benefits of offshore wind energy development. Subsequent chapters will explore the history of energy development on the US Outer Continental Shelf, proposals and obstacles to wind energy development in the United States, governance of offshore wind energy in Europe, and possible new approaches for the regulation of offshore energy development in the United States.

Fundamentals of Wind Energy

Wind turbines turn the power of the wind into electricity by using aerodynamic force to produce lift, causing torque on a shaft. This mechanical power is then transformed into electrical power using an electrical generator.[2] Most modern wind turbines have three blades on a horizontal axis. In the past 25 years, wind turbines have become more cost-effective, reliable, and quiet.[3] Offshore wind turbine technology is advancing rapidly. Today, typical offshore turbines have a capacity of 2 MW with blades

[2]J.F. Manwell, J.G. McGowan & A.L. Rogers, Wind Energy Explained 14, (John Wiley & Sons Ltd 2002).
[3] *Id* at 19

100m long and a height of 120m.[4] Currently, several companies are designing 5MW offshore wind turbines that will have a swept area larger than a football field.[5]

The increasing size of wind turbines is one of the primary reasons to place them offshore where visual impacts can be minimized. In addition to the aesthetic justification of minimizing visual impact of wind turbines, there are several resource-related reasons for placing wind turbines offshore. The commercial exploitation of wind energy requires sustained wind speeds of 7m/s or greater. While this wind speed is typically encountered in limited terrestrial locations, it is common to have consistent, strong winds offshore. Therefore, wind energy developments placed offshore will be able to generate electricity more reliably and at a lower cost. Another advantage to placing wind turbines in the ocean is the lower surface roughness of the water creates a smoother and more consistent wind regime.

Despite the benefits of offshore wind energy, development has been limited by the high cost of turbine installation. The primary factor that increases the cost of turbine installation offshore is the construction of a foundation for the wind turbine. Currently, there are three types of foundations that can be used to secure offshore wind turbines: monopile, gravity cassion, and multiple pile. A monopile is a single pole, typically about 5m in diameter, that is driven into the seabed. Monopiles cannot be used in water deeper than 25-30m because of limitations on the ability of the monopile to withstand the forces of waves and currents.[6] A gravity cassion is a hollow concrete foundation that is floated

---

[4] *Id* at 18.
[5] Swept area is the area through which the blades of the turbine travel. American Wind Energy Association Frequently Asked Questions, *Available at* http://www.awea.org/faq/windpower.html (Last accessed 10 Feb. 2006).
[6] Nic Flemming, *Crunch Time Looms for Offshore Wind Power*, 190 New Scientist, Dec. 6 – Dec. 12 2003, 30, at 30.

to the installation site and then filled with gravel and sand. The installation of a gravity cassion foundation requires that the seabed be prepared by divers. Gravity cassion foundations also require the installation of erosion protection around the foundation. Because of these limitations, gravity cassion foundations are too expensive to use in waters deeper than 10m.[7] A multiple pile foundation is a tripod structure similar to the foundation of an oil rig. Currently, the cost and structural integrity of foundations are the primary limitation in expanding wind energy development into deeper waters. In an attempt to overcome these limitations, moored foundations for floating wind turbines are in development. However, until floating turbines become readily available, offshore wind energy development is limited to shallow coastal areas with sustained wind speeds of 7m/s or greater. Thus, nations with long, wide, and shallow continental shelves, such as the East Coast of the US, are in the best position to develop offshore wind energy.

The United States possesses some of the world's best offshore wind resources. In fact, it has been estimated that there may be 900GW of offshore wind energy potential in the US.[8] Much of this wind resource is located on the East Coast of the US in close proximity to major cities with high electricity demands. Thus, the expansion of offshore wind energy in the United States could be an important part of a strategy to ensure the availability of a reliable, secure energy supply.

Costs and Benefits of Offshore Wind Installation

Energy security has been an important consideration in the development of offshore wind energy in Europe. Denmark's wind energy program began in response to

[7] *Id*
[8] Willett Kempton, Jeremy Firestone, Jonathan Lilley, Tracy Rouleau, and Phillip Whitaker, *The Offshore Wind Power Debate: Views from Cape Cod*, 33 Coastal Management, 119, 119 (2005).

the oil crisis of the 1970s, and was based on the realization that economic security in the twenty-first century requires a reliable energy supply that is not susceptible to price shocks.[9] The summer of 2005 was marked by several severe hurricanes in the Gulf of Mexico. These hurricanes and the resulting fuel shortages highlighted the vulnerability of the US domestic energy supply, which is overly dependent on a single region of the country. In the aftermath of Hurricane Katrina, the oil industry and its petroleum dependent partners pushed Congress to open areas of the Outer Continental Shelf outside of the Gulf of Mexico and Alaska to oil and gas exploration.[10] The oil industry argued that new exploration in other regions was necessary to increase domestic energy security through regional diversification of energy production. While regional diversification of energy production is essential to the security of the US energy supply, many residents of coastal states are strongly opposed to oil and gas extraction in their regions. Additionally, some areas, including much of the East Coast, do not possess significant offshore oil and gas resources. Therefore, these regions are better suited to enhance their energy security by looking to the development of renewable energy sources including offshore wind energy.

In addition to increasing energy security, wind energy offers a number of important environmental benefits. Wind generated electricity produces no emissions and has little or no associated social cost.[11] Therefore, wind energy can be an important component of a global strategy to reduce carbon dioxide emissions in response to the threat of global climate change. This priority is clearly visible in Northern Europe, where

[9] Sved Auken, *Answers in the Wind: How Denmark Became a World Leader in Wind Power*, 26 Fletcher F. World F.149, 150 (2002).
[10] Letter from American Gas Association to Representative Dennis Hastert, Speaker of the House (Sept. 8, 2005) (on file with author).
[11] International Energy Agency, Renewables for Power Generation Status & Prospects, 158 (OECD 2003).

the aggressive expansion of offshore wind energy is considered to be a critical element in meeting national obligations under the Kyoto Protocol.[12] As a zero-emissions technology, wind generated energy is also free from emissions of a number of significant pollutants including SO_x and NO_x. These conventional air pollutants have been implicated in a number of health and environmental quality problems. Therefore, the expansion of wind energy will lead to an improvement in air quality and reduce environmentally-related health problems. These benefits could be especially important in the Northeast US, an area that is in non-attainment under the Clean Air Act's National Ambient Air Quality Standards.[13]

Wind energy has always had the potential to provide these benefits, but the high cost of wind energy generation in the early stages of development and the fact that these benefits will not result in profits for the investor hindered development. However, recent advances in wind energy generation have made wind highly cost competitive. Table 1 shows the American Wind Energy Association's comparison of the cost of wind energy to conventional energy sources in 1996. Offshore wind turbines are expected to generate electricity for 5.4 – 5.9 cents/KWh,[14] and this cost will decrease as advances in technology produce larger, more efficient turbines and less expensive foundations. In addition to advances in wind energy technology, increasing fossil fuel prices will serve to

[12] All EU member states have committed to an 8% reduction in CO_2 emissions in the period 2008-2012. United Nations Framework Convention on Climate Change, *Essential Background Kyoto Protocol*, *Available at* http://unfccc.int/essential_background/kyoto_protocol/items/3145.php (last visited Feb. 10, 2006).

[13] NAAQs are federally determined standards for air quality. States not meeting the NAAQs are subject to a number of federal restrictions including strict emission standards for new factories and other stationary sources of air pollution and state inspection and monitoring programs for vehicle emissions. Robert V. Percival *et al.*, Environmental Regulation Law, Science, and Policy 496 (Erwin Chemerinsky *et al.* eds., Aspen Publishers 2003).

[14] Robert Y. Redlinger, Per Dannemand Andersen, and Poul Erik Morthorst, Wind Energy in the 21st Century: Economics, Policy, Technology and the Changing Electricity Industry 81 (2002).

make wind energy more cost-competitive. In fact, the American Wind Energy Association predicts that wind-generated energy, the cheapest source of renewable energy, will become the cheapest source of energy in the United States in the next ten years.[15]

Table 1: Comparison of cost of different energy sources[16]

Fuel	**Levelized Cost (cents/KWh) 1996**
Coal	4.8 – 5.5
Gas	3.9 – 4.4
Hydro	5.1 – 11.3
Biomass	5.8 – 11.6
Nuclear	11.1 – 14.5
Wind	3.3 – 6.0

As described above, the benefits of offshore wind energy development are numerous and far-reaching. However, offshore wind energy development has a number of significant costs. The economic costs of offshore wind energy development have already been addressed and are not the focus of this analysis as they are rapidly decreasing and no longer prohibitive to offshore wind energy development. The major impacts of offshore wind energy development are local and primarily aesthetic.[17] This has been clearly demonstrated by the rancorous debate over the Cape Wind Project, where opposition has largely been driven by viewshed concerns.

While aesthetic impacts may be the primary concern of many opponents of offshore wind development, there are a number of potential environmental impacts that have yet to be fully quantified. These include bottom disturbance during turbine

[15] AWEA fact sheet at http://www.awea.org/pubs/factsheets/Cost2001.PDF (last visited Jan. 15, 2006).
[16] *Id.*
[17] Redlinger *et al.*, *supra* note 14 at 163.

installation, noise, electromagnetic fields from submerged power lines, scour around installations leading to change in coastal processes, and avian impacts.

The most commonly voiced concern over the installation of offshore wind turbines is the potential for avian impacts.[18] Early terrestrial wind farm developments, which involved large numbers of small turbines with fast-moving blades, presented significant threats to bird populations, particularly when siting decisions did not account for the migratory routes of birds. Among the most infamous of these projects were the Altamont Pass wind farm in California and Tenerife in Spain. The massive mortality of raptors at these sites has created a long-standing association of wind farms with increased avian mortality. While these are important concerns, they are not directly applicable to offshore wind farms because offshore wind farms employ larger, slower turbines and if not sited in major avian flyways present a substantially reduced risk of collision.[19]

However, it would be inaccurate to claim that offshore wind farms are free from avian impacts. Potential impacts on bird populations include collision with turbines, long term habitat loss due to disturbance and barrier effects, and short term habitat loss during construction.[20] These impacts are likely to be species specific,[21] and some researchers believe that they may be more severe at offshore wind farms.[22] Others argue that while

---

[18] *See, e.g.,* Willett Kempton, Jeremy Firestone, Jonathan Lilley, Tracy Rouleau, and Phillip Whitaker, *The Offshore Wind Power Debate: Views from Cape Cod*, 33 Coastal Management, 119, 119 (2005). And Alliance to Protect Nantucket Sound, Cape Wind: Concerns: Environment, http://www.saveoursound.org/Cape/ConcernsEnvironment.aspx (last visited Feb. 10, 2006).

[19] Capewind.org, Frequently Asked Questions- Cape Wind and the Environment, http://www.capewind.org/FAQ-Category8-Cape+Wind+and+the+Environment-Parent0-myfaq-yes.htm#43 (last visited Feb. 10, 2006).

[20] Klaus-Michael Exo *et al.*, *Birds and Offshore Wind Farms: a Hot Topic in Marine Ecology*, 100 Wader Study Group Bull. 50, 50-53 (2003) (Review of potential impacts of offshore wind farms on birds).

[21] RHW Langston & JD Pullan, Windfarms and Birds: An analysis of the effects of windfarms on birds and guidance on environmental assessment criteria and site selection issues 2 (Council of Europe Directorate of Cultural and Natural Heritage 2002) *available at* http://www.offshorewindenergy.org/ (follow "reports" hyperlink; then follow "search"; select "Birds" under Environmental heading).

[22] *id*

more research is needed, the impact of offshore wind farms on bird populations is likely to be small.[23] Due to the fact that impacts are likely to be species specific, each potential wind farm site will need to be carefully evaluated. Even if collision rates are projected to be low, if a bird population is already threatened, the small increase in mortality from turbine collisions may be too much for the population and thus block wind farm installation.[24] While impacts on bird populations must be carefully considered in evaluating the impacts of wind farms, there is no current evidence that collisions with turbines will present major conservation problems.[25] Furthermore, the relative impacts on bird populations of habitat loss and collision due to wind farms must be weighed against the impact of habitat loss due to climate change that will occur from continued dependence on carbon-based fuels.[26]

The installation of wind turbine foundations can be highly disruptive. Monopile foundations are driven directly into the seabed and this installation has the potential to negatively impact benthic communities. Additionally, wind turbines require submerged transmission lines to carry electricity back to shore. In order to avoid damage to the power lines, they must be buried six to ten feet under the sediment. Cables are commonly buried using jet trenching, a technique where a high powered jet of water is used to displace sediment and bury the line. These highly invasive installation techniques

[23]Lars Kjeld Hansen & Hans Christen Sorensen, Environmental Impacts, Social Acceptance, and Politics: A State of the Art Review, http://www.offshorewindenergy.org/ca-owee/indexpages/downloads/Brussels01_Environment.pdf (last visited Feb. 10, 2006).
[24] Langston & Pullan, s*upra* note 21.
[25] Department of Trade and Industry, Assessment of the Effects of Offshore Wind Farms on Birds, 2001, DTI/Pub URN 01/1434, at 27.
[26] Pearce argues that more birds will be impacted by climate change than by wind farm impacts. Fred Pearce, *Sea Birds Might Pay the Price for Green Electricity*, New Scientist May 7 – May 14, 2005, at 10.

may cause significant benthic disturbances and communities may take months or years to recover.[27]

The impact of noise on local marine mammal and fish populations is an important concern with the installation of wind turbines. Noise presents the greatest problem during turbine installation. Studies at the Horns Reef wind farm in Demark indicate that noise levels during turbine installation are sufficient to damage the hearing of local seal populations and conclude that seals will tend to avoid wind farm sites during the installation phase.[28] Thus, the noise of turbine installation may cause temporary habitat loss for marine mammal species. Additionally, wind turbines generate noise when they are operating. Under water, turbines generate noise at a few frequencies between 30 and 800Hz.[29] This noise is less than that created by ship traffic and is expected to have minimal impacts.[30] However, a study completely characterizing the noise and vibrations created by offshore wind turbines will be necessary to understand the full biological impacts of noise.[31]

As previously mentioned, offshore wind farms require submerged power lines to transmit electricity back to shore. These power lines will be buried in the sediment and will emit electromagnetic fields as they transmit power back to shore. A number of electrosenstive marine species, including sharks and rays, use changes in the electromagnetic field to detect prey. Thus, there is the possibility that the

---

[27] Hansen & Sorensen, *supra* note 23
[28] Techwise A/S, Short-term effects of the construction of wind turbines on Harbour Porpoises at Horns Reef, http://www.hornsrev.dk/Miljoeforhold/miljoerapporter/Hornsreef%20porpoises%202002.pdf (last visited Feb. 12, 2006).
[29] Hans Lidell, Utgrunden off-shore wind farm- Measurements of underwater noise, Report 11-00329-03012700, *Available at* http://www.offshorewindenergy.org/ (follow "reports"; then follow "search"; select "Noise/vibration") (last visited Feb. 12, 2006).
[30] *Id.*
[31] Department of Trade and Industry, An Assessment of the Environmental Effects of Offshore Wind Farms, 2000, ETSU W/35/00543/REP, at iv.

electromagnetic fields emitted by submerged power lines will interfere with electrosensitive species' ability to detect prey. However, at this time, there is no conclusive research demonstrating the impact of submerged power lines on electrosensitive species.[32]

Another potential concern with the installation of offshore wind turbines is that scour around wind turbines will alter tidal regimes. This concern appears to be unfounded as far-field models indicate no changes in tidal flows and that coastal processes at the regional level are unlikely to be impacted.[33] Furthermore, the low density of wind turbines means that the effects on tidal currents should be minimal.[34] Most offshore installations protect against scour by installing mats, rock piles, and other devices that limit sediment movement.[35] These erosion control structures can actually add to the environmental benefits of offshore wind turbines by creating a network of artificial reefs.[36]

One of the most contested potential impacts of offshore wind farm installations is their potential impact on fish populations. Many fishing groups in the US have opposed the installation of offshore wind farms because they fear that loss of access to the wind farm area will result in decreased fish yields.[37] While reducing the available fishing grounds may reduce fish yields in the short run, there are reasons to believe that offshore

---

[32] Countryside Council for Whales, The potential effects of electromagnetic cabling between offshore wind turbines upon Elasmobranch Fishes, 2001, WHQ/70/2000-01, at 5.
[33]Department of Trade and Industry, Potential Effects of Offshore Wind Developments on Coastal Processes, 2002, ETSU W/35/00596/00/REP, at 31.
[34] The Marine Institute, Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment, 2000, *Available at* http://www.marine.ie/industry+services/technology/renewable+energy/assesment+of+impact+of+offshore+wind+energy+structures.pdf (last visited Feb. 12, 2006).
[35] *Id*
[36] Artificial reefs have been shown to enhance the yields of many commercially and recreationally important fish species.
[37] *See* Ten Taxpayer Citizen Group v. Cape Wind Associates L.L.C., 373F.3d 183, (1st Cir. 2004).

wind farms may ultimately be beneficial to fish populations. In most offshore wind farms, the spacing of turbines will be such that commercial fishing operations, particularly trawlers, will be excluded from the wind farm area.[38] Therefore, the benthic community in this area will be relatively undisturbed following installation. This may be of particular significance in areas such as the Gulf of Maine where a site may be trawled several hundred times in one year.[39] If access to the wind farm site by recreational fishermen is also limited, the wind farm will become a de facto marine reserve. The presence of these de facto reserves is likely to increase fishing yields.[40]

Even if recreational fishermen are allowed to fish inside wind farm areas, the wind farms still have the potential to enhance fish populations both because of the exclusion of frequent disturbances by commercial fishing gear and because of the artificial reef properties of the turbine foundations and scour control structures. Artificial reefs have been shown to enhance fish yields and are believed to increase populations of commercially and recreationally important species by enhancing both habitat complexity and food availability.[41]

The access concerns of fishermen raise another important issue that must be considered: according to the Public Trust Doctrine, the Outer Continental Shelf (OCS) is held by the federal government in trust for the people of the United States. Therefore, the

---

[38] The Marine Institute, s*upra* note 34, at ii.
[39] *Id.*
[40] For experimental evidence of reserves enhancing fish yields *see, e.g.* Gary Russ *et al., Marine Reserves Benefit Local Fisheries*, 14 Ecol. App. 597, 597-606 (2004) (discussing evidence of spillover of fish from the Apo Island marine reserve in the Philippines) and Callum Roberts *et al.*, *Effects of Marine Reserves on Adjacent Fisheries*, 294 Science, 1920, 1920-1923 (2001) (discussing evidence for spillover in St. Lucia and increase in world-record sized fish in Merritt Island Florida as evidence for spillover from reserves).
[41] *See, e.g.* James A. Bohnsack and David L. Sutherland, *Artificial Reef Research: a Review with Recommendations for Future Priorities*, 37 Bull. Mar. Sci. 11, 11-39 (1985) and Frank Stimele *et al.*, *Benthic Macrofauna Productivity Enhancement by an Artificial Reef in Delaware Bay, USA*, 59 ICES J. Mar. Sci. S100, S100-S105 (2002).

federal government has the obligation to manage the OCS and its associated resources in the manner that best serves all of the American people. This is becoming an increasingly challenging proposition with more users competing for OCS space, and has led to numerous proposals for ocean zoning.[42] In considering the potential impacts of wind farm installation, it is necessary to evaluate all use and non-use values of the OCS including fishing, sailing, and the value of having undisturbed areas in the ocean. The following chapters will explore the complexities of introducing renewable energy as a competing use of the OCS and consider ways that offshore renewable energy development can best balance the concerns of multiple user groups.

[42] *See* United States Commission on Ocean Policy, *An Ocean Blueprint for the 21st Century*, Final Report (2004), and Pew Oceans Commission, *America's Living Oceans: Charting a Course for Sea Change*, (2004).

History of Energy Activities on the Outer Continental Shelf

Evolution of US Territorial Claims

Under the Energy Policy Act of 2005, the Minerals Management Service (MMS) has been given the authority to regulate offshore renewable energy projects.[1] In order to fully understand the approach that MMS may take to regulating offshore renewable energy projects it is important to examine the historical uses of the Outer Continental Shelf (OCS) for energy purposes and the legal framework used to govern the exploitation of conventional energy sources on the Outer Continental Shelf. This chapter will trace the development of a legal regime for oil and gas extraction on the Outer Continental Shelf with particular focus on the role of federalism in determining the management structure for offshore energy exploitation.

The first claim of ocean territory was made by the US in 1793 by Secretary of State, Thomas Jefferson. The United States claimed a three nautical mile territorial sea. This distance was determined by what is commonly known as the cannon shot rule: the typical distance that a cannon firing from land could reach was three nautical miles. Other nations quickly followed suit, and the three nautical mile territorial sea became a part of international common law. This claim of territory was followed in 1945 by the Truman Proclamation which claimed all resources on the Outer Continental Shelf seabed and subsoils to be the property of the United States. In 1982, the United Nations Convention on the Law of the Sea (UNCLOS) recognized that each nation has control a 200 nautical mile Exclusive Economic Zone (EEZ). Although the United Stated did not ratify UNCLOS, it has accepted many of UNCLOS' provisions, including the EEZ as

[1] §388 of the Conference Report on the Domenici Barton Energy Policy Act of 2005 (H.R. Rep. No. 109-190 at 381 (2005)).

international common law. The extension of US territory to the 200 nautical mile EEZ was through a Presidential Proclamation made by Ronald Reagan in 1983.[2] As such, the United States now controls and ocean territory 1.25 times the size of US territory on land.[3]

The Outer Continental Shelf of the United States contains the country's largest domestic reserve of oil and gas,[4] with particularly rich resources in the Gulf of Mexico and Alaska. The first efforts to exploit these resources were conducted by the coastal states with oil leases issued by California in 1921, Texas in 1926, and Louisiana in 1938. Traditionally, coastal states had been granted jurisdiction over the first three nautical miles of the US territorial sea, and claimed that this included the resources of the seabed and the subsoils. After World War II when technology to extract oil beyond three nautical miles became available, the federal government attempted to claim offshore lands. The Truman Proclamation, which claimed federal jurisdiction over all resources of the seabed and the subsoil, formed the basis of the government's claims against coastal states. In a series of cases known as the Tidelands Controversy, the federal government sued coastal states claiming title to all lands below the mean low water mark.

The first of these cases was *United States v. California*.[5] In *United States v. California* the federal government sued the state of California the Supreme Court challenging California's title to lands within three nautical miles of the coast. The Court held that the federal government's sovereign interests in navigation, national defense, international affairs, and commerce took precedence in offshore lands below the low

[2] Proc. 5030, 48FR 10605 (March 10, 1983).
[3] Pew Oceans Commission, *America's Living Oceans: Charting a Course for Sea Change*, (2004).
[4] Edward A. Fitzgerald, The Seaweed Rebellion Federal-State Conflicts over Offshore Energy Development 1 (Lexington Books 2001).
[5] 322 US 19 (1947). Hereinafter *California*

water mark and that these interests included resources below the low water mark[6]. With this ruling, the Supreme Court effectively extinguished all state's rights to exploit marine energy resources.

Despite the ruling in *United States v. California*, Louisiana and Texas continued leasing activities in the Gulf of Mexico. In 1938, nine years prior to the ruling in *California,* Louisiana claimed a 27 nautical mile territorial sea, and began issuing leases in this area.[7] Louisiana continued to claim jurisdiction over the land and issued leases after the ruling in *United States v. California*. Consequently, in 1950, the federal government sued the state of Louisiana for trespass in violation of the rights of the United States and asked Louisiana to repay all royalties collected from offshore leasing activities conducted after the ruling in *United States v. California*.[8] In *United States v. Louisiana* the court held that Louisiana similarly lacked sovereignty over the resources of the seabed and subsoils and therefore could not issue leases for oil extraction.[9] Furthermore, the court found that the United States was entitled to the requested relief and Louisiana must pay back all royalties collected after the ruling in *United States v. California*.[10]

The final step in obtaining complete federal control over all submerged oil and gas resources was determined in *United States v. Texas*. In both *Louisiana* and *California* the state's claim to territory was based on the equal footing clause of the Constitution and the fact that the original colonies had been granted a three nautical mile territorial sea.[11] In 1947, Texas claimed title over all submerged lands on the continental shelf claiming

---

[6] *Id.*
[7] Fitzgerald, *supra* note 4, at 31.
[8] *United States v. Louisiana*, 399 U.S. 699 (1950). Hereinafter *Louisiana.*
[9] *Id.*
[10] *Louisiana*, *supra* note 8.
[11] *California*, *supra* note 5.

that it had surrendered only *imperium* and not *dominion* over the Outer Continental Shelf when it entered the Union.[12] Texas contended that as part of the agreement under which it entered the Union its rights to all natural resources both in the state and Gulf of Mexico remained intact.[13] The Court held that the equal footing clause applied in the same way in *Texas* as it did in *Louisiana* and *California* and ruled that in this case *dominion* and *imperium* were neither separable nor separate and that Texas did not have the rights to conduct leases of offshore oil extraction.[14] Thus, the rulings in the cases eliminated any claims that states may have made to resources below the low water mark.

Federal Laws Governing the Outer Continental Shelf

In response to these cases, Congress enacted the Submerged Lands Act (SLA) in 1953. The Submerged Lands Act grants coastal states title to offshore lands within their historic boundaries[15] and rights to the natural resources contained in these lands.[16] This was an unconditional grant of territory from the federal government to the states. At the same time, the SLA claimed all lands from 3 to 200nm to be the exclusive territory of the federal government of the United States.[17]

To establish a regulatory structure for the leasing of federal lands for oil and gas extraction, Congress also passed the Outer Continental Shelf Lands Act (OCSLA) in 1953. The Outer Continental Shelf Lands Act extended the jurisdiction of the United States and its laws to the OCS and established a minimal framework for oil and gas

[12] *United States v. Texas* 339 U.S. 707 (1950). Hereinafter *Texas.*
[13] *Id.*
[14] *Texas*, *supra* note 12.
[15] Note- This is why Texas and Florida (in the GOM) retain jurisdiction out to 9nm.
[16] 43 U.S.C. §1311(a)(2002).
[17] *Id* at §§1331-1332.

leasing.[18] In its original form, the OCSLA gave the Secretary of the Interior broad discretionary authority over how leasing on the OCS was to be conducted.[19]

Growing concerns over the environmental impacts of oil and gas extraction led to the inclusion of state commenting authority and the Coastal Energy Impact Assistance Program under the Coastal Zone Management Act (CZMA) of 1972.[20] The Coastal Zone Management Act gives coastal states federal funding to prepare a Coastal Zone Management Plan (CZMP). Once a state's coastal zone management plan has been approved by the Secretary of Commerce, all federal actions directly affecting a state's coastal zone are required to be consistent with the state's CZMP.[21] This gives the states some input into offshore leasing activity as they are able to comment on proposed leasing activities directly affecting the coastal zone. However, this power is limited because the Secretary of the Interior can override any state objection to leasing activities under OCSLA in the interests of national security.[22] In addition to the ability to comment, the CZMA created the Coastal Energy Impact Assistance Program to redistribute some of the revenues from oil and gas leasing to help states deal with the environmental consequences of offshore oil and gas exploration.[23]

On January 28, 1969, eight days after President Nixon took office, an oil rig in the Santa Barbara Channel blew out, spilling thousands of barrels of oil.[24] The Santa Barbara spill raised public consciousness of the potential environmental impacts of oil extraction. At the same time, in response to the energy crisis, the Nixon administration pushed to

[18] 43 U.S.C. §§1331 et. seq.
[19] Fitzgerald, *supra* note 4, at 34.
[20] 16 U.S.C. §§1451 et. seq.
[21] *Id* at §1456(c).
[22] 16 U.S.C. §1456 (c)(3)(B)(iii).
[23] *supra* note 20 at §1456(a).
[24] Fitzgerald, *supra* note 4 at 57.

open up large new areas of the Outer Continental Shelf for oil and gas leasing. This attempt to greatly expand Outer Continental Shelf leasing was repeatedly challenged in court in a series of lawsuits filed under the National Environmental Policy Act (NEPA).

The National Environmental Policy Act, passed in 1969, requires federal agencies to examine the possible environmental impacts of any major federal action significantly effecting the human environment.[25] NEPA is a purely procedural law: it requires that agencies examine the environmental impacts of their actions but does not mandate that they select a particular alternative or forbid actions with particularly severe environmental impacts. As NEPA is a procedural statute, citizens are able to sue federal agencies for failing to comply with their statutory duties under the Administrative Procedure Act.[26] Due to the purely procedural requirements of NEPA, the sole duty of the court in a NEPA case is to review if the agency's action complied with the intent of congress in writing the legislation.[27] If the actions of the agency are found to be "arbitrary and capricious",[28] the courts can force the agency to conduct the environmental review process again. However, it must be stressed that the courts cannot force an agency to come to a particular decision. Therefore, a lawsuit under NEPA can delay but not halt a major federal action. In the 1970s with mounting concern over the environmental impacts of oil extraction environmental groups filed a number of lawsuits under NEPA to slow the pace of OCS energy development.

[25] 42 U.S.C. §§4321 et. seq.
[26] 5 U.S.C. §§500 et. seq.
[27] *See* Chevron v. NRDC, 104 S. Ct. 2778 (1984).
[28] *Id.*

One of the first lawsuits related to oil and gas leasing filed under NEPA was *Natural Resources Defense Council Inc. v. Morton.*[29] In response to President Nixon's Message on Energy Supply and Clean Air, Secretary Morton announced a proposed lease sale off the coast of eastern Louisiana in June 1971.[30] In an attempt to halt the lease sale, environmental groups filed suit to enjoin the sale alleging that the Department of the Interior failed to comply with NEPA because it did not consider an appropriate range of alternatives in its environmental impact analysis.[31] The District Court agreed with the conservation groups and issued an injunction on the lease sale. The Department of the Interior requested and was granted an immediate hearing in the circuit court. The D.C. Circuit agreed with the district court and upheld the injunction and the lease sale did not proceed.[32] This case was significant because it demonstrated that the procedural requirements of NEPA could be used to delay a lease sale.[33]

Following the ruling in *NRDC v. Morton*, there were several other challenges to lease sales under NEPA filed by conservation groups. In *Sierra Club v. Morton*,[34] the Sierra Club challenged a lease sale of 147 lease tracts in the Gulf of Mexico on the grounds that the environmental impact statement prepared by the Department of the Interior was inadequate because it did not contain adequate baseline environmental information.[35] The court found that while the initial environmental information may have been inadequate, the final impact statement presented the potential environmental impacts of leasing in a way such that the decision maker would be able to evaluate the

[29] NRDC v. Morton, 458 F.2d 827 (D.C. Cir. 1972).
[30] *Id* at 830.
[31] *Id* at 831.
[32] *Id* at 838.
[33] Fitzgerald, *supra* note 4, at 60.
[34] Sierra Club v. Morton, 510 F.2d 813 (5th Cir. 1975).
[35] *Id* at 818.

consequences of leasing, and therefore the environmental impact statement was adequate.[36] *Sierra Club v. Morton* was the first in a series of unsuccessful challenges to lease sales under NEPA.[37] The lack of successful NEPA challenges after this point was because the Department of the Interior learned how to comply with the procedural requirements of NEPA.[38] However, the lack of successful challenges does not signify that the Department of the Interior improved its environmental performance. In fact, it has been suggested that the success of the Department of the Interior in later cases was because the Department learned how to comply with the procedural requirements of NEPA rather than because the Department had actually changed its operations in response to the environmental evaluation required by NEPA.[39]

As a result of this litigation and increasing concerns over the environmental impacts of oil extraction and the broad discretion given to the Secretary of the Interior in the OCSLA, the OCSLA Amendments were passed in 1978. Congress' major goals in the OCSLA Amendments were to expedite offshore oil and gas development and protect the environment.[40] The OCSLA Amendments required that the Secretary of the Interior develop five year leasing plans describing the size, timing, and location of any proposed leases and that studies on the impacts of OCS energy activities on the environment be conducted in these areas.[41] Most importantly, the OCSLA Amendments separated the OCS leasing process into four distinct phases: preparation of the five year leasing plan,

[36] *Id*.
[37] Fitzgerald, *supra* note 4, at 61.
[38] *Id*.
[39] *Id.*
[40] Biliana Cicin-Sain & Robert W. Knecht, The Future of U.S. Ocean Policy 85 (Island Press 2000).
[41] *Id* at 84.

lease sales, exploration, and development.[42] Separate approvals and environmental impact statements were also required for the exploration and development phases.[43]

In 1982, the Minerals Management Service was established to consolidate the Department of the Interior's OCS functions. The Offshore Minerals Management Program was designed to improve accountability and more effectively enable the Department of the Interior to balance the need for environmental protection with security concerns.[44]

In the 1980s, the Reagan administration pushed aggressively for the expansion of OCS leasing and began offering much larger tracts of land for sale. This move was highly controversial and in response, Congress began to institute leasing moratoria. The first moratorium on oil and gas leasing was established in 1981 for the California coast.[45] In 1984, the Congress extended the moratorium to ban all leases in California, the North Atlantic, and off of the Eastern Gulf of Florida through an appropriations bill.[46] Congress prevented leasing in these areas by not allocating any funding to the department of the interior for leasing activities in the areas it wanted to place under a moratorium. In addition to zero-budgeting leasing activities, Congress imposed moratoria through legislation that directly prohibited the Secretary of the Interior from conducting lease sales in certain areas.[47]

---

[42] *Id* at 86.
[43] *Id.*
[44] *Id.*
[45] Fitzgerald, *supra* note 4 at 84.
[46] *Id* at 101.
[47] *See, e.g.* the Outer Banks Protection Act, 43 U.S.C. §2753 (1990), *repealed by* Omnibus Consolidated Recessions and Appropriation Act of 1996. Although this law has since been repealed, it is an example of the ability of Congress to enact leasing moratoria. The right of Congress to enact such moratoria comes from its power under the Property Clause of the U.S. Constitution as the only Governmental body that may grant authority to hand over title to federal lands.

Starting with the Bush administration in 1990, the executive branch also became involved in the creation of leasing moratoria. In 1990, President Bush cancelled pending lease sales off of California and southwest Florida as well as leases that had already been issued on Georges Bank and off of Washington and Oregon. President Bush banned all leasing in these areas until the year 2000. In an attempt to limit the extent of offshore leasing due to environmental concerns, the President also pushed for the cancellation and buyback of leases off of the southwest coast of Florida. Congress passed the necessary legislation for the cancellation and buyback of the leases and also included the Aleutian Basin and North Carolina in its moratoria.[48]

President Clinton continued this trend of moratoria and conservative development of the OCS by extending President Bush's moratoria to 2012. President Clinton also restricted oil and gas development to the Gulf of Mexico and Alaska. These moratoria have been important in protecting vulnerable coastlines and marine resources. However, the current President Bush has done nothing to extend these moratoria so they are set to expire in six years. Furthermore, the Energy Policy Act of 2005 called for a comprehensive inventory of all oil and gas resources on the OCS, which indicates that portions of the OCS currently subject to moratoria may be offered for leasing after the moratoria expire in 2012.

Explanation of the Oil and Gas Leasing System

The current leasing system for offshore oil and gas extraction is conducted under the authority of the Secretary of the Interior through the Minerals Management Service. The Secretary of the Interior may offer for leasing any portions of the Outer Continental

[48] Fitzgerald, *supra* note 4, at 223

Shelf that have not been placed under moratorium by the President or Congress. The Secretary is required to create a five year leasing plan, outlining areas that will be offered for leasing.[49] As part of the five year plan, the Secretary is required to write an Environmental Impact Statement (EIS). After the five year plan has been created, the Secretary will offer specific tracts of land for sale. A notice of proposed leasing will be published in the federal register listing lease blocks that may be offered for sale and soliciting interest from potential lessees. The notice of proposed leasing will also be subject to public comment and environmental review. After the public comment and environmental review, the final notice of leasing is published in the federal register and sealed bidding for lease tracts begins.[50]

At the end of the bidding period, the Secretary of the Interior will award leases to the highest bidder. These leases will give the lessee the right to explore and exploit any resources in the leased tract for five years. In the case where deepwater extraction or other new technologies are being promoted, the Secretary may extend the period of the lease for up to ten years.[51] Prior to beginning any exploration activities, a lease holder must submit an exploration plan to the Secretary for approval.[52] The exploration plan must include a schedule of anticipated exploration activities, a description of the equipment to be used for exploration activities, the general location of each well to be drilled, and any other information deemed pertinent by the Secretary.[53] If oil and gas are found the lessee must submit a production plan to the Secretary for approval before

[49] 43 U.S.C. §1334.
[50] Based on the outcome of public comment and environmental review, certain lease blocks can be removed from the offering.
[51] 43 U.S.C. §1337 (b)(2)(B).
[52] 43 U.S.C. §1338 (2)(c)(1).
[53] 43 U.S.C. §1338(3)(A-D).

exploration commences.[54] The required elements of the production plan are the specific work to be performed, description of all facilities and operations located on the OCS that are proposed by the lessee or known to him that are directly related to production, environmental safeguards to be implemented, safety standards, expected rate of development and production, and any other relevant information that the secretary may require.[55] In addition to Secretarial approval of the exploration and production plans, the lessee must obtain permits from the U.S. Army Corps of Engineers under §10 of the Rivers and Harbors Act for any installations on the Outer Continental Shelf.[56] If successful commercial production commences, the lessee is required to pay royalties to the federal government. Royalties must be at least 12.5% of the value of production, but may be at a higher rate as negotiated by the Secretary.[57]

Revisiting Federalism and the Coastal Zone Management Act

The tidelands controversy and subsequent laws dividing jurisdiction between the state and federal government is an important example of federalism in the United States. The decisions in *California*, *Louisiana,* and *Texas* clearly assert the power of the federal government over all submerged resources. However, Congress, whose members represent individual states, did grant three nautical miles of jurisdiction to the coastal states.

In addition to jurisdiction over the first three nautical miles of submerged lands, states can also exert influence over offshore oil and gas extraction in federal waters

[54] 43 U.S.C. §1450 (a)(1).
[55] 43 U.S.C. §1450(c)(1-6).
[56] 43 U.S.C. §1333.
[57] 43 U.S.C. §1336(a)(1)(A).

through the consistency provisions of the Coastal Zone Management Act.[58] However, these provisions are of limited utility in the assertion of state's preferences in environmental management because the Secretary of the Interior may override the objections of the coastal state if it is in the interests of national security.[59] The Secretary of the Interior would also have grounds to issue leases under the provisions of the Commerce Clause that do not allow an individual state to take actions in its own interest if these actions are harmful to the interest of the nation.[60] However, states may also have the ability to limit oil and gas production and exploration in the adjacent coastal zone by refusing to permit supporting structures such as pipelines, landing facilities, and refineries under state jurisdiction.

An additional product of federalism and the conflict over federal and state resource rights is the 8(g) zone. Section 8(g) of the Outer Continental Shelf Lands Act created a three nautical mile zone beyond the boundary between state and federal waters that is commonly referred to as the 8(g) zone.[61] The 8(g) zone was established in recognition of the fact that federally issued resources in this area may draw upon resources that extend into state territory. In order to ensure that states are not denied resource revenues that are due to them, all revenues from oil and gas extracted in the 8(g) zone are shared between the adjacent coastal state and the federal government. For all leases that lie wholly or partially in the 8(g) zone, the Secretary must create a separate account in which to deposit the royalties from these leases in a percentage equivalent to

[58] 16 U.S.C. §1456 (c).
[59] *Id* at (3)(B)(iii).
[60] *See*, California v. Norton, F.3d 1162, (9th Cir 2002).
[61] 43 U.S.C. §1336(g)(1).

the percent of the lease that lies within the 8(g) zone.[62] The adjacent coastal state is entitled to 27% of the royalties deposited in this shared account.[63]

The Energy Policy Act of 2005 contained new provisions to further compensate states for the potential impacts of OCS energy activities adjacent to state waters. The Coastal Impact Assistance Program was reauthorized and expanded to increase the incentives for coastal states in order to facilitate extraction on the adjacent OCS. The new amendments to the Coastal Impact Assistance Program require that the Secretary disburse $250,000,000 a year from 2007 to 2010 to any coastal state that has production activities within 200 miles of its coastline.[64] Such revenue sharing is intended to encourage coastal states to support oil and gas extraction and ensure that they have the financial resources to deal with the negative impacts of oil and gas extraction. However, the program has come under fire from environmental groups because the funds are not earmarked for coastal protection activities.[65]

This chapter has addressed the history of Outer Continental Shelf management for energy extraction in the United States. The current system is highly effective in meeting its goals of careful planning of OCS energy developments and ensuring that the federal government is adequately compensated for the use of public resources. In administering this system, the Minerals Management Service has developed a high level of expertise in administering offshore energy developments. The history of OCS activities highlights the role that environmental concerns and federal-state cooperation have played in shaping the current federal management regime for offshore energy activities.

---

[62] 43 U.S.C. §1336(g)(2).
[63] 43 U.S.C. §1336(g)(2).
[64] Energy Policy Act §31(b)(1) (2005).
[65] M. Duval, personal communication.

Wind Energy Developments in the United States

Prior to the passage of the Energy Policy Act of 2005, the Secretary of the Interior did not have the authority to regulate the development of offshore renewable energy projects. This chapter will review proposals for offshore wind energy development in the US and trace the legal battle over the Cape Wind Project that led to expansion of the Secretary of the Interior's authority to include offshore renewable energy projects. This chapter will also examine the Galveston Offshore Wind Project in Texas state waters as a potential example of what the federal regulatory structure for offshore wind energy might look like.

Proposed Offshore Wind Developments in the United States

The first offshore wind farm to be proposed in the United States was the Cape Wind Project. The Cape Wind Project is headed by a private company that has previous experience investing in other power producing projects. The project proposes to install 130 turbines on Horseshoe Shoal off the coast of Nantucket. The turbines will each stand 417 ft. high and have blades that are 171ft. long.[1] The project is expected to have an average power output of 170MW, which is equal to nearly 75% of the total electricity demand for Cape Cod.[2] The Cape Wind Project is located in an area that is entirely under federal jurisdiction: the closest turbine will be approximately 5 nautical miles from shore. For most residents of Cape Cod, Cape Wind estimates that the turbines will be barley

[1] U.S. Army Corps of Engineers, Cape Wind Draft Environmental Impact Statement. 1-4, *available at* http://www.nae.usace.army.mil/projects/ma/ccwf/deis.htm (last visited Jul. 25, 2005).
[2] Cape Wind Associates, Project at a Glance, http://www.capewind.org/article24.htm (last visited Jul. 1, 2005).

visible as white lines on the horizon.[3] Despite this minimal viewshed impact, the Cape Wind Project has been a source of great controversy among residents. The permitting of the Cape Wind Project, the first of its kind in the US, has stood at the center of a debate over how non-traditional uses of the Outer Continental Shelf should be reviewed and permitted.

The Long Island Offshore Wind Initiative is a public coalition of "environmental, civic, health, & faith-based groups" that are working with the Long Island Power Authority to bring offshore wind development to Long Island Sound.[4] The proposed Long Island Offshore Wind Park will have 40 turbines that are projected to generate 140MW of electricity.[5] The Long Island Offshore Wind Initiative differs from the Cape Wind Project in that it is a community-based project being developed with the support of local residents.

The Galveston Offshore Wind Project is likely to be the first offshore wind farm in the United States. The Galveston project has the advantage of lying within Texas' extended state jurisdiction, and as such is subject to a different permitting process than offshore wind projects in federal waters. The developers of the Galveston project, Galveston Offshore L.L.C., have obtained an 11,355 acre lease seven miles off of Galveston for a proposed wind farm development.[6]

---

[3]Cape Wind Associates, Project Siting and Visual Simulations, http://www.capewind.org/article7.htm (last visited Nov. 13, 2005).
[4]Long Island Offshore Wind Initiative, About LIOWI, http://www.lioffshorewindenergy.org/aboutus.html (last visited Aug. 2, 2005).
[5] Long Island Offshore Wind Initiative, The Long Island Offshore Wind Park: The Future is Now!, http://www.lioffshorewindenergy.org/index.php? (last visited Aug, 2, 2005)
[6]State of Texas, Wind Lease WL-000002, (2005) (on file with author).

Cape Wind and the Need for a Federal Structure to Regulate Offshore Wind

Prior to the Energy Policy Act of 2005, the Outer Continental Shelf Lands Act limited the Secretary of the Interior's authority over Outer Continental Shelf Activities to mineral extraction, which is commonly understood to mean oil, gas, sand, and gravel.[7] As offshore wind energy developments do not fall under this definition, the Secretary of the Interior had no authority to issue permits for offshore wind energy projects at the time that the Cape Wind Project began to seek federal permits for development.

As the Secretary of the Interior did not possess any relevant authority, Cape Wind went directly to the Army Corps of Engineers seeking permits under §10 of the Rivers and Harbors Act.[8] Cape Wind applied for two separate permits: one for a meteorological data collection tower to characterize the wind regime at the proposed site and one for the wind farm itself. After conducting an Environmental Assessment for the meteorological tower, the Army Corps issued a finding of no significant impact and granted Cape Wind a permit to construct the tower.[9]

The development of the Cape Wind project has been subject to significant opposition by local residents. The most vocal opposition group is the Alliance to Protect Nantucket Sound (Alliance), a group of Cape residents who are primarily concerned about the viewshed and avian impacts of offshore wind development in Nantucket sound.[10] In an effort to stall the Cape Wind Project, the Alliance to Protect Nantucket

[7] Martin and Smith at 296.
[8] Guy R. Martin & Odin A. Smith, *The World's Largest Wind Energy Facility in Nantucket Sound?* 31 B. C. Envtl. Aff. L. Rev. 285, 296 (2004).
[9] *Id* at 286.
[10] Alliance to Protect Nantucket Sound v. U.S. Army Corps of Eng'rs, 288 F. Supp. 2d 64, 69 (D. Mass 2003). Hereinafter Alliance

Sound sued the Army Corps challenging their authority to issue a permit to Cape Wind for the meteorological tower.

The Alliance to Protect Nantucket Sound sued the Army Corps under NEPA and the Administrative Procedure Act (APA) arguing that the permitting of the Cape Wind meteorological tower was arbitrary and capricious.[11] The Alliance challenged the Army Corps' issuance of the Cape Wind Permit on two fronts. First, the Alliance contended that the extension of the Army Corps' §10 authority under the OCSLA was solely for the purposes of permitting structures directly related to minerals extraction.[12] Additionally, the Alliance alleged that even if the Army Corps did have the authority to permit offshore structures that are not directly related to offshore mineral extraction, the Corps has a responsibility to ensure that the applicant has title to the land where the proposed activity will take place.[13] In the case of the Cape Wind Project, such title had not yet been obtained because the Secretary of the Interior lacked the authority to conduct OCS leases for renewable energy activities.

In *Alliance to Protect Nantucket Sound v. United States Department of the Army*, the court ruled that the Corps did in fact have jurisdiction over non-oil and gas related structures on the OCS. The language at issue in OSCLA gives the Corps jurisdiction over:

> All artificial islands and all installations and other devices permanently or temporarily attached to the seabed, which *may be* erected thereon for the purpose of exploring for, developing, or producing resources therefrom.[14]

[11] *See*, Alliance to Protect Nantucket Sound, http://www.saveoursound.org (last visited Jan. 25, 2006).
[12] Alliance, 288 F. Supp. 2d at 67.
[13] *Id* at 67
[14] 43 U.S.C. §1333 (a)(1) (2000), emphasis added.

While many scholars have interpreted this wording to mean that the Army Corps only has jurisdiction over those structures that are erected for oil and gas related purposes, the court's ruling hinged on the phrase "may be", interpreting it to mean "including but not limited to" structures that are related to oil and gas exploration and extraction.[15] Thus the Corps claim of authority over non-oil and gas related activities on the outer continental shelf was upheld.

This ruling was upheld and the question of the Corps authority to issue a permit for activities on land to which the applicant does not have title was addressed by the First Circuit Court of Appeals in *Alliance to Protect Nantucket Sound v. United States Department of the Army*.[16] On the question of the need for a property interest, the court stated that in order for the Corps to issue a §10 permit, the regulation only requires the applicant to affirm that "it possesses or will possess the requisite property interest to undertake the activity proposed in the application."[17] Thus, the court found that the Corps' issuance of a permit was not arbitrary and capricious because the Corps is not actually required to make a determination that the necessary property rights have been obtained prior to issuing a §10 permit under the expanded authority granted by OCSLA.

While the Army Corps' issuance of the permit for Cape Wind withstood legal challenge, this litigation served to highlight the need for a comprehensive regulatory regime to govern offshore wind energy. The most pressing concern was to ensure that a method of granting title to federal lands was developed. The lands of the Outer Continental Shelf are held by the federal government in trust for all residents of the

[15] Alliance, 288 F. Supp. 2d at 75.
[16] Alliance to Protect Nantucket Sound Inc. v. U.S. Dep't of the Army, MA 03-2604 (2005).
[17] *Id.*

United States.[18] Therefore, the federal government has a responsibility under the Public Trust Doctrine to ensure that it is adequately compensated for the use of the public trust resources of the OCS.[19] The need to develop a process of compensation for offshore wind energy development was also underscored by an influx of proposals by companies attempting obtain development rights while the costs of wind farm development did not include leasing expenses.[20]

Congressional Response to the Need for Regulation of OCS Renewables

Recognizing the need for a regulatory structure for offshore wind energy, Congress created the basis for offshore wind energy regulation in the Energy Policy Act of 2005.[21] The Outer Continental Shelf Lands Act was amended to expand the authority of the Secretary of the Interior to include offshore renewable energy projects. The amendment to OCSLA reads:

> (1) "In General – The Secretary in consultation with the Secretary of the Department in which the Coast Guard is operating and other relevant departments and agencies of the Federal Government, may grant a lease, easement, or right-of-way on the outer Continental Shelf for activities not otherwise authorized in this Act, the Deepwater Port Act of 1974 (33 USC 1501 et seq), the Ocean Thermal energy Conservation Act of 1980 (42 USC 9101 et seq), or other applicable law if those activities—
>
> "(C) Produce or support production, transportation, or transmission of energy from sources other than oil and gas."[22]

[18] 43 U.S.C. §1332(3).
[19] Elizabeth A. Ransom, *Wind Power Development on the United States Outer Continental Shelf: Balancing Efficient Development and Environmental Risks in the Shadow of OCSLA* 31 B.C. Envtl. Aff. L. Rev. 465 (2004).
[20] Martin & Smith, *supra* note 8, at 287.
[21] Energy Policy Act of 2005, Pub. L. No. 109-58, (2005).
[22] H.R. Rep. No. 109-190 at 460 (2005) (Conf. Rep.).

The amendments to OSCLA go on to require that the Secretary create a system under which leases will be granted on a competitive basis and that a royalty scheme be created. This new regulatory system must be in place within 270 days of the passage of the Energy Policy Act.[23]

The amendment to the Outer Continental Shelf Lands Act is significant because it resolves many of the legal conflicts that surrounded the initial permitting of the Cape Wind Project. Now that the Secretary of the Interior has authority over renewable energy activities on the OCS, offshore wind farms will be subject to some type of leasing and permitting system that will ensure that the federal government will be adequately compensated for the use of public trust resources. Additionally, the question of the Army Corps' authority to issue permits for offshore wind farms has been definitively resolved. As the extension of the Army Corps §10 permitting authority is under the OCSLA, the inclusion of offshore wind in OCSLA affirms the authority of the Army Corps to issue permits for the building of offshore wind farms.

Moving Forward with Offshore Wind Energy

As with the other administrative responsibilities under OCSLA, the Secretary of the interior has delegated the authority to regulate offshore renewable energy projects to the Minerals Management Service.[24] The Minerals Management Service is now charged with the task of creating new regulations to govern the development of offshore wind energy projects. In addition to writing regulations for new offshore wind energy projects,

[23] *Id.*
[24] http://www.mms.gov/offshore/RenewableEnergy/RenewableEnergyAndAlternateUses.pdf (Last visited 17 Jan 2006).

MMS has also taken over responsibility for the Cape Wind Project and the Long Island Offshore Wind Initiative.[25]

Prior to the passage of the Energy Policy Act of 2005, Cape Wind had already constructed the meteorological tower and the Army Corps had issued a Draft Environmental Impact Statement for the wind farm. Currently, the Army Corps' Draft Environmental Impact Statement and all comments received in the public comment period are being transferred to MMS.[26] Although the Army Corps has already written an Environmental Impact Statement (EIS) for the Cape Wind Project, MMS will conduct further studies and write a new EIS.[27] Further evaluation by MMS will be required because MMS has a much broader scope of authority than the Army Corps, and there are many issues not considered in the Army Corps' EIS that MMS must evaluate.[28]

MMS does not anticipate making a final decision about the Cape Wind Project until 2007, and is hoping to use an adaptive management approach in the installation of the Cape Wind Project.[29] At this point, the most likely outcome is that MMS will permit the installation of a limited number of turbines in a demonstration project that can be expanded once the environmental impacts of the wind farm have been established.[30] At the same time that the Cape Wind Project is moving forward, MMS is considering a variety of possible approaches to the regulation of offshore renewable energy projects. MMS hopes to build upon its experience with offshore oil and gas administration and

[25] Rodney Cluck, MMS Cape Wind Project Director, personal communication
[26] *Id.*
[27] *Id.*
[28] *Id.*
[29] *Id.*
[30] *Id.*

also consider zoning approaches examining which regions of the OCS are most appropriate for different forms of OCS energy development.[31]

Learning from State-Level Experience: Offshore Wind in Texas

While MMS is in the process of determining a regulatory structure for offshore wind energy, Texas has already issued its first lease for an offshore wind farm. Due to Texas' historical jurisdiction over territorial waters as an independent nation, Texas was granted extended state jurisdiction under the Submerged Lands Act.[32] While most states retain the rights to submerged lands and associated resources out to 3 nautical miles, Texas owns all submerged lands out to 9 nautical miles.[33] Because of this extended jurisdiction, Texas can offer offshore wind developers the opportunity to build with fewer permitting requirements. Although a §10 permit from the Army Corps is still required,[34] wind farm developments in state waters will not be required to comply with any regulations that MMS may create for offshore wind energy development in federal waters. Additionally, developers can lease land directly from the state of Texas before the federal leasing system has been completely determined.

In October of 2005, the Texas General Land Office announced that it had issued its first offshore wind farm lease.[35] Galveston Offshore Wind L.L.C. has obtained an 11,355 acre lease seven miles off of Galveston for the development of an offshore wind

[31] *Id.*
[32] 43 U.S.C. §1312.
[33] *Id.*
[34] Jim Sudyam, Press Secretary, General Land Office, personal communication
[35] Texas lands historic offshore wind project. News Release 24 Oct 2005. Available at http://www.glo.state.tx.us/news/docs/10-24-05-Offshore.pdf (Last visited 17 Jan 2006).

farm.[36] The lease agreement has three phases: a data collection phase, a development phase, and an operation phase.

In the data collection phase, Galveston Offshore Wind will construct two 80 meter meteorological towers. For the use of state lands, Galveston Offshore Wind will pay the state $10,000 a year during the data collection phase.[37] At the conclusion of the data collection phase, Galveston Offshore Wind plans to build a $300 million wind farm with fifty turbines and an anticipated capacity of 150MW.[38] The wind farm is expected to have a thirty year production phase with a phased in royalty scheme that is designed to encourage energy production at the beginning of the production phase. Royalties on wind energy production will be as follows:[39]

Years 1 to 8: 3.5%
Years 9 to 16: 4.5%
Years 17 to 30: 5.5%.

Overall, the lease is expected to provide at least $26.5million in revenue for the state.[40]

Under Texas law, all revenues from leasing of state lands for energy purposes are deposited in the permanent school fund, which is used to support public schools in Texas.[41] Due to the fact that leasing for offshore wind energy will benefit public schools and that residents of Texas are used to seeing offshore oil rigs, the General Land Office anticipates that Texas will not encounter the public resistance to offshore wind that has been a problem in Cape Cod.[42]

---

[36] *Id*.
[37] State of Texas, *supra* note 6.
[38] *supra* note 35.
[39] State of Texas, *supra* note 6.
[40] *supra* note 35.
[41] *supra* note 35.
[42] *supra* note 35.

The leasing process for the Galveston Offshore Wind project was different from the process traditionally used to lease offshore lands for mineral resource extraction. Rather than the state issuing a proposal for a lease sale, Galveston Offshore Wind approached the state requesting a lease.[43] The lease site was selected by Galveston offshore wind because it believes that the site has a suitable wind regime for profitable energy generation.[44] The wind farm will be placed approximately seven miles offshore in order to minimize any potential aesthetic concerns.[45] Unlike leases for mineral resource extraction, which are determined on the basis of competitive bidding, the terms of the least of the Galveston Offshore Wind project were negotiated by the developers and the state.[46]

Currently, the General Land Office is negotiating with another developer for its second wind farm lease in state waters.[47] At this time, Texas plans to continue to use a case specific approach to the negotiation of offshore wind leasing rather than a competitive bidding system.[48] The primary reason for this approach is that many energy companies are unwilling to assume the financial risk of installing a wind farm before it has been proven that offshore wind turbines will be able to withstand class 4 and 5 hurricanes in the Gulf of Mexico.[49] Ultimately, Texas would like to move to a competitive leasing system for granting offshore wind leases, but feels that the one on one approach is necessary to facilitate interest in the development of offshore wind in

[43] Robert Blumberg, General Land Office Wind Manager, Personal Communication.
[44] *Id.*
[45] *Id.*
[46] *Id.*
[47] *Id.*
[48] *Id.*
[49] *Id.*

Texas at this time.[50] In order to stimulate additional interest in offshore wind energy development, the state also hopes to place a series of meteorological towers along the coast to more fully characterize the offshore wind regime so that future developers can be more certain of their investment in offshore wind in Texas.[51]

The offshore wind leasing system in Texas is well equipped to handle the promotion and development of offshore wind energy within its state waters. The state has created a system that will ensure the government is adequately compensated for the use of public trust resources while also facilitating the early phases of offshore wind energy development. While this system is likely to be highly effective in meeting Texas' renewable energy goals, it is only suitable in a situation where there is limited interest in offshore wind energy development.

Given the large number of proposals for offshore wind energy development that were submitted to the Army Corps before the Secretary of the Interior was granted jurisdiction over offshore renewable energy projects,[52] the approach used in Texas not will be suitable for the initial phases of offshore wind leasing in federal waters. However, MMS can still learn from the experience with offshore wind leasing in Texas. MMS will have to determine a lease structure for the Cape Wind and Long Island Offshore Wind Initiative projects, and may be able to use a lease structure similar to those used by Texas. Additionally, MMS will be able to evaluate Texas' experience with offshore wind energy development and any potential environmental impacts of this development. This data may prove invaluable to MMS in evaluating the impact and determining a permitting process for offshore wind energy development.

---

[50] *Id.*
[51] *Id.*
[52] *See,* Martin & Smith, *supra* note 8 at 287, and Elizabeth A. Ransom, *supra* note 19 at 466.

The Need to Revisit Federalism on the Outer Continental Shelf

This chapter has focused on the role of the states and the federal government as lessors of their own land. However, it must be noted that the success of federal offshore wind leasing will be dependent on the cooperation of the adjacent coastal states. Due to the nature of offshore wind energy development, states will have significant authority in the permitting of offshore wind energy. When the federal government pursues the development of offshore mineral resources, the state's only authority is the right to comment on the consistency of exploration and development plans with the state's Coastal Zone Management Plan.[53] Offshore wind developments require submerged power lines in state waters and onshore support structures including power transformation stations. Thus, states have a permitting role in the approval process for offshore wind farms.

If the adjacent coastal state were to refuse to permit submerged power lines for an offshore wind energy development, the project would likely be halted due the potentially prohibitive costs of extending power lines into a different coastal state. The situation with offshore wind energy is unique in energy development because significant federal and state approvals are required for project development. As such, the cooperation of the states will be essential to any federal plan to expand offshore wind energy generation. The successful development of offshore wind energy will require a new system of development planning that accounts for the renewable energy plans of both the state and federal governments.

[53] 16 U.S.C. §1456 (c).

Summary

The conflict over the permitting of the Cape Wind Project highlighted the need for a comprehensive federal system to govern OCS leasing for offshore wind energy development. Congress acted to fill this regulatory void in the Energy Policy Act of 2005 by expanding the authority of the Secretary of the Interior under OCSLA to include offshore renewable energy developments. While MMS prepares federal regulations and determines how to proceed with projects that are already underway, Texas has begun to pursue offshore wind leasing in state waters. Although the leasing system employed in Texas is unlikely to be effective at the federal level, MMS would be wise to evaluate the process and outcomes in Texas. Finally, offshore wind energy installations will require state permits for submerged power lines and landing stations, greatly increasing state authority over offshore energy development. For offshore renewable energy development to be successful in federal waters, the renewable energy plans of the federal and state governments must be coordinated.

Offshore Wind Energy in Europe

Although the development of offshore wind energy has been slow in the United States, many Northern European countries have aggressively pursued offshore wind energy development as part of a package of solutions to enhance energy security and reduce greenhouse gas emissions. While the passage of the Energy Policy Act was an important step in creating a regulatory regime for offshore wind energy in the United States, it is still unclear what this regime will look like. In determining a best course for offshore wind energy regulation in the US, it is helpful to examine the approaches taken by other countries. This chapter will present the legal regimes for offshore wind energy development in the United Kingdom, Denmark, and Germany. The regulatory structures in these three countries will then be evaluated as potential models for the governance of offshore wind energy development in the United States.

United Kingdom

Currently, the United Kingdom has three windfarms installed with a total capacity of 213.8MW.[1] In the United Kingdom, all submerged lands in the territorial sea are property of the Crown Estate, and all submerged lands beyond the territorial sea belong to the federal government.[2] In the UK, all offshore wind developments are jointly permitted by the Crown Estate and the Department of Trade and Industry (DTI).[3] For wind farm projects within the territorial sea, the developer must obtain a lease from the

[1] British Wind Energy Association, Offshore Wind Introduction, http://www.bwea.com/offshore/info.html (last visited Feb. 27, 2006).
[2] Department of Trade and Industry, Policy: Offshore Renewables, http://www.dti.gov.uk/renewables/renew_2.1.3.htm (last visited Dec. 26, 2005).
[3] Department of Trade and Industry, Guidance Notes: Offshore Wind Farm Consents Process 6 (2004), *available at* http://www.dti.gov.uk/energy/leg_and_reg/consents/guidance.pdf (last visited Dec. 26, 2005).

Crown Estate.[4] The Energy Act of 2004 designated the area from 12 to 200 nautical miles as the Renewable Energy Zone (REZ),[5] and all developments in this zone require a license from the Crown Estate.[6]

There have been two rounds of offshore leasing conducted in the UK. The first round of offshore wind leasing was held in April of 2001, and 18 agreements were made between the Crown Estate and offshore energy developers.[7] All companies who entered into agreements with the Crown Estate were given three years to obtain the necessary consents for the proposed wind farm project.[8] A second round of leasing was conducted in December of 2003, and 15 agreements were made with seven year development options.[9]

In order to participate in the leasing process in the UK, companies are invited to pre-qualify. To pre-qualify, a company must show that it possesses financial standing, offshore development expertise, and wind farm expertise.[10] Once a company has been pre-qualified, it is invited to submit proposals for offshore wind development to the Crown Estate for consideration. For the first round of leasing agreements, all project proposals were subject to the following constraints: all sites had to be within 12 nautical miles of shore, proposed sites had to be at least 10km apart, and have a minimum generating capacity of 20MW, and were limited to a maximum capacity of 30 turbines.[11] Furthermore, the UK has identified three priority areas for offshore wind development:

---

[4] *Id* at 9.
[5] Energy Act, 2004, c. 20 §94 (Eng.).
[6] Department of Trade and Industry, *supra* note 3, at 3.
[7] Department of Trade and Industry, *supra* note 2.
[8] Department of Trade and Industry, *supra* note 2.
[9] Department of Trade and Industry, *supra* note 2.
[10] Department of Trade and Industry, *supra* note 2.
[11] Department of Trade and Industry, *supra* note 2.

the Thames Estuary, Greater Walsh, and North West.[12] For each of these areas, the DTI conducted a strategic environmental impact assessment of the effects of wind energy development.[13] At this time, all proposals for offshore wind energy development must fall within one of these priority areas.[14] The important legislative provisions governing offshore wind energy development in the United Kingdom are reviewed below.

The Electricity Act 1989 §36 addresses offshore wind power stations in territorial waters.[15] The Energy Act 2004 extends the requirements of the Electricity Act 1989 to the Renewable Energy Zone.[16] Under the Electricity Act 1989, the Secretary of State for Trade and Industry (Secretary), must consent to the construction, extension, or operation of any electricity generating facility with more than 50MW capacity.[17] In 2001, the powers of the Secretary under the Electricity Act were extended to include all wind and water driven energy developments larger than 1MW.[18] When the Secretary gives consent for the construction of an offshore wind farm, he also has the ability to extinguish navigation rights through the development area.[19]

If an offshore wind developer does not want to go through the permitting process of the Electricity Act, the developer may instead seek the consent of the Secretary of Trade and Industry under the Transport Works Act.[20] The Transport Works Act 1992 gives the Secretary the right to temporarily extinguish navigation rights to accommodate

[12] Department of Trade and Industry, *supra* note 2.
[13] Department of Trade and Industry, *supra* note 2.
[14] Department of Trade and Industry, *supra* note 2.
[15] Electricity Act, 1989, c. 29 §36 (Eng.).
[16] Energy Act, 2004, c. 20 §89 (Eng.).
[17] Electricity Act, 1989, c. 29 §36 (Eng.).
[18] Department of Trade and Industry, *supra* note 3.
[19] Electricity Act, 1989, c. 29 §36a (Eng.).
[20] Department of Trade and Industry, *supra* note 3.

wind farm development.[21] The Transport Works Act also allows the Secretary to authorize onshore components of the project and gives the Secretary the authority for compulsory land acquisition for the building of these structures.[22] As the permits issued under the Transport Works Act cover the onshore portions of offshore wind energy development, developers seeking permits under the Transport Works Act are also freed from the obligation to obtain permits under the Coastal Protection Act 1949.[23]

Developers who seek permits from the DTI under the Electricity Act 1989 must obtain permits under the Coastal Protection Act 1949 for all near shore components of the development project.[24] Under the Coastal Protection Act, a developer must obtain consent for any construction under or over the seashore below mean high water springs (MHWS).[25] Coastal Protection Act permits are not required for projects permitted under the Transport Works Act or for projects in the Renewable Energy Zone.[26] Installations below MHWS also require a license from the Secretary of State for Environment, Food, and Rural Affairs under the Food and Environment Protection Act 1985.[27]

The United Kingdom has taken a proactive stance towards monitoring the environmental impacts of offshore wind energy developments. The DTI has identified three priority areas for offshore wind development and conducted a strategic environmental assessment for each of these areas. Offshore wind farm developers are also required to create environmental statements concerning both the positive and negative impacts of their proposed development, and these statements must be submitted

[21] Department of Trade and Industry, *supra* note 3.
[22] Department of Trade and Industry, *supra* note 3.
[23] Department of Trade and Industry, *supra* note 3.
[24] Department of Trade and Industry, *supra* note 3.
[25] Department of Trade and Industry, *supra* note 3.
[26] Department of Trade and Industry, *supra* note 3.
[27] Department of Trade and Industry, *supra* note 3.

with all permit applications.[28] As an additional measure to examine the potential environmental impacts of offshore wind farm development, the DTI and Crown Estate created Collaborative Offshore Windfarm Research into the Environment (COWRIE). COWRIE is an independent company created to raise awareness and understanding of potential impacts of offshore wind developments in the UK.[29] COWRIE was set up by the Crown Estate in the first round of offshore wind leasing using a trust fund to which all developers were required to contribute.[30] COWRIE is governed by the Crown Estate, DTI and the British Wind Energy Association and uses its resources to fund studies of the environmental impacts of wind development.[31]

Denmark

Denmark is a global leader in wind energy development. Currently 18% of Denmark's energy is supplied by wind power and this figure is expected to grow to 50% by 2030.[32] Denmark has a strong focus on both terrestrial and offshore wind power development, and government policy played a large role in driving the development of wind energy by ensuring a market for energy produced by wind power[33] and aiding in the technical development of wind turbine technology.[34] More than 80% of Denmark's wind turbines are owned by wind energy cooperatives or individual farmers.[35] Thus, public

[28] Department of Trade and Industry, *supra* note 3.
[29] Collaborative Offshore Windfarm Research into the Environment, What is COWRIE?, http://www.offshorewindfarms.co.uk/ (last visited Feb. 27, 2006).
[30] *Id.*
[31] *Id.*
[32] Svend Auken, *Answers in the Wind: How Denmark Became a World Leader in Wind Power*, 26 Fletcher F. World F.149, 151 (2002).
[33] This was significant in the early stages of wind power development before wind energy was cost-competitive with fossil fuel sources.
[34] Auken, *supra* note 32, at 149.
[35] Auken, *supra* note 32, at 150.

acceptance of wind energy projects has been fostered through collective ownership of energy generating turbines.

Government policy in Denmark has been a key driver of offshore wind development. Energy 21 is the government's long term action plan for the development of wind energy. Energy 21 sets long term goals and policies to send clear signals to potential investors about the future of the wind industry in Denmark.[36] Given the long time horizons involved in wind farm planning and development, such long term signals are essential to ensure the future growth of Denmark's wind industry. An important part of this long term plan has been the setting of aggressive targets of how much of the country's energy supply will be provided by wind.[37] To date, this program has been highly successful in fostering wind energy development. In fact, the official target of supplying 15% of Denmark's energy from wind power by 2005 was met three years ahead of schedule in 2002.[38]

Demark adopted a phased-in approach to the development of offshore wind that employed a series of demonstration projects to examine the viability and potential impacts of industrial scale wind farm development. The first demonstration project was a 5MW project in Vindeby begun in 1991.[39] This was followed by a second 5MW demonstration project at Tunø Knob begun in 1995.[40] Denmark's first large wind farm was permitted in 1999, and has 20 turbines and a capacity of 40MW.[41] Denmark is unique in that it has a separate approval process by which individual turbines are

---

[36] Auken, *supra* note 32, at 151.
[37] Auken, *supra* note 32, at 151.
[38] Auken, *supra* note 32, at 151.
[39] Danish Energy Authority, Wind Energy Pilot Projects, http://www.ens.dk/sw15562.asp (last visited Feb. 27, 2006).
[40] *Id.*
[41] Danish Energy Authority, *supra* note 134.

permitted for use. This permitting is conducted through the Risø National Laboratory and is intended to weed out low quality and potentially dangerous products.[42]

In addition to the permitting of individual turbines for safety, there is a structure for permitting offshore wind farms as a whole. Offshore wind farms are addressed in Denmark's 2004 Act on Electricity Supply. The Act on Electricity Supply reserves the right to extract energy from wind and water in Danish territorial waters and the Exclusive Economic Zone for the Danish State.[43] The responsibility for permitting energy extraction activities in Danish waters is given to the Minister of Transport and Energy.[44] The Act on Electricity Supply requires that the Minster either issue a public call for applications for offshore wind development or give competing developers a chance to submit proposals once an initial development proposal is submitted to the Ministry.[45] The Minister is also given discretion to set the criteria by which competing proposals for offshore wind energy development will be evaluated.[46]

The government's offshore wind energy policy is implemented by the Danish Energy Authority (DEA). The DEA invites applicants to pre-qualify based on financial, legal, and technical criteria.[47] Prior to inviting applications, the DEA screens regions for their potential for offshore wind energy development.[48] Screening is conducted to provide information about potential areas before a call for proposals is issued and to give the public an early opportunity to comment on wind farm development in a particular

---

[42] Auken, *supra* note 32, at 153.
[43] Act on Electricity Supply, 2004, §13 (Den.).
[44] Act on Electricity Supply, 2004, §13 (Den.).
[45] Act on Electricity Supply, 2004, §14 (Den.).
[46] Act on Electricity Supply, 2004, §15 (Den.).
[47] Danish Energy Authority, Offshore Wind Power- Danish Experiences and Solutions 1-36, 9 (2005), *available at* http://www.ens.dk/graphics/Publikationer/Havvindmoeller/uk_vindmoeller_okt05/index.htm (last visited Feb. 27, 2006).
[48] *Id* at 10.

region.[49] Once a company has been pre-qualified, it may submit an application to develop a wind farm to the DEA. The DEA selects which wind farms to permit based on criteria determined by the Minister of Transport and Energy.[50]

In Denmark, calls for wind farm proposals are driven by the desire to install a specific amount of wind energy generation rather than through a regional leasing approach. However, wind farm proposals are more likely to be approved if they are in a pre-screened area that has been determined to be a priority area for development. The DEA and the Forest and Nature Agency formed a working group to recommend priority areas for wind farm development. This working group recommended four priority development areas for the first 4000MW of installed offshore wind capacity through 2030.[51]

Germany

Germany currently obtains about 15% of its energy from terrestrial wind power operations.[52] The future expansion of terrestrial wind power installations in Germany will be extremely limited because there is widespread public opposition to further onshore or near shore development arising from concerns over aesthetics and landscape impacts.[53] Because of these limitations, the future of wind energy development in Germany lies offshore. Currently, only pilot projects with a maximum of 80 turbines

[49] *Id* at 10.
[50] Act on Electricity Supply, 2004, §15 (Den.).
[51] Danish Energy Authority, *supra* note 47, at 9.
[52] Bela Hieronymus Buck, Gesche Krause, and Harald Rosenthal, *Extensive Open Ocean Aquaculture Development within Wind Farms in Germany: the Prospect of Offshore Co-Management and Legal Constraints*, 47 Ocean & Coastal Mgmt. 95, 100 (2004).
[53] *Id.*

have been approved for offshore installation.[54] However, given Germany's energy demands and Kyoto obligations, offshore wind power will expand greatly in the next decade.

In Germany, the territorial sea out to 12 nautical miles is controlled by the adjacent coastal state, and the federal government controls all lands between 12 and 200 nautical miles.[55] Offshore wind farm projects in federal waters are overseen by the German Federal Maritime Agency (Bundesamt fur Seeschiffahrt und Hydrographie, BSH). The BSH grants site specific proposals for offshore wind projects in both the North and Baltic Seas.[56] Most offshore wind farms in Germany will be in federal waters and subject to the jurisdiction of the BSH.[57] Any proposals for wind farms in the territorial sea will be subject to the permitting requirements of the adjacent coastal state.[58]

For offshore wind development in federal waters, the BSH will conduct the environmental review for all proposed developments, and an EIS will be required for any proposal involving more than 25 turbines.[59] Once a wind farm has been approved by the BSH, the approval will last for 25 years and construction must begin within 2.5 years of approval.[60] New permits will be required for the continued operation of the wind farm beyond 25 years after permitting.[61] When applications for wind farm development are submitted to the BSH, they are checked for completeness and comments are sought from

---

[54] *Id.*
[55] *Id* at 105.
[56] Bundesamt für Seeschifffahrt und Hydrographie (BSH), Wind Farms, http://www.bsh.de/en/Marine%20uses/Industry/Wind%20farms/index.jsp (last visited Jan. 5, 2006).
[57] *Id.*
[58] *Id.*
[59] *Id.*
[60] *Id.*
[61] BSH, Approval Procedure, http://www.bsh.de/en/Marine%20uses/Industry/Wind%20farms/Approval%20Procedure.jsp (last visited Jan. 5, 2006).

relevant agencies.[62] This is followed by a second round of commenting that involves a larger group of stakeholders including the general public.[63] The developer is required to hold an application conference where the proposed project is presented and conflicting interests are discussed.[64] The applicant is also required to conduct an environmental impact assessment for the proposed wind farm.[65] In addition to receiving permits from the BSH, the applicant is required to obtain permits from the adjacent coastal state for the laying of submerged power cables in state waters.[66] The applicant is also required to prepare a full environmental impact assessment for the proposed project.[67]

At this point, Germany lacks a competitive system for wind energy development proposals. If multiple applications for development of wind energy at a site are received, the first application that meets all of the criteria for approval must be fully evaluated and a final decision must be made before other proposals can be considered.[68] The lack of a competitive bidding structure for wind energy installations will undoubtedly be an impediment to future offshore renewable energy developments in Germany. Additionally, the permits issued for wind energy pilot projects in Germany do not contain provisions for multiple uses of the wind farm space.[69] Consequently, wind farm developers are beginning to encounter some resistance from traditional users of ocean space who fear that they will be marginalized by further wind energy developments.[70] At this time, Germany has yet to effectively address how to convey property rights and

[62] *Id.*
[63] *Id.*
[64] *Id.*
[65] *Id.*
[66] *Id.*
[67] *Id.*
[68] *Id.*
[69] Buck *et al.*, *supra* note 52, at 119.
[70] Buck *et al.*, *supra* note 52, at 111.

fulfill its public trust obligations when pursuing offshore wind energy development. However, a recent amendment to the Federal Nature Conservation Act of 2002 calls for the designation of priority areas for wind development and sets out the beginnings of a legal framework to regulate offshore wind energy development.[71]

Lessons to be Learned from European Approaches

Due to their carbon reduction requirements under the Kyoto protocol, the European nations examined have taken a far more aggressive approach to the development of offshore wind energy than that of the United States. While Europe has moved forward with offshore wind energy development, this development has taken the form of smaller demonstration projects and is coupled with extensive environmental data collection and monitoring. This data will prove invaluable to the US as the environmental impact statements for the first offshore wind farms in the United States are developed. Europe's environmental monitoring program should serve as a model for the US when designing reporting requirements for offshore wind farm operators. A particularly excellent model is that of COWRIE in the UK, which funds independent scientific research that is a rich source of information on the impacts of offshore wind farm development. Given the long-term nature of offshore wind farm operation, the US would be wise to adopt a similar system that promotes ongoing research into the impacts of offshore renewable energy development.

[71] Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (Germany), Strategy of the German Government on the use of Off-Shore Wind Energy in the Context of its National Sustainability Strategy 8 (2002), *available at* http://www.bmu.de/english/documents/doc/3389.php (last visited Jan. 6, 2006).

All countries examined above began offshore wind development with a series of small pilot projects. This approach offers the benefit of allowing a developer to gain experience with wind energy before installing a full-scale commercial development and also allows for the assessment of any potential impacts of wind farms in the particular region where development will occur. The offshore wind energy projects that have been proposed in the United States are all large scale power development projects. If these projects are to be approved, the US will bypass the pilot project phase of offshore wind energy development and the learning opportunities that come with such phased-in development.

The UK and Denmark have both created priority areas for offshore wind energy in order to expedite development. As part of the process of designating priority areas in the UK, a strategic environmental assessment (SEA) was conducted for each potential development area. The SEA considered the cumulative impact of multiple wind farms in each priority area. This process is important in saving time and money in considering cumulative impacts at a later stage as well as giving developers clear signals for the future of offshore wind. Furthermore, a system of priority areas ensures rational, comprehensive development of OCS energy resources that has been considered well in advance of specific project proposals. Given the uneven distribution of wind resources, the designation of priority areas coupled with strategic environmental assessments will be important to facilitating offshore wind development while ensuring that any environmental impacts of development are fully evaluated. In creating a leasing system for offshore renewable energy development, MMS should study the system of priority area designation and evaluation used in the UK and employ a similar model in the US.

It is interesting to note differing approaches to the rights of adjacent coastal areas in European offshore wind energy permitting processes. Germany's system is most similar to that of the US, as permits for submerged cables must be obtained from the coastal state and the coastal state retains all development rights within the German territorial sea. The UK employs a radically different approach allowing the Secretary of State for Transport and Industry to appropriate all lands necessary for the on-shore supporting structures for offshore wind development. Clearly, this option is not available to the US where coastal states retain strong rights to their territorial waters and coastal lands. As such, the MMS must work to create a collaborative development system with coastal states to ensure that the appropriate support structures for offshore wind energy development will be made available both in state waters and on state lands.

The Secretary of State for Trade and Industry may also extinguish access rights to land occupied by a wind farm. Given the tradition of open access rights to the sea in the US and the strong public resistance to Cape Wind, it is not wise for the US to follow suit and extinguish access rights inside of wind farms. In fact, allowing access to fishing areas inside of wind farms may be critical to their eventual public acceptance.

Thus far, wind farms in Europe have been embraced by the public, and the US can learn from Europe's experience in generating public support for offshore renewable energy development. One of the key features in the UK and German systems is the early involvement of the public through consultation. In the UK, public consultation begins when priority development areas are initially designated. This opportunity for early public input allows the government to avoid proposing developments in areas where public opposition is high or modify proposed development areas to address public

concerns. Germany has turned to the exploration of developments beyond the territorial sea in response to the public's growing concern about the aesthetic impact of more coastal and near-shore wind development. In Denmark, acceptance for wind energy development has also been fostered through the creation of wind energy cooperatives, resulting in a high degree of public ownership of Denmark's wind energy generating capacity. While public ownership of costlier offshore wind farm developments may not be feasible, the US must learn from examples in Europe and strive to garner public support for offshore wind energy development. Allowing early public commenting and using smaller pilot projects should aid in fostering public support by increasing familiarity with wind farms and allowing environmental concerns to be addressed.

Recommendations to the Minerals Management Service

The Energy Policy Act grants authority for offshore renewable energy development to the Secretary of the Interior. This authority has been further delegated to the Minerals Management Service. The MMS is in the process of developing a new branch of its agency to handle offshore renewable energy development. As previously discussed, this part of the MMS will handle both the continued permitting of the Cape Wind Project and Long Island Offshore Wind Initiative as well as the creation of new regulations to govern all offshore renewable energy development.

While the placement of authority for offshore renewable energy development is securely within MMS, an evaluation of the development of a regulatory regime for offshore renewable energy would be incomplete without a consideration of alternative systems of ocean governance. Consequently, this chapter presents a theoretical program under MMS and two other proposals for ocean energy governance and evaluates the merits of each of these approaches. The three approaches to be evaluated are as follows:

1. Development of a regulatory structure for offshore renewable energy within MMS.
2. Creation of a new comprehensive energy planning authority, the Energy Resource Management Service (ERMS).
3. Creation of a new agency to manage all competing uses of the Outer Continental Shelf, the Outer Continental Shelf Resource Authority (OCSRA).

The criteria used to evaluate these alternatives are:

1. ability to preserve expertise in OCS management,
2. ability to consider all types of OCS energy development,
3. ability to weigh competing uses of the OCS, cost, and political feasibility.

This chapter will conclude with a series of substantive recommendations for the Minerals Management Service as it proceeds with the creation of a regulatory system for offshore renewable energy. These recommendations include the following:

1. Improve coordination with coastal states.
2. Devise measures to improve public acceptance.
3. Use zoning to establish priority areas for offshore wind development.
4. Develop a system of research support similar to the COWRIE program in the UK.

Theoretical Management Under the Minerals Management Service

Although the management structure for OCS renewable energy has yet to be created, it is not unreasonable to assume that it will have strong similarities to the administrative structure used to manage federal oil and gas leasing. As such, one would expect that the MMS proposal for the management of OCS renewable energy will include competitive leasing of specific areas of the Outer Continental Shelf as designated through some type of long-term development plan.

However, there are certain elements of the oil and gas leasing program that will not translate cleanly to renewable energy development. MMS concedes that the spatial scale of management for OCS oil and gas development will not be appropriate for offshore renewable energy.[1] Furthermore, MMS plans to examine different regions of the country for specific types of renewable energy development, and acknowledges that this will likely require analysis on a variety of different spatial scales.[2] MMS is well aware of the challenges it faces in creating a new regulatory regime for offshore wind energy and is working to evaluate a range of different options for offshore renewable energy management.

[1] Rodney Cluck, MMS Director of the Cape Wind Project, personal communication 12/2/2005
[2] *Id*

One of the best elements of expanding the authority of MMS to govern offshore renewable energy development is that it ensures that the new program for renewable energy development will build upon MMS's pre-existing expertise in Outer Continental Shelf resource management. This option also has the advantage of being relatively inexpensive, as it will only require the hiring of new personnel to expand on pre-existing operations.

The ability of an expanded MMS to holistically consider meeting energy demand with a variety of sources will largely depend on how the management of offshore renewable energy is incorporated into MMS's system. If offshore renewable energy leasing and permitting is designed to be an entirely separate system within the same agency, then the opportunity to think comprehensively about how to meet America's energy needs is likely to be overlooked. However, if offshore renewable energy is incorporated into five-year leasing plans that the Secretary of the Interior is required to create under OCSLA,[3] there is a strong opportunity for MMS to become more comprehensive in its approach to OCS energy development. By creating long-term leasing plans that incorporate both renewable and mineral resources, MMS would be able to evaluate which portions of the Outer Continental Shelf are most appropriate for different energy uses. While this approach would help to meet the goal of attaining energy independence, the very different timelines of oil and renewable energy development and operation make it unlikely that such a system will be created. Unlike oil and gas leases, which are typically held for five to ten years, offshore renewable energy developments will have much longer life spans. In fact, offshore wind farms are

[3] 43 U.S.C. §1344 (2000).

expected to have a working lifetime of at least twenty years.[4] Thus, the resulting regulatory structure must be prepared to deal with these substantially longer timelines.

Expanding the authority of MMS under OCSLA also has the drawback that it does not promote comprehensive ocean planning. As MMS only has authority over offshore mineral extraction and renewable energy operations, it is not well positioned to consider other competing uses of the OCS. This limitation to comprehensive planning is a serious impediment in the development of ocean governance for offshore wind energy because it does not allow for the full consideration of other potentially displaced uses of the OCS. The potential for displacement is likely to be more serious with offshore renewable energy installations due to the longer timelines of these projects described above. Furthermore, there have been suggestions that one way to increase the appeal of offshore wind farms is to allow for multiple use management of the wind farm area including other operations such as aquaculture.[5] The potential for multiple use development on the OCS is hampered by the need for multiple regulatory agencies to be involved in permitting. Thus, leaving authority for offshore renewable energy development inside MMS may miss key opportunities to reform ocean governance in America.

The Energy Resource Management Service

The creation of the Energy Resource Management Service (ERMS) would require new enabling legislation to rename and refocus the Minerals Management Service. The

[4] Cape Wind Project, Frequently Asked Questions: Cape Wind Timetable, http://www.capewind.org/FAQ-Category12-Cape+Wind+Timetable-Parent0-myfaq-yes.htm (last visited Feb. 28, 2006).
[5] Bela Hieronymus Buck, Gesche Krause, and Harald Rosenthal, *Extensive Open Ocean Aquaculture Development within Wind Farms in Germany: the Prospect of Offshore Co-Management and Legal Constraints*, 47 Ocean & Coastal Mgmt. 95 (2004).

OCSLA Amendments modified OCSLA and charged the Secretary of the Interior via the Minerals Management Service to balance offshore energy development with environmental concerns.[6] In fulfilling this task, the Secretary must consider energy and national security needs as well as environmental threat in creating OCS leasing plans.[7] The new Energy Resource Management Service would have an altered mandate that focused on meeting America's energy demand using all available sources. The ERMS would be responsible for all leasing and permitting for all minerals extraction and energy generation within the United States. The primary mission of the ERMS would be to ensure that America's energy needs are met using a balanced portfolio of resources and generating technologies in a regionally balanced manner.

In the aftermath to Hurricane Katrina, Americans became acutely aware of our strong regional dependence on the Gulf of Mexico for energy resource production and the need for regional diversification in energy supply. As part of the initial response, many companies with interests in a stable petroleum supply pushed Congress to reopen oil and gas leasing on other portions of the United States Continental Shelf.[8] The ERMS would be able to ensure that energy resource production is regionally diversified in a manner that is economically feasible and sensitive to the environmental concerns of coastal states. As such, the ERMS would have a strong capability to holistically manage the energy sector in the United States and work to increase energy independence and security of the US energy supply.

[6] Biliana Cicin-Sain & Robert W. Knecht, The Future of U.S. Ocean Policy 84 (Island Press 2000).
[7] Letter from American Gas Association to Representative Dennis Hastert, Speaker of the House (Sept. 8, 2005) (on file with author).
[8] *Id.*

While the ERMS is attractive for its ability to ensure balanced energy development, it does have several significant costs. First, the actual economic and political costs of reframing the way that America approaches energy management would be high. This is especially true because the realignment and consolidation of all aspects of energy resource extraction and electricity generation would require the combination of authority from multiple agencies, and is likely to be met with some resistance. Assuming that the Energy Resource Management Service would be created primarily from MMS, resistance to the reform inside of MMS should be low and the ERMS should be able to preserve and take advantage of a high level of MMS expertise in OCS resource management.

The Energy Resource Management Service is a significant step forward in creating a comprehensive approach to meeting America's energy demands. However, the ERMS would be focused solely on energy resource extraction and generation and therefore would be ill-equipped to consider multiple-use management on the OCS. Thus, the ERMS is not a significant improvement over the current regulatory framework when evaluated in terms of its ability to facilitate a more complete and coordinated system of ocean governance.

The Outer Continental Shelf Resource Authority

The Outer Continental Shelf Resource Authority (OCSRA) would be a new executive agency with authority to regulate all uses of the Outer Continental Shelf. The primary purpose of the OCSRA would be to ensure coordinated, sustainable development of the Outer Continental Shelf while ensuring that competing uses of ocean space are

properly weighed. The OCSRA would be a far-reaching agency that would take over all aspects of ocean management from the federal agencies in which they are currently housed, including MMS and the National Oceanic and Atmospheric Administration (NOAA).

Although the creation of the OCSRA would be highly disruptive to the current system of ocean governance, comprehensive ocean resource management is a goal that is supported by both the United States Commission on Ocean Policy[9] and the Pew Oceans Commission.[10] In their comprehensive evaluations of the state of America's ocean resources, both of these groups highlighted the need for comprehensive ocean resource management on an ecosystem level.[11],[12]

The overall cost of creating an agency like the OCSRA will be high because it will involve the realignment and consolidation of major regulatory responsibilities from different government departments. For example, simply combining authority over fisheries, which currently resides in the National Marine Fisheries Service in NOAA, and authority over offshore energy resources requires pulling agencies from two different cabinet departments: NOAA is housed in the Department of Commerce while MMS is part of the Department of the Interior. If one were to go further and place all offshore functions in a single body, it would also require adding the permitting authority of the Army Corps of Engineers. Such a rearrangement of government functions would not only be extremely expensive by also politically difficult. At least one cabinet level

---

[9] United States Commission on Ocean Policy, An Ocean Blueprint for the 21st Century 61 (2004), *available at* http://oceancommission.gov (last visited Feb. 27, 2006).
[10] Pew Oceans Commission, America's Living Oceans: Charting a Course for Sea Change 34 (2004), *available at* http://www.pewtrusts.org/ideas/ideas_item.cfm?content_item_id=1635&content_type_id=8&issue_name=Protecting%20ocean%20life&issue=16&page=8&name=Grantee%20Reports (last visited Feb. 27, 2006).
[11] United States Commission on Ocean Policy, *supra* note 9, at 99.
[12] Pew Oceans Commission, *supra* note 10.

agency will have to give up a significant authority over marine resources for such consolidation to occur.

In terms of considering differing energy supplies, the OCSRA will not be able to be as broad in its approach as the ERMS, but has the potential to perform better than MMS. OCSRA would have the primary responsibility of balancing all uses of America's marine resources including non-use functions such as conservation. Ideally, the OCSRA would be composed of a broad group of stakeholders representing all interests and therefore would be able to fully weigh all uses of the OCS. Although energy development would not be the primary function of the OCSRA, OCS energy production is undeniably one of the most important uses of the OCS, and therefore the Outer Continental Shelf Resource Authority would have energy development as one of its core functions. As the OCSRA would also be responsible for other competing uses of the OCS, it would be able to examine which types of energy development are compatible with other OCS uses in a given region.

The OCSRA is clearly the best option for weighing multiple uses of the Outer Continental Shelf. The Outer Continental Shelf Resource Agency would have the ability to facilitate multiple use management schemes. As the final authority weighing all potential uses of the Outer Continental Shelf, a public space, the OCSRA would be the most thorough way to fulfill the government's public trust obligation. As the steward of the Outer Continental Shelf, the government bears the responsibility to manage the Outer Continental Shelf and all of its associated resources for the maximum benefit of the American people. By consolidating the regulation of all competing uses of the OCS into

one body, the OCSRA would be able to fully consider how different uses of ocean space benefit the public as a whole.

Recommendations for the Minerals Management Service

While the OCSRA may be the best way to manage the public trust resource of the Outer Continental Shelf, the high costs and potential political resistance make this option infeasible. This makes the ERMS the most desirable solution, and MMS could easily move in this direction considering OCS energy development in a comprehensive way. Given that the overall administrative structure has already been determined with the assignment of authority for OCS energy regulation to MMS via the secretary of the Interior, the following is a set of substantive recommendations for MMS it proceeds with the development of a regulatory system for offshore renewable energy.

Focus on fulfillment of the Public Trust obligation first: It is imperative that MMS first meet its legal obligation to act as a guardian of the public trust of the Outer Continental Shelf. The placement of offshore renewable energy resources under OCSLA obligates the Secretary of the Interior to create a competitive system for the granting of leases for offshore wind energy. In Texas, the state has pursued negotiated leases with individual developers because of a lack of broad interest in offshore wind energy development. Prior to the passage of the Energy Policy Act, there was a rush of developers attempting to get wind farm proposals approved before leasing was required.[13]

[13]*See*, Guy R. Martin & Odin A. Smith, *The World's Largest Wind Energy Facility in Nantucket Sound?* 31 B. C. Envtl. Aff. L. Rev. 285, 287 (2004), and Elizabeth A. Ransom, *Wind Power Development on the United States Outer Continental Shelf: Balancing Efficient Development and Environmental Risks in the Shadow of OCSLA* 31 B.C. Envtl. Aff. L. Rev. 465, 466 (2004).

This suggests that there is sufficient interest to support a competitive leasing system for offshore wind energy development. However, MMS must carefully consider the details of a competitive system so that it can be sensitive to the differing needs and scales of different types of renewable energy development.

Work to build public support for offshore renewable energy: As the Cape Wind case demonstrates, public acceptance will be crucial to the future success of offshore renewable energy development in the United States. Public support may be particularly difficult to gain in regions of the country that have not experienced offshore oil and gas development and therefore are not used to seeing offshore industrial structures. Therefore, public education about the benefits of offshore renewable energy will be crucial to the success of future developments. Public acceptance is especially important because public resistance to a project may make a state less likely to permit the necessary on-shore support structures.

Improve coordination with coastal states: Under the current regulatory system, the only opportunity for the state to have input regarding energy development in federal waters is to comment on if proposed leasing, exploration, and development plans are consistent with the state's Coastal Zone Management Plan.[14] This commenting authority is weak at best, and it will not be sufficient for renewable energy development, which requires substantial state cooperation in the permitting of support structures. Improved coordination with states is imperative because it will be a waste of MMS's resources to

---

[14] 43 U.S.C. §1351 (2000).

explore the possibility of offshore renewable energy development in areas where the adjacent coastal state will not agree to permit the necessary supporting structures. However, MMS must also keep in mind the need to add regional diversity in offshore energy development and work with coastal states to find acceptable means of developing OCS renewable energy resources across the country.

Develop a system of revenue sharing: Currently, the Outer Continental Shelf Lands Act contains provisions that allow for the sharing of revenue with the adjacent coastal state for oil and gas extraction.[15] These revenues are intended to help the state mitigate any potential negative impacts of offshore oil and gas extraction. One means of countering public resistance to offshore renewable energy projects may be to create a revenue sharing system that compensates the public for viewshed disruptions. In the state of Texas, all revenues from leasing activities in state waters are deposited in the public school fund.[16] This helps to create support for all offshore energy development activities because the revenues from these activities directly improve services for the people of Texas.

Develop a zoning system with priority areas: All of the European countries examined above use a system of priority zoning that identifies specific areas for expedited wind energy development. The zoning approach has two important advantages: It allows for early public comment and environmental review on a larger scale. MMS should examine the potential offshore renewable energy resources along the OCS and also examine other

[15] *See, e.g.* 43 U.S.C. §1336(g)(1).
[16] Texas lands historic offshore wind project. News Release 24 Oct 2005. Available at http://www.glo.state.tx.us/news/docs/10-24-05-Offshore.pdf (Last visited 17 Jan 2006).

uses of these areas and then propose a network of renewable energy development zones for specific types of renewable energy. The process of creating renewable energy zones will allow for early public participation in the decision-making process and may also expedite development of renewable energy projects, as less review and comment is likely to be necessary for proposed projects within a renewable energy zone.

Develop a system to support independent research and environmental evaluation: MMS should develop a system similar to COWIRE in the UK where bonus bids for offshore renewable energy development are deposited into an account that is then used to fund independent research into the potential effects of offshore renewable energy development. Offshore renewable energy development is expanding rapidly, and many of its impacts are not known with certainty. Therefore, the funding of such research will be essential to understand the true costs of offshore renewable energy development and allay public fears over environmental impacts.

Use a phased-in approach to offshore renewable energy development: Both the UK and Denmark have been successful with demonstration projects to develop technical capability in offshore wind energy development. The US should pursue a similar system of small-scale projects. The use of demonstration projects will allow MMS to evaluate the potential impacts of offshore renewable energy installations without committing to large projects with potentially significant impacts. Furthermore, the use of demonstration projects may help to build public support for offshore renewable energy development in the United States.