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The Legal Hurdles to Developing Wind Power as an Alternative Energy Source in the United States: Creative and Comparative Solutions

Adam M. Dinnell & Adam J. Russ***

This article discusses how parties have used current domestic environmental laws to curb the development of a more “environmentally-friendly” alternative energy source—wind power. As the ever-increasing demand for oil and petroleum around the world leads to rising costs throughout the nation, investing in new energy sources is considered crucial to sustainable development in the United States. Wind power has the potential to serve as a clean, efficient, and renewable source of energy in the 21st Century. The further development of wind power could create a meaningful alternative energy supply, relaxing geopolitical and economic concerns over this country’s strict century-old diet of fossil fuels. Unfortunately for proponents, wind power projects, despite their environmentally-conscious potential, have been successfully stalled in recent years by the unlikeliest of foes—legislation designed to protect the environment.

This article addresses the growth of wind power in the United States, and the relevant statutes that threaten to thwart its development. The authors recommend that the United States look to international examples as potential models for creating an energy and environmental policy conducive to both domestic and international investment in alternative energy sources. The authors also propose that Congress pass legislation that provides an efficient framework for the growth of wind power in concert with federal

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objectives, consolidating federal oversight of onshore and offshore wind power developments into a single agency. This “National Wind Power Act” would supersede other environmental laws as the authoritative source for the regulation of all aspects of wind power projects in the United States. This initiative would encourage experienced international and domestic developers, as well as upstart entrepreneurs, to invest in wind power by: creating a streamlined and simplified permit process, reducing the time from a project’s proposal to its construction, and centralizing decision-making. In the absence of legislative change, businesses should continue to invest in wind power, and develop creative solutions that harness this largely untapped resource, by compromising with current environmental legislation, and working together with fellow developers.

I. INTRODUCTION

First, there is the power of the Wind, constantly exerted over the globe . . . Here is an almost incalculable power at our disposal, yet how trifling the use we make of it! It only serves to turn a few mills, blow a few vessels across the ocean, and a few trivial ends besides. What a poor compliment do we pay to our indefatigable and energetic servant.¹

The concept of wind power provides rich fodder for the imagination—a free and infinite source of energy that is non-polluting and purportedly cost-effective. For the environmental community, however, the notion of developing wind power into a meaningful alternative energy source has grown into a complicated and delicate dilemma. Proponents of aggressive wind power development in the United States often tout wind power as a potential environmental savior. They argue that using wind to create electricity may help reduce both fossil fuel use and pollutant emissions in the world’s rush towards sustainability over the next century. At a minimum, wind power may emerge as a meaningful supplement to fossil fuel energy that will help meet the ever-increasing demands for electricity and foster positive long-term environmental benefits. Proponents also suggest that a confluence of further benefits could result—ranging from a more progressive energy policy less dependent on foreign imports, to a corresponding shift in foreign policy—if wind power is properly developed into a major energy source.² The wind will continue blowing regardless; why not use it to humankind’s advantage? In the words of Shakespeare, “ill

¹ HENRY DAVID THOREAU, *Paradise (To Be) Regained*, in COLLECTED ESSAYS AND POEMS (STARTING PAGE), 115, 119, 121 (Library of America 2001).

² See generally American Wind Energy Ass’n, Awea Green power factsheets, <http://www.awea.org/greenpower> (last visited Mar. 29, 2007).

blows the wind that profits nobody.”³

The critics of wind power development see it as just another form of industrial growth, dangerously cloaked in a “green” exterior. They view this supposed environmental savior as a man-made plague on local landscapes and communities, fragmenting habitats, and causing irreparable ecological damage.⁴ The most popular complaints about wind power often focus on its health effect on wild birds and its aesthetic effect on humans. While it is generally uncertain just how significant an impact wind farms can have on wildlife and habitats,⁵ both sides of the debate often agree that the visual appeal of wind farms hinges heavily on the location of the farm and the tastes of the viewer.⁶ Many opponents of wind power have chosen to stress the negative aesthetic impact such projects will have, rather than questioning their utility.⁷

Today’s wind turbines do not evoke the quaint images of yesterday’s windmills slowly turning amidst a bucolic backdrop; current turbines are massive, seemingly overpowering creatures that swoop away at the sky. Often taller than the Statue of Liberty, today’s wind turbines fail to seamlessly integrate into the existing landscape; rather, the turbines *become* the landscape, killing bats and birds in the process.⁸ Construction of these

³ WILLIAM SHAKESPEARE, *THE THIRD PART OF KING HENRY THE SIXTH* act 2, sc. 5.

⁴ See generally Ecology Action Center, Wind energy, Concerns, Awea Green power factsheets, http://www.ecologyactioncenter.org/energy/wind_energy.shtml (last visited Mar. 29, 2007).

⁵ See Michelle Nijhuis, *Selling the Wind*, AUDUBON, Sept.–Oct. 2006, at 58, available at <http://magazine.audubon.org/features0609/energy.html> (“In a 2005 Government Accountability Office report to Congress summarizing the research on wind farms and wildlife impacts, the authors describe ‘significant gaps in the literature’ that ‘make it difficult for scientists to draw conclusions about wind power’s impact on wildlife in general.’”).

⁶ See *Ecogen, LLC v. Town of Italy*, 438 F. Supp. 2d 149 (W.D.N.Y. 2006).

⁷ One opponent, James Hall, a member of the an Ocean City, Maryland, City Council member and real estate agent, commented in response to a prosed wind farm in the mid-Atlantic region, “The worst idea I ever saw . . . Would you want to look out on the ocean and see 350 windmills? Not me!” See Anita Huslin, *Tilting Over Windmills in the Sea*, WASHINGTON POST: ONLINE ED., May 20, 2003, available at <http://www.washingtonpost.com/ac2/wp-dyn/A12495-2003May19>.

⁸ Local governments often oppose wind power development projects based on aesthetics. One town recently went so far as to propose a moratorium prohibiting the construction of wind turbine towers. See generally *Ecogen*, 438 F. Supp. 2d 149 (dismissing the complaint of a producer of wind-energy projects that sought relief under 42 U.S.C. § 1983 from a town’s moratorium prohibiting the construction of wind turbine towers). The *Ecogen* case begins:

The development of wind power projects, which convert wind energy into electricity, seems to be on the upswing in this country, but that growth has not been universally welcomed. See, e.g., Felicity Barringer, *Debate Over Wind Power Creates Environmental Rift*, N.Y. Times, June 6, 2006, at A18. As in *Don Quixote*, where one person sees a windmill, another sees a “monstrous giant”

new “wind turbine forests” often requires a large spatial footprint and excessive road infrastructure. The critics of wind power stress that development may aid in creating a new renewable energy source, but will create a panoply of new, very different, environmental problems that cannot be overlooked.⁹

Environmental advocates are presented with an uncomfortable “Hobson’s choice.”¹⁰ It is important to note that no energy technology poses zero environmental cost. Therefore, two choices arise: parties can argue against wind power development, potentially endorsing the status quo, where fossil fuels remain firmly entrenched as the only meaningful power source in the United States; or they can support wind power development, effectively creating what some view as a death knell for bird and bat populations and their habitats, and altering the scenic views of neighboring landowners.

Frequently, opponents of wind power development have relied upon environmental legislative provisions and the courts for relief.¹¹ Environmental statutes often include delicate balancing acts that weigh an assortment of congressional policies. History has shown that these statutes are formidable foes that can be used to stop even the most expensive development projects. The most famous example of the power wielded by environmental statutes occurred in 1978, when the Supreme Court sided with a citizens’ group in *Tennessee Valley Authority v. Hill*.¹² There, the Court authorized an injunction against the completion of the Tellico Dam, a multimillion-dollar dam project located on the Little Tennessee River, because the dam would threaten the existence of a tiny fish known as the snail darter.¹³ Even though the federal government had already spent an

looming over the countryside. This case involves one such proposed project that has met with local opposition.

Id. at 151–53 (discussing the aesthetic concerns behind the moratorium); *see also id.* at 158 (“Aesthetics is generally a valid subject of municipal regulation and concern.” (quoting *Sprint Spectrum L.P. v. Willoth*, 176 F.3d 630, 645 (2d Cir. 1999))).

⁹ Little is known at this point regarding the lasting effects of large scale wind power projects. New analyses suggest that large groups of wind turbines could have small but detectable influence on a region’s climate. *See* Sid Perkins, *Change in the Weather? Wind Farms Might Affect Local Climates*, SCIENCE NEWS, Oct. 16, 2004, at 246, available at <http://www.sciencenews.org/articles/20041016/fob7.asp>. The Department of Defense has also voiced some concern that wind turbines could potentially block military radar. *See Talk of the Nation* (NPR radio broadcast July 21, 2006), available at <http://www.npr.org/templates/story/story.php?storyId=5573653>.

¹⁰ “A choice without an alternative.” *See* WEBSTER’S II NEW RIVERSIDE UNIVERSITY DICTIONARY 585 (1984).

¹¹ *See infra* Part III.A.2.

¹² *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 153 (1978).

¹³ *Id.*

enormous amount of money constructing the nearly completed dam, the Court held completion of the dam would violate an environmental statute, the Endangered Species Act, and so it had no choice but to issue an injunction.¹⁴

Borrowing from the lesson of *Tennessee Valley Authority*, this article examines how the Endangered Species Act and numerous other environmental statutes are being used to thwart wind power development projects. First, the article examines how wind power has emerged in the quest to develop clean, efficient, and renewable alternative energy sources—by relying on wind farms that use large turbines to generate electricity from a fuel that is inherently free and infinite. Then, the article will discuss how attempts to invest in wind power as a new energy source have been challenged through a variety of means, particularly through the use of domestic statutory regulations. Next, this article looks to potential solutions to aid the development of wind power in the United States. The article surveys various international approaches to the issue, suggests the development of a National Wind Power Development Act to override other obstructive environmental statutory provisions and encourage investment, and discusses model business innovations that have emerged in an attempt to spur the development of wind power.

II. DEVELOPING A CLEAN ALTERNATIVE ENERGY: THE GROWTH OF WIND POWER IN THE UNITED STATES

A. How Wind Turbines Create Electricity

While the common household fan uses electricity to create wind, a wind turbine, by contrast, uses the power of the wind to make electricity.¹⁵ Because of this relationship, wind, a free and renewable resource, is emerging as a potential way to relax the usage of limited fossil fuel energy sources. The technology behind wind turbines currently in use consists of a horizontal axis turbine, which typically includes a set of three feather-shaped blades attached to a metal tower via a device known as a nacelle.¹⁶ The nacelle covers the drive train, shaft, and generator.¹⁷ Wind turns the blades, which spin a connected shaft, which then connects to a generator

¹⁴ *Id.* at 153–55; *see also* 16 U.S.C. § 1536 (2000).

¹⁵ U.S. Department of Energy, Wind and Hydropower Technologies Program: How Wind Turbines Work, http://www1.eere.energy.gov/windandhydro/wind_how.html (last visited Mar. 29, 2007) [hereinafter How Wind Turbines Work].

¹⁶ Christine Real de Azua, *The Future of Wind Energy*, 14 TUL. ENVTL. L.J. 485, 488 (2001).

¹⁷ AM. WIND ENERGY ASS'N, WIND ENERGY TEACHER'S GUIDE 4 (2003) [hereinafter TEACHER'S GUIDE], available at <http://www.awea.org/pubs/documents/TeachersGuide.pdf>.

though a drive train and gearbox.¹⁸ Inside the generator, gears help to spin magnets that convert the captured energy into electricity.¹⁹ The generator attaches to “electronic and electrical equipment including controls, electrical cables, ground support equipment, and interconnection equipment [that] control the turbine, ensure maximum productivity, and transmit the electrical current.”²⁰

In order to capture faster wind speeds, wind power turbines are often mounted very high. Many of today’s turbines reach heights upwards of 300 feet.²¹ For example, the Zond Z-750, a turbine widely used on wind projects in the United States between 1998 and 1999, includes a tower 208 feet (63 meters) high, with blades 79 feet (24 meters) in length, spanning a rotor diameter of 164 feet (50 meters).²² In fact, “the Z-750 . . . is capable of generating 750 kilowatts (kW) at its peak output.”²³

Wind turbines have become increasingly more efficient, quiet, reliable, and inexpensive with each passing year.²⁴ A 1.65 megawatt (MW) turbine in 2001 generated 120 times the energy of a 25 kilowatt (kW) machine built in the 1980s, at only twenty times the cost.²⁵ Blades on large turbines tend to spin slowly and usually cannot be heard over the sound of the wind itself, at speeds of around seventeen to thirty revolutions per minute (RPM) or

¹⁸ How Wind Turbines Work, *supra* note 15; *see also* TEACHER’S GUIDE, *supra* note 17, at 4.

¹⁹ TEACHER’S GUIDE, *supra* note 17, at 4.

²⁰ *Id.*; *see also* Jeannette Lee, *Search for Electricity Goes Underwater*, MSNBC, Nov. 9, 2006, <http://www.msnbc.msn.com/id/15588290> (discussing the use of underwater turbines that are being advanced as another potential source of alternative energy, of which the most advanced project in the United States is planned for Manhattan’s East River in New York).

²¹ TEACHER’S GUIDE, *supra* note 17, at 4.

²² Real de Azua, *supra* note 16, at 488.

²³ *Id.*

²⁴ The development of new technology in the wind energy sector has not been without its share of conflict. The sale of wind turbines, particularly for importation, often gives rise to potential patent infringement concerns. *See generally* Gamesa Eolica, S.A. v. GE, 359 F. Supp. 2d 790 (W.D. Wis. 2005) (discussing variable speed wind turbine systems); *see also* Enercon GmbH v. ITC, 151 F.3d 1376, 1378–81, 1385–86 (Fed. Cir. 1998) (discussing the technology involved in converting wind power into electrical power usable by an electric utility company and affirming the decision of the U.S. International Trade Commission (ITC), which found that a manufacturer of wind turbines violated § 337 of the Tariff Act of 1930, 19 U.S.C.S. § 1337, and excluded the manufacturer’s turbines from entry into the United States until expiration of a patent involving the method of controlling the AC power output). Developing new technologies can also often be risky and lead to financial troubles. *See generally* Lilley v. Charren, 936 F. Supp. 708 (N.D. Cal. 1999), *aff’d*, 17 F. App’x. 603 (9th Cir. 2001). The U.S. Department of Energy Wind Energy Technologies Program has played a key role in funding the National Renewable Energy Laboratory’s National Wind Technology Center which has conducted extensive research in the development of more efficient wind turbines. *See* National Renewable Energy Laboratory, Wind Research, <http://www.nrel.gov/wind> (last visited Mar. 29, 2007).

²⁵ Real de Azua, *supra* note 16, at 488–89.

less.²⁶ Wind projects also create electricity a greater percentage of time than other energy sources, as they are less likely to undergo shutdowns like nuclear or coal power plants.²⁷

Scientists designate wind into seven power classes ranging from class one to class seven, “with each class representing a range of mean wind power density or equivalent mean speed at specified heights above the ground.”²⁸ Current wind turbine technology limits wind energy development to class four level or greater.²⁹ The Department of Energy’s Wind & Hydropower Technologies Program has encouraged research to improve low wind speed technology in order to “reduce the cost of electricity from large wind systems in class four winds to three cents/kWh [kilowatt hours] for onshore systems or five cents/kWh for offshore systems.”³⁰ Future technological advances may allow class three winds to be used for power generation, thereby increasing potential development sites.³¹ Experts believe, however, that class one and two winds will permanently remain unsuitable for wind energy development.³²

B. An Overview of Wind Energy Development in the United States

The future of wind energy in the United States is promising. Wind energy worldwide is expected to increase due to ratification of the Kyoto Protocol³³—which calls for reductions in worldwide carbon emissions, the decreasing cost of implementation, and an awareness of the positive

²⁶ *Id.* at 489.

²⁷ *Id.* (citing to evidence that during the California energy crisis in January 2001, nearly 11,000 MW of generating capacity, an amount equivalent to about a third of the power the state would need at peak demand, was out of commission for “required maintenance” or because of breakdowns.).

²⁸ U.S. Department of Energy, Wind and Hydropower Technologies Program: Wind Energy Resource Potential, http://www1.eere.energy.gov/windandhydro/wind_potential.html (last visited Mar. 29, 2007) [hereinafter Wind Energy Resource Potential].

²⁹ *See Id.*

³⁰ *See* U.S. Department of Energy, Wind and Hydropower Technologies Program: Low Wind Speed Technology, http://www1.eere.energy.gov/windandhydro/wind_low_speed.html (last visited Mar. 29, 2007) [hereinafter Low Wind Speed Technology]. The Department of Energy is seeking improvements in three principal areas of low wind speed technology: (1) turbine rotor diameters must be larger to harvest the lower-energy winds from a larger inflow area without increasing the cost of the rotor, (2) towers must be taller to take advantage of the increasing wind speed at greater heights, and (3) generation equipment and power electronics must be more efficient to accommodate sustained light wind operation at lower power levels without increasing electrical system costs. *Id.*

³¹ *See Id.*

³² *See* Wind Energy Resource Potential, *supra* note 28.

³³ Note that the United States was not a signatory of the Kyoto Protocol. Further discussion of the Kyoto Protocol and its provisions is outside of the scope of this article.

environmental effects of wind-based power.³⁴ In the United States, areas capable of harvesting wind energy account for only approximately 6% of the contiguous U.S. land area, but may be able to “supply more than one and a half times the current electricity consumption of the United States.”³⁵ Given this tremendous potential to alleviate current dependence on fossil fuel energy, wind energy is experiencing tremendous growth in what is still a nascent sector of the domestic energy market. Indeed, the future of wind energy appears to be bright if the sector is allowed to grow.

The United States has the potential for extensive wind energy development and production, yet it remains largely untapped.³⁶ Scientific studies estimate that U.S. wind could generate up to 10,777 billion kilowatt hours (kWh) of electricity—an amount greater than necessary to power the entire country.³⁷ According to those studies, “the top ten states for wind energy potential [in the United States] are North Dakota . . . , Texas, Kansas, South Dakota, Montana, Nebraska, Wyoming, Oklahoma, Minnesota and Iowa.”³⁸ Wind from coastal states may also be harvested using offshore wind power projects.³⁹

California constructed the first commercial wind farms in the United States in the 1980s.⁴⁰ Due in part to early adoption of the technology, California had the largest amount of wind energy generating capacity installed through 2001, though the state ranked only seventeenth in wind energy potential, with the potential to “generate a total of [fifty-nine] billion kWh per year.”⁴¹ Domestic wind energy production reached 1000 megawatts in 1985, but production would not eclipse the 2000 megawatts mark until 1999.⁴² Even though it took nearly a decade and a half for the United States to double its production, installation of new wind energy capacity in the United States in 2005 outpaced every other country in the world.⁴³ In fact, new capacity in 2005 totaled 2431 megawatts and was “worth more than \$3 billion in generating equipment [which] brought the

³⁴ Lena M. Hansen, *Can Wind be a “Firm” Resource? A North Carolina Case Study*, 15 DUKE ENVTL. L. & POL’Y F. 341, 380 (2005).

³⁵ See Wind Energy Resource Potential, *supra* note 28.

³⁶ Real de Azua, *supra* note 16, at 493.

³⁷ *Id.*

³⁸ *Id.*

³⁹ See *infra* Part II.C.

⁴⁰ U.S. Department of Energy, Wind and Hydropower Technologies Program: Wind Powering America, <http://www.eere.energy.gov/windandhydro/windpoweringamerica> (last visited Mar. 29, 2007) [hereinafter Wind Powering America].

⁴¹ See Real de Azua, *supra* note 16, at 493.

⁴² Wind Powering America, *supra* note 40.

⁴³ See U.S. Department of Energy, Wind and Hydropower Technologies Program, <http://www1.eere.energy.gov/windandhydro> (last visited Mar. 29, 2007) [hereinafter Wind and Hydropower Technologies Program].

total national wind energy capacity to 9149 megawatts.”⁴⁴ Experts expected U.S. wind energy capacity to grow at a record-breaking pace in the subsequent months, with capacity in excess of 10,000 megawatts by the end of July 2006—more than ten times the level just two decades prior.⁴⁵ Current capacity produces “enough electricity to power 2.3 million average American households.”⁴⁶ In fact, wind power is “the second-fastest-growing source of electricity” to natural gas.⁴⁷ Assisting in this development, the U.S. Department of Energy seeks to increase wind power generating capacity to 100 megawatts each in at least thirty states by 2010.⁴⁸

C. An Examination of Onshore Versus Offshore Wind Energy Production

Wind power turbines may be installed either on land (“onshore” or “terrestrial”) or over bodies of water (“offshore”). Until recently, all wind turbines throughout the world have been land based.⁴⁹ Although onshore wind turbines represent the predominant version currently employed throughout much of the world, the future of offshore wind projects must not be discounted. Optimism regarding offshore wind projects stems from their novelty and their potential scientific advantages. The issue of where to place wind power turbines, however, remains a source of debate.

As noted above, the strongest wind resources in the United States occur in the western states and the Great Plains region.⁵⁰ Unfortunately, these winds often occur in remote places without sufficient access to power transmission lines and infrastructure.⁵¹ While these remote locations pose a reduced likelihood of negatively affecting people, transferring the energy from such generation locations to load centers remains prohibitively expensive.⁵² Because the majority of the population in the United States

⁴⁴ *Id.*

⁴⁵ *See id.*

⁴⁶ *See id.*

⁴⁷ Nijhuis, *supra* note 5, at 55.

⁴⁸ *See* U.S. Department of Energy, Wind and Hydropower Technologies Program: Wind Energy Technology Acceptance, http://www1.eere.energy.gov/windandhydro/wind_tech_accept.html (last visited Mar. 29, 2007) [hereinafter Wind Energy Technology Acceptance].

⁴⁹ *See* U.S. Department of the Interior, *Service Interim Guidelines on avoiding and Minimizing Wildlife Impacts from Wind Turbines*, May 13, 2003, Appendix 7, at 50, available at <http://www.fws.gov/habitatconservation/wind.pdf>.

⁵⁰ *See id.* (citing Ari Reeves, *Wind Energy for Electric Power: A REPP Issue Brief*, 10 (2003), available at http://solstice.crest.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf).

⁵¹ *See id.*; *see also* Janet Raloff, *Power Harvests*, SCIENCE NEWS, July 21, 2001, available at <http://www.sciencenews.org/articles/20010721/bob14.asp> (discussing how American farmers could lease active farmland to onshore wind power developers).

⁵² *See* Carolyn S. Kaplan, *Congress, the Courts, and the Army Corps: Siting the First Offshore Wind Farm in the United States*, 31 B.C. ENVTL. AFF. L. REV. 177, 190 (2004).

resides near the coastlines, placing wind turbines just offshore along the Atlantic and Pacific coasts could “accommodate larger scale projects than can service regional load centers, avoiding the higher transmission costs that would plague remotely located wind farms.”⁵³ Moreover, a number of Atlantic Coast states (Connecticut, Massachusetts, and New Jersey) already promote the use of alternative energy sources, and have established a renewable portfolio standard (“RPS”) for their utilities.⁵⁴ When enacted, a RPS requires “that any company selling electricity in a competitive market include renewable energy as a percentage of its portfolio of generating sources.”⁵⁵

In contrast to land-based winds, offshore winds are typically stronger and less turbulent, thereby increasing the potential for successful energy creation.⁵⁶ Another advantage of offshore turbines is that their size can easily eclipse that of onshore turbines, thereby producing more power per turbine.⁵⁷ Offshore wind turbines also appear to have a longer useful life than land-based turbines due to reduced wind shear.⁵⁸ Offshore turbine installations do not require vast amounts of land, and therefore can be built near population centers without facing the problems commonly associated with close proximity to homes and other buildings.⁵⁹ In addition, placing wind turbines offshore also reduces complaints over aesthetic concerns, as turbines can be installed far enough offshore that they are out of sight.⁶⁰

The drawback to offshore wind power development, however, lies primarily with the increased construction and maintenance costs associated with building in water.⁶¹ Offshore wind turbines are more expensive and difficult to install and maintain, as they must be able to survive “the offshore wind and wave loading of severe storms and must be protected from the corrosive marine environment.”⁶² While environmental concerns plague both onshore and offshore wind power developments, environmental groups point out that comparatively less research has been conducted on the environmental effects that offshore wind projects may cause “birds, fish,

⁵³ See *id.*

⁵⁴ See *id.*

⁵⁵ See *id.* at 186.

⁵⁶ See *id.* at 191.

⁵⁷ See e.g. Robert Thresher, *Wind Power Today*, EJOURNAL USA: GLOBAL ISSUES, June 2005, available at <http://usinfo.state.gov/journals/itgic/0605/ijge/thresher.htm> (last visited Mar. 29, 2007); Cheryl Pellerin, *Wind Power World's Fastest-Growing New Electricity Source*, U.S. DEPT. OF STATE, International Information Programs, Apr. 25, 2005, available at <http://usinfo.state.gov/gi/Archive/2005/Apr/22-869267.html>.

⁵⁸ See Kaplan, *supra* note 52, at 191.

⁵⁹ See e.g. Thresher, *supra* note 57; Pellerin, *supra* note 57.

⁶⁰ See *id.*

⁶¹ See *id.*

⁶² Thresher, *supra* note 57.

sea mammals, and animals on and below the seabed floor.”⁶³

III. LEGAL CHALLENGES TO THE GROWTH OF WIND POWER

A. Not in My Cape Cod: An Illustration of the Role Public Sentiment Plays in Development.

Although the United States does not currently have an offshore wind power development,⁶⁴ several projects are in the planning and permitting stage.⁶⁵ The U.S. Department of Energy (“DOE”) is optimistic that competitive commercial wind power developments can be realized, and “that U.S. offshore wind electric generating capacity could grow significantly over the next two decades.”⁶⁶ In fact, some experts believe that the development of offshore wind energy could contribute “up to 70,000 megawatts of power to the electric grid by 2025, nearly [ten] times the current level.”⁶⁷ Growth of wind power along the coastal areas could result in lower energy prices, as wind power develops as an alternative energy resource.⁶⁸

1. About the Cape Wind Project

Despite the promise of future offshore wind power development in the United States, not all citizens favor such development. The most notable offshore development project is planned for Nantucket Sound. Known as the Cape Wind project (“Cape Wind”), the plan was proposed by Energy Management Inc. (“EMI”), a New England-based energy company with over twenty-eight years of energy development experience, through Cape Wind Associates, LLC.⁶⁹ The Cape Wind project is expected to provide reliable, cost-effective energy to Massachusetts and the rest of the New England region.⁷⁰

⁶³ Northeast Sustainable Energy Association, *Harvesting Offshore Wind*, available at, http://www.nesea.org/publications/NESun/wind_article.html (last visited Mar. 29, 2007).

⁶⁴ One commentator notes that at least twelve offshore wind power developments have been proposed, including one seven miles offshore from Galveston, Texas. See *Cape Wind's Prospects and Energy Output Get a Boost*, ENERGY BIZ INSIDER ONLINE, Dec. 16, 2006, available at <http://www.energycentral.com/site/newsletters/ebi.cfm?id=250>.

⁶⁵ See U.S. Department of Energy, *DOE to Develop Multi-Megawatt Offshore Wind Turbine with General Electric*, Mar. 9, 2006 [hereinafter *Offshore Turbine*], available at <http://www.energy.gov/news/3309.htm>.

⁶⁶ See *id.*

⁶⁷ See Pellerin, *supra* note 57.

⁶⁸ See *Offshore Turbine*, *supra* note 65.

⁶⁹ See Cape Wind Associates, LLC, *Company History and Management Team*, available at <http://www.capewind.org/article27.htm> (last visited Mar. 29, 2007) [hereinafter *Cape Wind Management*].

⁷⁰ See Cape Wind Associates, LLC, *Cape Wind Passes Major Regulatory Milestone*, May

When complete, the Cape Wind project will consist of 130 wind turbine generators along with an additional electrical service platform.⁷¹ Original plans estimated that “each [turbine] would be approximately 420 feet in height from the water to the top of the blade.”⁷² A 2006 revision, however, increased the proposed height to 440 feet.⁷³ The wind turbines will be mounted “to a single monopole foundation, which is a hollow steel pipe that will be driven [eighty] feet into the sandy seabed” to provide stability.⁷⁴ Cape Wind estimates that “the base of the wind turbine towers will be [sixteen] feet in diameter.”⁷⁵ Each tower will be a revised 258 feet tall “from the surface of the water to the center of the blades.”⁷⁶ Blades on the turbines will range from a height of 440 feet above the surface of Nantucket Sound to a blade tip seventy-five feet above the surface of the water.⁷⁷ The shallow depth of Horseshoe Shoal is expected to “simplify construction and minimize interference with marine traffic and commercial fishing.”⁷⁸

The turbines will encompass approximately twenty-four square miles of Horseshoe Shoal in Nantucket Sound, and will be connected by undersea cables to a service platform that will house an electric transformer.⁷⁹ Although the 130 turbines and electrical service platform “will be spread over a twenty-four square mile area, it will only physically occupy two acres.”⁸⁰ The closest points from the project to the shore would vary throughout, but would include: “Point Gammon in Yarmouth, 4.7 miles to the north; Cape Poge on Martha’s Vineyard, 5.5 miles to the southwest; and points in Nantucket approximately eleven miles to the south and southeast.”⁸¹ The closest turbines to the shoreline, under clear conditions, “will appear one half-inch above the horizon.”⁸²

10, 2005, available at <http://www.capewind.org/news375.htm> [hereinafter *Cape Wind Milestone*].

⁷¹ Alliance to Protect Nantucket Sound, Inc. v. Energy Facilities Siting Bd., 448 Mass. 45, 48 (Mass. 2006).

⁷² *Id.* at 48–49.

⁷³ See Beth Daley, *On the Horizon?*, THE BOSTON GLOBE, Oct. 15, 2006, available at http://www.boston.com/news/local/articles/2006/10/15/on_the_horizon.

⁷⁴ See Cape Wind Associates, LLC, *Frequently Asked Questions*, available at <http://www.capewind.org/FAQ-Category4-Cape+Wind+Basics-Parent0-myfaq-yes.htm> (last visited Mar. 29, 2007) [hereinafter *Cape Wind FAQ*].

⁷⁵ *See id.*

⁷⁶ *See id.*

⁷⁷ *See id.*

⁷⁸ See Kaplan, *supra* note 52, at 193.

⁷⁹ See Alliance to Protect Nantucket Sound, Inc. v. Energy Facilities Siting Bd., 448 Mass. 45, 49 (Mass. 2006).

⁸⁰ See Kaplan, *supra* note 52, at 192.

⁸¹ See *Alliance to Protect Nantucket Sound*, 448 Mass. at 49.

⁸² See Cape Wind FAQ, *supra* note 74.

Importantly, the Cape Wind project in Horseshoe Shoal will be located on the Outer Continental Shelf ("OCS"), which is land subject to federal jurisdiction and control under the Outer Continental Shelf Lands Act ("OCSLA"), 43 U.S.C. § 1331.⁸³ Parts of the Cape Wind project were initially slated for location in state waters based on plans by the U.S. Department of the Interior; but with such a location, the Massachusetts Environmental Protection Act would require environmental review, including the completion of an Environmental Impact Report ("EIR").⁸⁴ Under that plan, commentators noted that the Cape Cod Commission ("CCC") would be responsible for the review of the project under Massachusetts law as a Development of Regional Impact ("DRI").⁸⁵ Additionally, Cape Wind agreed to file one set of documents to fulfill any obligations under applicable state and federal laws.⁸⁶ Cape Wind, however, has since adjusted the planned turbine locations, so that "the entire project is now in federal waters."⁸⁷

The Cape Wind project "will be rated to produce up to 468 megawatts of wind power as each wind turbine will produce up to 3.6 megawatts . . . [for a] maximum expected production . . . [of] 454 megawatts."⁸⁸ EMI expects that average production "will be 170 megawatts, which is almost 75% of the 230 megawatt average electricity demand for Cape Cod and the islands of Martha's Vineyard and Nantucket."⁸⁹ Given this energy potential, the possible benefits of the Cape Wind project are seemingly obvious. The question, though, is at what cost?

2. The Legal Challenges to Cape Wind

Due to its proposed location, the Cape Wind project has faced protracted public scrutiny from its outset. An opinion poll conducted by the Institute for Regional Development at Bridgewater State College, and sponsored by the Cape Cod Times and WCAI-WNAN, surveyed 588 Massachusetts residents of Barnstable, Nantucket, and Dukes Counties, between February 12 and 22, 2004, and found that residents narrowly

⁸³ See e.g. *Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of the Army*, 398 F.3d 105, 107 (1st Cir. 2005); *Alliance to Protect Nantucket Sound*, 448 Mass. at 48.

⁸⁴ See Kaplan, *supra* note 52, at 193 n.92; see also MASS.GEN.LAWS ch. 30, §§ 61–62H (2007).

⁸⁵ See Kaplan, *supra* note 52, at 193 n.92 (citing Cape Cod Comm'n Act of 1989, 1989 Mass. Acts 716).

⁸⁶ See *id.* (citing Mass. Executive Office of Environmental Affairs, *Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form*, 4 (2002), available at <http://www.state.ma.us/envir/mepa/downloads/12643cert.doc>).

⁸⁷ See Daley, *supra* note 73.

⁸⁸ See Cape Wind FAQ, *supra* note 74.

⁸⁹ *Id.*

opposed the project, 55.1% to 44.9%.⁹⁰ The results showed that residents were most strongly opposed to the project due to aesthetic concerns, followed closely by environmental concerns.⁹¹ Interestingly, the statistics showed that residents were more likely to be opposed to the project as their income level increased.⁹²

This limited data suggests that there is a very real “not in my backyard” sentiment among those whose property values and aesthetic sightlines may be affected by these projects. In fact, such an attitude appears to be reflected by an opinion article written by a member of the area’s most famous family, the Kennedy family. Prof. Robert F. Kennedy, Jr. noted in his article that, “[a]s an environmentalist, I support wind power, including wind power on the high seas . . . [b]ut I do believe that some places should be off limits to any sort of industrial development.”⁹³ In other words, Kennedy contests not the merits of wind power projects generally, but rather the specific placement of Cape Wind.⁹⁴ Indeed, Kennedy further suggested that Cape Wind place its project “further offshore, [where] it could build not just 130, but thousands of windmills—where they can make a real difference in the battle against global warming without endangering the birds or impoverishing the experience of millions of tourists and residents and fishing families who rely on the sound’s unspoiled bounties.”⁹⁵ Kennedy, however, offered no scientific explanation of how birds or marine life would be less affected by merely placing the turbines—and multiplying the number of them—further offshore.⁹⁶ Presumably, Kennedy’s concerns appear to rest solely with how the project could impact “tourists and residents.”

The Alliance to Protect Nantucket Sound (the “Alliance”),⁹⁷ also

⁹⁰ See WBGH Online, *Cape Wind Poll*, available at http://www.wgbh.org/cainan/article?item_id=1484587 (last visited Mar. 29, 2007).

⁹¹ See *id.*

⁹² *Id.*

⁹³ Robert F. Kennedy, Jr., *An Ill Wind Off Cape Cod*, N.Y. TIMES, Dec. 16, 2005, at 41.

⁹⁴ This kind of debate over the location of projects may invoke a number of environmental concerns.

⁹⁵ Kennedy, Jr., *supra* note 93, at 41.

⁹⁶ By contrast, another area property owner with a view of Horseshoe Shoal and a famous family lineage, Theodore Roosevelt IV, is leading the efforts to finance the private project through Lehman Brothers. Roosevelt commented, “*Our house looks directly toward Horseshoe Shoal. We will see this project when it gets built. Yes, if this were a perfect world, this would not get built. But we can’t continue business as usual.*” Wendy Williams, *Theodore Roosevelt IV Tilts for Windmills*, PROVIDENCE J., May 25, 2005, reprinted in CAPE WIND ONLINE, available at <http://www.capewind.org/news384.htm>.

⁹⁷ Interestingly, the Alliance has received criticism from other environmental groups, including Greenpeace. In fact, Greenpeace, which supports Cape Wind, criticized the true motivation behind the Alliance and its efforts to block the project. Greenpeace.org, Greenpeace Support’s Cape Wind, America’s First Offshore Wind Farm,

known as Save Our Sound, has emerged as the most vocal opponent of the Cape Wind project and also the most active litigant.⁹⁸ The Alliance is a 501(c)(3) nonprofit environmental organization formed in 2001, in direct response to the Cape Wind project.⁹⁹ The Alliance is dedicated to the long-term preservation of Nantucket Sound “in perpetuity through conservation, environmental action, and opposition to inappropriate industrial or commercial development that would threaten or negatively alter the coastal ecosystem.”¹⁰⁰ As part of its purpose, the Alliance “supports formal designation of Nantucket Sound as a marine protected area.”¹⁰¹ Among the allies of the Alliance are former Massachusetts Governor Mitt Romney (R-MA), Senator Edward M. Kennedy (D-MA), and Congressman William Delahunt (D-MA).¹⁰² Current Governor Duval Patrick (D-MA), however, openly supports the Cape Wind project, lauding it as the centerpiece of an effort to make Massachusetts more attractive to alternative energy start-up companies.¹⁰³

Before moving forward with plans to erect its wind turbines along the Nantucket Sound horizon, Cape Wind planned to first construct a Scientific Measurement Devices Station (“SMDS”), or data tower, within Horseshoe Shoal to test the viability of the project.¹⁰⁴ In contemplation of this project, section 10 of the Rivers and Harbors Appropriations Act of 1899 (the “RHA”)¹⁰⁵ required Cape Wind to submit a permit application to the Army

<http://www.greenpeace.org/usa/campaigns/global-warming-and-energy/copy-of-wind-power/in-support-of-cape-wind/greenpeace-support-s-cape-wind> (last visited Apr. 12, 2007).

⁹⁸ More information on the Alliance is available at <http://www.saveoursound.org>.

⁹⁹ The Alliance to Protect Nantucket Sound, About <http://www.saveoursound.org/About/Default> (last visited Mar. 29, 2007).

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ Peter J. Howe, *Energy*, BOSTON GLOBE, Nov. 9, 2006, available at <http://www.boston.com/news/local/politics/candidates/articles/2006/11/09/energy>.

¹⁰⁴ Kaplan, *supra* note 52, at 197.

¹⁰⁵ Section 10 of the RHA provides, in pertinent part:

The creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of the Army; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the

Corps of Engineers (the "Corps") for approval, which Cape Wind did in November 2001.¹⁰⁶ A month later, in December 2001, the Corps announced through public notice "that it was considering Cape Wind's data tower application."¹⁰⁷ The public notice stated that Cape Wind was seeking "to install and maintain a pile-supported scientific measuring tower extending [approximately] 263 feet in the air above the mean lower low water elevation in the ocean waters of Nantucket Sound as well as an associated measurement device imbedded in the sea floor," all of which would be located on the OCS in waters outside of the Commonwealth of Massachusetts.¹⁰⁸ Moreover, the stated purpose of the data tower would be for "gathering scientific data, including meteorological and oceanographic data, to evaluate the design and engineering criteria for a proposed wind energy project in this area of Horseshoe Shoals."¹⁰⁹ The public notice disclosed that Cape Wind would be "the subject of a separate and distinct permit and environmental review process with further opportunity for public involvement."¹¹⁰ The Corps determined shortly after release of the public notice that an Environmental Impact Statement would be required for the wind farm project under NEPA.¹¹¹

Based upon the requirements of NEPA, "the Corps issued an Environmental Assessment ("EA") and a Finding of No Significant Impact ("FONSI") [related] to the data tower."¹¹² As a result of that finding, the Corps issued a permit under RHA section 10 to Cape Wind on August 19, 2002, allowing it to install and operate the data tower.¹¹³ These administrative decisions led to a number of civil lawsuits in Massachusetts, as well as federal legislation designed to stop or delay construction of the data tower and the underlying project.¹¹⁴

After Cape Wind received its permit, it planned for construction of the

Secretary of the Army prior to beginning the same.

33 U.S.C. § 403 (2000).

¹⁰⁶ See *Id.*; see also Kaplan, *supra* note 52, at 197 n.118 (citing Press Release, U.S. Army Corps of Eng'rs, Cape Wind Applies for Corps Permit to Install Scientific Measuring Tower in Nantucket Sound (Dec. 4, 2001), available at <http://www.nae.usace.army.mil/news/2001-162.html>).

¹⁰⁷ Kaplan, *supra* note 52, at 197.

¹⁰⁸ U.S. Army Corps of Eng'rs, Public Notice (Dec. 4, 2001), available at <http://www.nae.usace.army.mil/projects/ma/ccwt/capewindfarmsllcnov2001.pdf>.

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ Kaplan, *supra* note 52, at 198.

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Id.*

data tower to begin on October 7, 2002.¹¹⁵ Concerned parties, including the Cape Cod Marine Trades Association, Inc., and a group known as the Ten Taxpayers Citizen Group, sought and received a temporary restraining order from the Barnstable Superior Court on September 24, 2002.¹¹⁶ Cape Wind removed the matter to the U.S. District Court for the District of Massachusetts, based on federal question jurisdiction arising out of the Magnuson-Stevens Fishery Conservation and Management Act (the “Magnuson Act”), 16 U.S.C. § 1801 *et seq.*¹¹⁷ The temporary restraining order soon expired, and Cape Wind began building the data tower on October 27, 2002.¹¹⁸

Before the district court, the plaintiffs, Ten Taxpayers Citizen Group, alleged that Cape Wind needed to first receive licensure from the Commonwealth of Massachusetts in order to construct the data tower. Plaintiffs based this argument on an incorrect assumption that the federal government ceded its jurisdiction over the entire Nantucket Sound fishery to Massachusetts under a 1983 amendment to the Magnuson Act.¹¹⁹ The district court granted Cape Wind’s motion to dismiss, finding that the Magnuson Act only granted Massachusetts exclusive regulatory jurisdiction with respect to fishing in the limited area of Nantucket Sound.¹²⁰ The district court found that non-fishing activities do not fall under the jurisdiction of Massachusetts, but reside with the federal government.¹²¹ Accordingly, the district court held that the construction of a scientific testing tower on the OCS was outside of the jurisdiction of the Commonwealth of Massachusetts, and as a result, no state license was required.¹²²

The plaintiffs appealed the decision to the U.S. Court of Appeals for the First Circuit.¹²³ The First Circuit affirmed the judgment of the district court, dismissing the plaintiffs’ complaint and concluding, “any Massachusetts permit requirement that might apply to the SMDS project is inconsistent with federal law and thus inapplicable on Horseshoe Shoals under the OCSLA.”¹²⁴ The U.S. Supreme Court subsequently declined to

¹¹⁵ *Ten Taxpayers Citizen Group v. Cape Wind Assocs., LLC*, 278 F. Supp. 2d 98, 99 (D. Mass. 2003), *aff’d*, 373 F.3d 183 (1st Cir. 2004), *cert. denied*, 543 U.S. 1121 (2005).

¹¹⁶ *Id.*

¹¹⁷ *Id.* at 99–100.

¹¹⁸ *Id.* at 99.

¹¹⁹ *Id.* at 100–01.

¹²⁰ *Id.* at 101.

¹²¹ *Cape Wind*, 278 F. Supp. 2d., at 101.

¹²² *Id.*

¹²³ *See Taxpayer Citizens Group v. Cape Wind Assocs., LLC*, 373 F.3d 183 (1st Cir. 2004).

¹²⁴ *Id.* at 197.

grant certiorari to further review the matter.¹²⁵

Just over a month later, District Court Judge Joseph L. Tauro, who wrote the opinion of the district court in *Ten Taxpayers Citizen Group v. Cape Wind Assocs., LLC*, offered an opinion in a second case.¹²⁶ Judge Tauro prophetically wrote, “[t]his action is the second skirmish in what may prove to be a protracted struggle over the construction of a wind energy plant in Nantucket Sound, Massachusetts.”¹²⁷

Going further than the first case, the second case involved a challenge to the Army Corps’ decision to issue the permit under RHA section 10 to Cape Wind to construct the data tower on the OCS.¹²⁸ The section 10 permit imposed certain conditions upon Cape Wind, including the following: “Cape Wind must remove the data tower ‘within five years of the start of construction’; Cape Wind must ‘post a bond for \$300,000 . . . for emergency repairs or removal of the tower’; and Cape Wind must share the data collected with government agencies, educational institutions, and research organizations.”¹²⁹

The district court disagreed with the plaintiffs’ contention, “that the Corps lacked the authority to issue a section 10 permit for the construction of the data tower on the OCS.”¹³⁰ Instead, the district court found that the Outer Continental Shelf Lands Act (“OCSLA”), codified at 43 U.S.C. § 1333(e), broadly extended the Corps’ authority to grant section 10 permits on the OCS, including “the artificial islands and fixed structures” thereupon.¹³¹

The plaintiffs invoked another important environmental regulation, the National Environmental Policy Act (“NEPA”), in an effort to halt construction of the data tower.¹³² The plaintiffs alleged that the Corps failed to comply with certain NEPA requirements, including:

(1) [the Corps] did not circulate the Environmental Assessment and FONSI for public comment, (2) [the Corps] did not adequately consider alternatives to the data tower, (3) [the Corps] acted improperly in reviewing the data tower application apart from the [separately-filed] wind energy plant application, and (4) [the Corps] did not consider the environmental effects of removal of the data

¹²⁵ See *Ten Taxpayer Citizens Group v. Cape Wind Assocs., LLC*, 543 U.S. 1121 (2005).

¹²⁶ *Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep’t of the Army*, 288 F. Supp. 2d 64 (D. Mass. 2003), *aff’d*, 398 F.3d 105 (1st Cir. 2005).

¹²⁷ *Id.* at 66.

¹²⁸ *Id.* at 66–67.

¹²⁹ *Id.* at 69.

¹³⁰ *Id.* at 72.

¹³¹ *Id.* at 72–73.

¹³² *Alliance*, 288 F. Supp. 2d, at 78.

tower.¹³³

The district court examined each of those contentions and found that all of them lacked merit.¹³⁴ As a result, the district court granted summary judgment in favor of Cape Wind and the named defendants.¹³⁵ On appeal, the United States Court of Appeals for the First Circuit affirmed the District Court's judgment.¹³⁶

3. Clearing the Legal Hurdles—the Future of Cape Wind

The Cape Wind project illustrates how plaintiffs may utilize federal statutes in order to permanently halt, or at least delay, the permitting and construction phases of a wind power development project.¹³⁷ Although unsuccessful in its quest to permanently stop the Cape Wind project thus far, the Alliance to Protect Nantucket Sound has successfully delayed the project at every step of the way. The Alliance has been able to transform its aesthetic concerns over the potential loss of the Horseshoe Shoal's physical beauty into a legal hurdle for Cape Wind. They have done this by using environmental laws that include specific procedural requirements to invoke judicial review before Cape Wind may be permitted to undertake its proposed wind power development.¹³⁸ Viewed in this light, the struggles faced by the Alliance to date may provide property owners potentially affected by future developments hope, albeit for a different outcome.

Following the legal battles denoted herein, Cape Wind installed its 196-foot high scientific monitoring station to collect information on wind,

¹³³ *Id.*

¹³⁴ *Id.* at 78–82.

¹³⁵ *Id.* at 82.

¹³⁶ See *Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of the Army*, 398 F.3d 105 (1st Cir. 2005).

¹³⁷ The authors recognize that various state laws will also regulate and affect wind power development both onshore and offshore, but refrain from examining such laws in this article. In *Alliance to Protect Nantucket Sound, Inc. v. Energy Facilities Sitting Bd.*, the Supreme Judicial Court of Massachusetts upheld the decision by the Massachusetts Energy Facilities Board conditionally granting a petition by Cape Wind and the Commonwealth Electric Company, doing business as NSTAR Electric ("NSTAR"), "to build and operate two 115 kilovolt underground and undersea electric transmission lines approximately eighteen miles in length" connecting the Cape Wind project to the existing New England regional electric power grid. *Alliance to Protect Nantucket Sound, Inc. v. Energy Facilities Sitting Bd.*, 858 N.E. 2d 294 (Mass. 2006). The Alliance intervened in the matter and sought relief from the Board's decision. The Supreme Judicial Court, ruling entirely on state law issues, found the Board's discretionary decision to be "an eminently reasonable and practical approach to the uncommon jurisdictional issues presented by the petition." *Id.* at 302.

¹³⁸ For more information on the aesthetic concerns raised by wind power development, see Avi Brisman, *The Aesthetics of Wind Energy Systems*, 13 N.Y.U. ENVTL. L.J. 1 (2005).

waves, tide height, currents, and water temperature.¹³⁹ At the present time, Cape Wind is still undergoing federal review of its construction permit, in the hope that it will one day become the first offshore wind turbine farm in the United States.¹⁴⁰ The Army Corps of Engineers released its combined Draft Environmental Impact Statement (“DEIS”), Draft Environmental Impact Report (“DEIR”), and Development of Regional Impact (“DRI”) in November 2004, all of which affirmatively showed the “compelling public benefits with positive environmental and economic impacts” expected from the Cape Wind project.¹⁴¹ Cape Wind foresees the permitting process to last into 2008, with turbine manufacturing and construction planned for 2010.¹⁴²

Despite the plan to move forward, the Alliance and other residents of the Nantucket Sound area still hold out hope that construction will never take place.¹⁴³ To secure that end, the Alliance created its own lobbying organization, Advocates for Nantucket Sound, Inc. (“Advocates”), on June 28, 2006.¹⁴⁴ Between 2002 and the formation of Advocates in 2006, the Alliance spent approximately \$800,000 on outside lobbying efforts, albeit to no avail.¹⁴⁵ According to the Alliance, the lobbying organization “is a recognition of how important state and federal legislation has become in

¹³⁹ Kaplan, *supra* note 52, at 193.

¹⁴⁰ In November 2001, Cape Wind submitted a separate application to the Corps for a section 10 permit under the RHA in order to construct and operate the wind farm proposed for Horseshoe Shoal. *See id.* at 219, (citing U.S. Army Corps of Eng’rs, Notice of Intent to Prepare a Draft Environmental Impact Statement, *available at* <http://www.nae.usace.army.mil/projects/ma/ccwf/NOI%20Cape%20Wind.pdf>).

¹⁴¹ Cape Wind Associates, LLC, Permitting Update, <http://www.capewind.org/article72.htm> (last visited Mar. 29, 2007); *see also* U.S. Army Corps of Engineers, *Cape Wind Energy Project Draft Environmental Impact Statement*, *available at* <http://www.nae.usace.army.mil/projects/ma/ccwf/deis.htm> (last visited Apr. 15, 2007).

¹⁴² Cape Wind Associates, LLC, Project Timeline, <http://www.capewind.org/article26.htm> (last visited Mar. 29, 2007).

¹⁴³ The next protracted struggle over offshore wind power development could emerge in southern Texas, where the nation’s largest offshore wind farm is being planned by Superior Renewable Energy Inc., for a 40,000 acre site near the Padre Island seashore in South Texas, a critical migratory bird flyway. *Texas Plans Nation’s Largest Offshore Wind Farm*, USA TODAY, May 11, 2006, *available at* http://www.usatoday.com/news/nation/2006-05-11-texaswind_x.htm. For an argument urging courts to oversee offshore wind power development using the public trust doctrine rather than an amended version of the OCSLA, *see* Cathy J. Lewis, *The Timid Approach of the Federal Courts to the Public Trust Doctrine: Justified Reluctance or Dereliction of Duty?*, 19 PUB. LAND & RESOURCES L. REV. 51, 58 (1998).

¹⁴⁴ *See* Dick Farley, *Alliance Forms a New Anti-Wind Farm Lobbying Arm*, CAPE COD TODAY, Aug. 8, 2006, *available at* <http://www.capecodtoday.com/news478.htm>.

¹⁴⁵ Jim Snyder, *New England Energy Projects Ignite a Cross-Country Debate*, THE HILL, May 10, 2006, *available at* <http://thehill.com/business—lobby/new-england-energy-projects-ignite-a-cross-country-debate-2006-05-10.html> (noting, also, that Cape Wind spent approximately \$440,000 during that same time period.).

ocean management policy.”¹⁴⁶ Thus, it appears that the battle over wind farms in Nantucket Sound is far from over, and may be only just beginning on Capitol Hill.

B. United States Statutory Environmental Regulations Affecting the Future of Wind Power Development

As illustrated by the Cape Wind project, federal statutes provide a means to challenge proposed wind power development projects. Several pieces of U.S. environmental legislation appear likely to affect the emergence of wind power energy by providing restrictions on the location and manner of potential wind farms.¹⁴⁷ A plaintiff may invoke one or more of these statutes in an effort to control how or where wind power facilities will be built, maintained, and regulated. These statutes generally contain strict procedural requirements; failure to follow any of their requirements may doom a potential wind power development.¹⁴⁸ The key statutes include the following.

1. The Migratory Bird Treaty Act

The Migratory Bird Treaty Act (the “MBTA”) implements four

¹⁴⁶ The Alliance to Protect Nantucket Sound, Alliance Strengthens Advocacy Hand with “Advocates For Nantucket Sound,” <http://www.saveoursound.org/node/486> (last visited Mar. 29, 2007).

¹⁴⁷ Although the authors recognize that state legislation may couple with the federal statutes described herein and provide additional restrictions on wind power development, this section will focus solely on the federal level. At least one case has noted the potential interstate commerce concerns of such state regulation. *South Dakota Farm Bureau, Inc. v. Hazeltine*, 202 F. Supp. 2d 1020, 1049 (D.S.D. 2002) (identifying as a potential issue that “[r]egulating or more correctly over-regulating interstate utility corridors and very likely excluding new investments in electric and wind power generation and transmission facilities intended for interstate use could constitute direct regulation of interstate commerce by [a state] rather than by Congress.”).

¹⁴⁸ In addition to, and in conjunction with, the substantive environmental regulations mentioned herein, requests made under the Freedom of Information Act (FOIA), 5 U.S.C. § 552, can be powerful tools for environmental groups. See *Friends of Blackwater v. U.S. DOI*, 391 F. Supp. 2d 115, 117–18 (D.D.C. 2005) (granting an organization’s motion for summary judgment where the organization filed a request under FOIA with the U.S. Fish and Wildlife Service). The request in *Friends of Blackwater* sought:

[A]ll documents relating to bird and bat mortality and injury caused by industrial wind turbine power-generating facilities, as well as documents relating to the Service’s enforcement of related environmental laws, particularly the Migratory Bird Treaty Act (“MBTA”), 16 U.S.C. §§ 703–12 (2000), the Bald and Golden Eagle Protection Act (“BGEPA”), 16 U.S.C. § 688 (2000), and the Endangered Species Act of 1973 (“ESA”), 16 U.S.C. §§ 1531–44 (2000).

Id.

international treaties that the U.S. government has entered into with other countries to protect birds that migrate across U.S. airspace.¹⁴⁹ The Fish and Wildlife Service ("FWS") of the Department of the Interior administers the provisions of the MBTA. Invoking strict liability, the MBTA makes it unlawful:

[T]o pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird [protected under the four treaties].¹⁵⁰

By its terms, the MBTA only applies to migratory bird species that are "native to the United States or its territories."¹⁵¹

Because strict liability attaches for any killing of a migratory bird under the MBTA, wind power developers must carefully examine the presence of migratory birds near their chosen project location. In fact, section 707 of the MBTA provides that:

[A]ny person, association, partnership, or corporation who shall violate any provisions of said conventions or of this subchapter, or who shall violate or fail to comply with any regulation made pursuant to this subchapter shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not more than \$15,000 or be imprisoned not more than six months, or both.¹⁵²

Thus, the MBTA creates a sizable economic disincentive to creating a wind power project that leads to the death of migratory birds.¹⁵³

¹⁴⁹ See 16 U.S.C. § 703(a) (affecting the terms of the conventions between the United States and Great Britain for the protection of migratory birds concluded August 16, 1916 (39 Stat. 1702), the United States and the United Mexican States for the protection of migratory birds and game mammals concluded February 7, 1936, the United States and the government of Japan for the protection of migratory birds and birds in danger of extinction, and their environment concluded March 4, 1972, and the convention between the United States and the Union of Soviet Socialist Republics for the conservation of migratory birds and their environments concluded November 19, 1976.).

¹⁵⁰ *Id.* § 703(a) (emphasis added).

¹⁵¹ *Id.* § 703(b)(1).

¹⁵² *Id.* § 707(a) (1998).

¹⁵³ See *Flint Hills Tallgrass Prairie Heritage Found., Inc. v. Scottish Power, PLC*, 147 Fed. Appx. 785 (10th Cir. 2005) (Order) (affirming the district court's grant of a motion to dismiss on the grounds that the case did not warrant federal equitable intervention where plaintiff corporation filed a class action complaint against defendant power companies). The *Flint* case was brought "individually and on behalf of all those entitled to the full benefit, use, and enjoyment of that unique national and international natural resource treasure, the

2. Bald and Golden Eagle Protection Act

Like the MBTA, the Bald and Golden Eagle Protection Act ("BGEPA") may affect the location of wind power projects in the United States due to their potential effect on certain birds. The BGEPA prohibits the taking of any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof, and imposes both civil and criminal penalties.¹⁵⁴ A taking includes any wounding or killing of the protected eagles.¹⁵⁵ In particular, a taking will result in a civil fine of not more than \$5,000.¹⁵⁶ Each taking constitutes a separate violation of the Act.¹⁵⁷ One must note, however, that anyone accused of violating the BGEPA must be given notice of, and an opportunity for a hearing, with respect to each such violation before a fine may be assessed.¹⁵⁸ The Secretary of the Fish & Wildlife Service may consider the "gravity of the violation, and the demonstrated good faith of the person charged," in determining the amount of the

Flint Hills Tallgrass Prairie Ecosystem, not only during this generation but generations yet unborn, and those who are so unfortunate as to be similarly adversely affected and afflicted by the industrial wind turbine commercial electric power generation facilities proposed to be constructed within the Flint Hills Tallgrass Prairie Ecosystem." *Id.* at 786. Plaintiff claimed that the defendants' construction of industrial wind power generating facilities "would cause permanent and irreparable damage," and asked for equitable relief in the form of a restraining order or injunction using notions of natural law, constitutional claims, and a number of statutes including the Migratory Bird Treaty Act ("MBTA"), 16 U.S.C. § 701 *et seq.* *Id.* at 786–87. The Tenth Circuit concluded plaintiff had not demonstrated that it was entitled to bring a private action under the MBTA and remarked, "While courts are accused from time-to-time of tilting at windmills, here the court has no legal basis for doing so, either literally or figuratively." *Id.* at 787. Courts have only permitted private causes of action against the government under the APA for violations of the MBTA in limited circumstances. *Flint Hills Tallgrass Prairie Heritage Found., Inc. v. Scottish Power, PLC*, 2005 U.S. Dist. LEXIS 2772, at *8–*9 (D. Kan. Feb. 22, 2005), *aff'd*, 147 Fed. Appx. 785 (10th Cir. 2005) (noting that state and federal governments have attempted to promote the use of wind power and encourage the development of alternative energy sources) (citing *Sierra Club v. Martin*, 933 F. Supp. 1559, 1566 (N.D. Ga. 1996) *rev'd* 110 F.3d 1551 (11th Cir. 1997) (finding no basis for a private cause of action under the MBTA but finding the plaintiffs could bring a civil action against the permitting agency under the APA premised on a violation of the MBTA (on appeal the Eleventh Circuit held that the MBTA does not subject the United States to suit under the APA, noting the government is not a "person" under the MBTA)); *Center for Biological Diversity v. Pirie*, 201 F. Supp.2d 113, 117 (D.D.C. 2002) *vacated by* 2003 U.S. App. LEXIS 1110, 2003 WL 179848, at *1 (D.C. Cir. Jan. 23, 2003) (finding that no private right of action or injunctive relief is available for a violation of the MBTA, but allowing such an action under the APA (on appeal the D.C. Circuit vacated the decision as moot))).

¹⁵⁴ See 16 U.S.C. § 668 (2000).

¹⁵⁵ *Id.* § 668c.

¹⁵⁶ *Id.* § 668(b).

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

penalty.¹⁵⁹ In fact, “[f]or good cause shown, the Secretary may remit or mitigate any such penalty.”¹⁶⁰ Therefore, while there is no guarantee that a wind turbine project that takes protected eagles will result in a monetary penalty, the potentially steep civil fines may dissuade developers from choosing locations where bald or golden eagles may be affected.

The BGEPA already has resulted in at least one notable effect on U.S. wind power development. The Center for Biological Diversity (“CBD”) invoked the BGEPA in a 2004 complaint against a number of companies operating wind turbines as part of California’s Altamont Pass Wind Resource Area.¹⁶¹ The plaintiffs argued that the turbines caused a taking of many birds, including bald and golden eagles, and that the taking amounted to a violation of the public trust doctrine and an unlawful business practice under California law.¹⁶² Although the Alameda Superior Court initially allowed the case to proceed based on this novel pleading, the Court granted the defendants’ motion for judgment on the pleadings on October 12, 2006.¹⁶³ CBD announced that it would consider appealing the decision.¹⁶⁴ Despite the unfavorable ruling, Alameda County supervisors earlier that month had “approved a six-month, \$600,000 plan to investigate and monitor effect[s] of the Altamont windmills on avian mortality.”¹⁶⁵

While its complaint did not ultimately prevail, the CBD succeeded in calling attention to how wind turbines affect birds—especially bald and golden eagles. Thus, one can expect a proliferation of scientific studies on the effects of wind turbines on all birds and bats, including the fiercely protected bald and golden eagles, as wind power projects become more widespread.¹⁶⁶

¹⁵⁹ *Id.*

¹⁶⁰ 16 U.S.C. § 668(b) (2000).

¹⁶¹ See Center for Biological Diversity, Inc. v. FPL Group, Inc., Alameda Case No. RG04183113 (Alameda Super. Ct. Nov. 1, 2004) (unreported), Compl. at 26–27, available at <http://www.biologicaldiversity.org/swcbd/programs/bdes/altamont/complaint9.pdf>; see also Press Release, Center for Biological Diversity, Expanded Lawsuit Over Raptor Kills At Altamont Pass, CA Wind Turbines: California Energy Commission Blasts Wind Companies’ Sham Mitigation Plan (Nov. 1, 2004), available at <http://www.biologicaldiversity.org/swcbd/Programs/bdes/altamont/11-1-04pr.pdf>.

¹⁶² *Id.* at 26–29.

¹⁶³ Center for Biological Diversity, Alameda Case No. RG04183113, Order Granting Motions for Judgment on the Pleadings (Oct. 12, 2006), available at <http://apps.alameda.courts.ca.gov/fortecgi/fortecgi.exe?Servicename=DomainWebService&PageName=Image&ID=1&Parent=12598900&Action=18994682>.

¹⁶⁴ See Center for Biological Diversity, Press Release, *Judge Dismisses Altamont Pass Bird Kill Lawsuit* (Oct. 17, 2006), available at <http://www.biologicaldiversity.org/swcbd/PRESS/altamont-10-17-2006.html>.

¹⁶⁵ See *Judge Dismisses Altamont Pass Windmills Bird Deaths Lawsuit*, KTVU, Oct. 17, 2006, <http://www.ktvu.com/news/10097288/detail.html?rss=fran&psp=news>.

¹⁶⁶ For more information on scientific tracking studies currently being performed on

3. The Endangered Species Act

The Endangered Species Act (the “ESA”), perhaps the most famous and influential environmental law in the United States, affects wind power development in much the same manner as the MBTA.¹⁶⁷ The ESA seeks to ensure that all federal departments and agencies utilize their authorities to conserve endangered and threatened species, as well as their ecosystems.¹⁶⁸ The Fish & Wildlife Service of the Department of the Interior and the National Marine Fisheries Service of the Department of Commerce administer the law.¹⁶⁹ In addition, the ESA commands all other federal agencies to comply with its provisions, even where such protection conflicts with the agency’s primary responsibility.¹⁷⁰ The ESA also requires that the Secretary cooperate to the maximum extent practicable with the states, and affords financial incentives to the states for doing so.¹⁷¹

The ESA targets species designated as “endangered” or “threatened” due to one of five designated factors: “(1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; or (5) other natural or manmade factors affecting its continued existence.”¹⁷² Importantly, the ESA allows the Secretary to concurrently designate any habitat of an endangered or threatened species as a “critical habitat.”¹⁷³ The statute affords the Secretary wide discretion in designating critical habitat, requiring that it be done “to the maximum extent prudent.”¹⁷⁴ “A designation of critical habitat is not prudent [whenever] . . .

golden eagles and other raptors in Pennsylvania in preparation for wind power development, see Don Hopey, *Aviary Tracking Raptors to Find Safe Sites For Wind Turbines*, PITTSBURGH POST-GAZETTE, Jan. 14, 2007, available at <http://www.post-gazette.com/pg/07014/753462-28.stm>.

¹⁶⁷ See 16 U.S.C. §§ 1531–1544 (2000).

¹⁶⁸ *Id.* § 1531(c)(1).

¹⁶⁹ See *Id.* § 1532(15) (defining the term “Secretary” as used throughout the ESA to mean, except as otherwise provided, the Secretary of the Interior or the Secretary of Commerce).

¹⁷⁰ See *Id.* § 1531(c)(1), see also *id.* § 1536 (requiring that “[e]ach Federal agency, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is [un]likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee,” while employing the best scientific and commercial data available).

¹⁷¹ See, e.g., *id.* § 1535.

¹⁷² *Id.* § 1533(a)(1).

¹⁷³ 16 U.S.C. § 1533(a)(3)(A) (2000).

¹⁷⁴ *Id.*

(1) the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species, or (2) such designation would not be beneficial to the species.”¹⁷⁵

Particularly relevant to the development of wind power, section 9 of the ESA makes it illegal to “take any such species within the United States or the territorial sea of the United States.”¹⁷⁶ Under the ESA, “the term ‘take’ includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”¹⁷⁷ Therefore, any activity related to the construction or maintenance of wind turbines could expose an individual or entity to liability where it results in the harming, wounding, or killing of a protected species. While liability would be expressly limited to instances involving certain species expressly designated under the ESA, any wind turbines located within the habitat of such species would be affected. Thus, the ESA would limit the number of locations suitable for wind turbine projects.

Fortunately for developers, the ESA includes a provision that may allow for wind turbines in areas that would be otherwise prohibited. Thanks to a 1982 amendment, the FWS has the power to issue what is known as an “incidental take permit” under §10(a) of the Act to allow “otherwise lawful state or private actions that would result in the incidental taking of listed species.”¹⁷⁸ More particularly, the FWS has the direction to issue an incidental take permit to an entity engaged in an otherwise lawful activity to continue actions that may result in a taking, so long as any taking that occurs is incidental to and not the purpose of otherwise lawful activity.¹⁷⁹ In theory, then, the FWS could issue incidental take permits to entities responsible for wind turbines in order to mitigate any fear that the entities have regarding liability for incidental takings that could result from turbines.¹⁸⁰

Moreover, the ESA includes another requirement that affects potential wind power development. The ESA requires that any non-federal activities that seek an incidental take permit must include a habitat conservation plan

¹⁷⁵ 50 C.F.R. § 424.12(a)(1)(i)–(ii) (2006).

¹⁷⁶ 16 U.S.C. § 1538(a)(1)(B).

¹⁷⁷ *Id.* § 1532(19).

¹⁷⁸ Christopher Carter, *A Dual Track For Incidental Takings: Reexamining Sections 7 and 10 of the Endangered Species Act*, 19 B. C. ENVTL. AFF. L. REV. 135, 155, (1992), citing H.R.REP. NO. 304, 97th Cong. 2d Sess. 31 (1982), reprinted in 1982 U.S.C.C.A.N. 2807, 2831; see also, Richard Webster, Note, *Habitat Conservation Plans Under the Endangered Species Act*, 24 SAN DIEGO L. REV. 243, 247 (1987).

¹⁷⁹ 16 U.S.C. § 1539(a)(1)(B) (1997).

¹⁸⁰ U.S. DEPARTMENT OF THE INTERIOR, SERVICE INTERIM GUIDELINES ON AVOIDING AND MINIMIZING WILDLIFE IMPACTS FROM WIND TURBINES 36 (2003), available at <http://www.fws.gov/habitatconservation/wind.pdf>.

("HCP") along with the application for the incidental take permit.¹⁸¹ Throughout this process, the public must be given the opportunity to comment on both the permit and the conservation plan proffered by the applicant.¹⁸² The habitat conservation planning process helps to ensure that there is adequate minimization and mitigation of the effects of the authorized incidental take before a permit is granted.¹⁸³ The HCP prerequisite to obtaining an incidental take permit provides a further safeguard against an entity obtaining an incident take permit without first designating how its planned activity will affect the species in question. Drafting an approved HCP also alleviates a private landowner's uncertainty regarding potential liability or increased regulation.

The Secretary also has the power to grant an exemption from the permit process to a private party based on an "undue economic hardship" arising from the listing of the endangered or threatened species, including "substantial economic loss resulting from an inability . . . to perform contracts . . . [or] substantial economic loss to persons who . . . derived a substantial portion of their income from the [otherwise] lawful taking of any listed species . . . [or] curtailment of subsistence taking."¹⁸⁴ The exemption is limited, however, to one year from publication in the Federal Register.¹⁸⁵

One of the greatest benefits of drafting a HCP is that doing so will provide for a "no surprise assurance" through section 10(a)(1)(B).¹⁸⁶ A "no surprise assurance" is tantamount to a governmental guarantee to non-federal landowners that the FWS will not require the commitment of additional land, water, or financial compensation; or place additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the permittee, should "unforeseen circumstances" arise.¹⁸⁷ In fact, the government will honor these assurances as long as the permittee implements and maintains the terms and conditions of the HCP, permit, and other associated documents in good faith.¹⁸⁸ The government, in turn, benefits by receiving consistent behavior from the landowner, with any potential effects on listed species already having been reviewed.

¹⁸¹ 16 U.S.C. § 1539(a)(2)(A); *see also* U.S. FISH & WILDLIFE SERVICE, HABITAT CONSERVATION PLANS: SECTION 10 OF THE ENDANGERED SPECIES ACT (2005), *available at* http://www.fws.gov/Endangered/hcp/HCP_Incidental_Take.pdf.

¹⁸² 16 U.S.C. § 1539(a)(2)(B).

¹⁸³ *Id.*

¹⁸⁴ *Id.* § 1539(b)(1)–(2).

¹⁸⁵ *Id.* § 1539(b)(1).

¹⁸⁶ *See Id.* § 1540(a)(1)(B).

¹⁸⁷ *See Id.* § 1540(b); *see also* U.S. FISH & WILDLIFE SERVICE, *supra* note 181, at 1.

¹⁸⁸ *See* U.S. FISH & WILDLIFE SERVICE, *supra* note 181, at 1.

4. *The National Environmental Policy Act*

The National Environmental Policy Act of 1969 ("NEPA"), invoked in the Cape Wind litigation by the Alliance, will affect any wind power development project that requires federal action significantly affecting the quality of the human environment.¹⁸⁹ The purpose of NEPA is to create a national policy that promotes better harmony between mankind and the environment, particularly in regards to environmental damage caused by society.¹⁹⁰ This broad applicability makes NEPA an important piece of legislation that must be considered by anyone proposing a wind power project.¹⁹¹

Under NEPA, federal agencies must include in every major federal action significantly affecting the quality of the human environment (including recommendations or reports on proposals for legislation) an "economic impact statement" ("EIS") detailing the environmental impact of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, alternatives to the proposed action, the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources involved in the proposed action should it be implemented.¹⁹² The Council on Environmental Quality, created by NEPA, has established regulations in 40 C.F.R. 1500–1508 that describe how to prepare an EIS.¹⁹³

¹⁸⁹ 42 U.S.C. §§ 4321–47 (2004).

¹⁹⁰ *Id.* § 4321.

¹⁹¹ Section 101 of NEPA declares a broad national commitment to protecting and promoting environmental quality. 42 U.S.C. § 4331 (2004). *See also* 42 U.S.C. § 4321 (2004); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989). Section 102 seeks to further those goals by prescribing procedures that federal agencies must follow when recommending or reporting on major federal actions "significantly affecting the quality of the human environment." *See Robertson*, 490 U.S. at 348. Appellate review of agency action under NEPA is governed by the Administrative Procedure Act (APA). *Highway J Citizens Group v. Mineta*, 349 F.3d 938, 952 (7th Cir. 2003). Some environmental groups have argued that rejection of reasonable energy efficient alternatives is contrary to the "searching inquiry into alternatives" required by NEPA. *See Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997), *but see Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 199 (D.C. Cir. 1991) (noting that an agency's evaluation of reasonable alternatives is "shaped by the application at issue" and can take an applicant's goals for a project into account); *All Indian Pueblo Council v. United States*, 975 F.2d 1437, 1446 (10th Cir. 1992) (describing how an agency rejected wind power generation as an alternative in an EIS because it would not be "dependable.").

¹⁹² 42 U.S.C. § 4332(C).

¹⁹³ *See Id.* § 4321; *see also* Memorandum from Deputy Dir., Fish & Wildlife Serv., U.S. Dep't of the Interior, to Reg'l Dirs., Serv. Interim Guidance on Avoiding and Minimizing

5. *The National Wildlife Refuge Systems Administration Act*

Wind power development may occur on lands owned by the federal government that are designated as a national wildlife refuge. The National Wildlife Refuge Systems Administration Act (“NWRSA”) governs the National Wildlife Refuge System (the “System”), with the purpose of administering a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.¹⁹⁴

Particularly important to the development of wind power on wildlife refuge land, the NWRSA prevents any person from taking or possessing any fish, birds, mammals (including bats) and other wildlife within any refuge area, unless by activities that are otherwise permitted by law, proclamation, regulation, or executive order.¹⁹⁵ The Act allows, however, for an exemption to permit the use of any area within the System for *any purpose*, including but not limited to hunting, fishing, public recreation and accommodations, and access *whenever such uses are compatible with the major purposes for which such areas were established*.¹⁹⁶ Accordingly, any wind power development on refuge land must be compatible with the major purpose for which the refuge was established.¹⁹⁷ It is important to note that the NWRSA already permits easements in, over, across, upon, through, or under any areas within the System for purposes including, but not limited to, the construction and maintenance of power lines, telephone lines, pipelines, and roads.¹⁹⁸

As a result, the NWRSA may allow for wind power development on wildlife refuge land in limited circumstances given its similarity to other approved uses. The Fish and Wildlife Service has published guidelines for the consideration of wind turbines located on easement lands in Region 6.¹⁹⁹ The guidelines are intended for use by Refuge Managers and Wetland

Wildlife Impacts from Wind Turbines, at 36 (May 13, 2003).

¹⁹⁴ 16 U.S.C. § 668dd(a)(2) (2004).

¹⁹⁵ *Id.* § 668dd(c).

¹⁹⁶ *Id.* § 668dd(d)(1)(A).

¹⁹⁷ Memorandum from Deputy Dir., Fish and Wildlife Serv., U.S. Dep’t of the Interior, to Reg’l Dirs., Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, at 36 (May 13, 2003).

¹⁹⁸ 16 U.S.C. § 668dd(d)(1)(B).

¹⁹⁹ Region 6 of the FWS, known as the Mountain-Prairie Region, includes the states of Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. See U.S. Fish and Wildlife Serv., Region 6 Map, <http://www.r6.fws.gov> (last visited Feb. 20, 2007). For more on the guidelines set forth by the FWS, see Memorandum from Deputy Dir., Fish and Wildlife Serv., U.S. Dep’t of the Interior, to Reg’l Dirs., Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, at 40–41 (May 13, 2003).

District Managers for site-by-site consideration of compatibility determinations for individual right-of-way requests for wind turbine use on easement lands.²⁰⁰ The guidelines seek to prevent the alteration or destruction of grassland habitat that could result from the construction of wind turbines on easement land.²⁰¹ The guidelines are subject to future revision and modification due to ongoing research and monitoring of the effects of wind turbines on wildlife populations.²⁰²

In particular, the guidelines restrict turbine frequency to a quota of one turbine per every 160 acres of easement tract.²⁰³ Current biological information indicates that this density will not materially interfere with or detract from the purposes of the easement.²⁰⁴ Wind power industry spacing recommendations also advise a distance of not less than 2000 feet between turbines, and a distance of 2000 from an occupied building, in order to prevent clumping of the turbines.²⁰⁵ Turbines also shall not be constructed on wetlands, including lakes, ponds, sloughs, swales, swamps, and potholes.²⁰⁶ Additionally, turbine owners must update bird strike avoidance equipment and implement techniques to reduce the disturbance to nesting birds at turbine sites.²⁰⁷ Of course, any turbines on refuge land must still comply with other environmental laws and regulations, including the ESA and NEPA.

6. The National Historic Preservation Act

One additional federal statute that may have implications on the future of wind power development in the United States is the National Historic Preservation Act ("NHPA"). The NHPA promotes the federal government's role in historic preservation through programs and activities, encourages agencies and individuals undertaking preservation by private means, and seeks to assist state and local governments and the National Trust for Historic Preservation in the United States in expanding and accelerating their historic preservation programs and activities.²⁰⁸

²⁰⁰ See Memorandum from Deputy Dir., Fish and Wildlife Serv., U.S. Dep't of the Interior, to Reg'l Dirs., Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, at 40 (May 13, 2003).

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Id.*

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ See Memorandum from Deputy Dir., Fish and Wildlife Serv., U.S. Dep't of the Interior, to Reg'l Dirs., Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, at 40 (May 13, 2003).

²⁰⁷ *Id.*

²⁰⁸ See 16 U.S.C. §§ 470–470b, 470c–470n (2004); see also Memorandum from Deputy Dir., Fish and Wildlife Serv., U.S. Dep't of the Interior, to Reg'l Dirs., Service Interim

The NHPA can affect wind power development by requiring, similar to the NEPA, that federal agencies take into account the effects that actions will have on items or sites listed, or eligible for listing, in the National Register of Historic Places.²⁰⁹ In particular, federal agencies will need to determine the effects that any proposed development will have on listed sites where the development is built, funded, or permitted by a federal agency.²¹⁰ This statute may become more important as technology advances allow for wind turbines to be placed in more urban settings. Other statutes may be invoked as equally unique circumstances arise.²¹¹

IV. COMPARATIVE LESSONS FROM INTERNATIONAL MODELS

Lessons on how best to accelerate the development of wind power in the United States can be learned from experiences abroad. Worldwide, the wind energy industry installed more than \$14 billion worth of new generating equipment in 2005 alone, a 25% increase from 2004, according to the Global Wind Energy Council.²¹² At the end of 2005, cumulative global wind energy generating capacity reached 59,322 megawatts, a substantial increase over the 47,317 megawatts of capacity available at the end of 2004.²¹³ This figure marked an increase of close to 34,000

Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, at 36 (May 13, 2003).

²⁰⁹ Memorandum from Deputy Dir., Fish and Wildlife Serv., U.S. Dep't of the Interior, to Reg'l Dirs., Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, at 36 (May 13, 2003).

²¹⁰ *Id.*

²¹¹ Another statute that could affect wind power development in a small number of areas is the Coastal Barrier Resources Act ("CBRA"). Section 5(a)(1) of the CBRA, 16 U.S.C. § 3501(a)(1), could possibly prevent future construction of wind power projects near congressionally designated *undeveloped* coastal barriers on "the Atlantic and Gulf coasts and along the shore areas of the Great Lakes of the United States and the adjacent wetlands, marshes, estuaries, inlets and nearshore waters . . ." See 16 U.S.C. § 3503 (2004) (explicitly describing the lands that are designated by Congress as being within the Coastal Barrier Resources System ("CBRS")); *Id.* § 3501(b) ("The Congress declares that it is the purpose of this Act to minimize . . . wasteful expenditure of Federal revenues and the damage to fish, wildlife, and to other natural resources associated with the coastal barriers along the Atlantic and Gulf coasts . . ."). This section of the statute prohibits new federal expenditures or federal financial assistance within the CBRS established by the CBRA. *Id.* § 3504(a)(1). "Financial assistance" is defined by Section 3(3) of the CBRA as "any form of loan, grant guarantee, insurance, payment, rebate, subsidy, or any other form of direct or indirect Federal assistance" with certain exceptions. *Id.* § 3502(3); see generally *Bostic v. United States*, 581 F. Supp. 254 (E.D. N.C. 1984).

²¹² ENVIRONMENT NEWS SERVICE, *Global Wind Power Industry Spins Into High Gear*, Feb. 23, 2006, <http://www.ens-newswire.com/ens/feb2006/2006-02-23-04.asp> [hereinafter *Global Wind Power Industry*].

²¹³ *Id.*; see AM. WIND ENERGY ASS'N, GLOBAL WIND ENERGY MKT. REP. 2005, available at <http://www.awea.org/pubs/documents/globalmarket2005.pdf> [hereinafter GLOBAL WIND ENERGY REP. 2005]; AM. WIND ENERGY ASS'N, GLOBAL WIND ENERGY MKT. REP. 2004,

megawatts since 1999. Of the 7976 megawatts of newly installed wind power across the globe in 2004, Europe dominated the market, accounting for 72.4% of new installations. Asia came in second with a 15.9% installation share, while North America followed with 6.4%, the Pacific Region with 4.1%, and a combination of Latin America, the Caribbean, and Africa collectively accounted for a 0.6% market share of new installations.²¹⁴ The 2004 figures from the American Wind Energy Association indicate the bulk of wind power is concentrated in several countries: Germany (16,629 MW), Spain (8263 MW), the United States (6740 MW), Denmark (3117 MW), and India (3000 MW).²¹⁵ A number of countries produced above or near the 1000 megawatt mark, including Italy, the Netherlands, Japan, and the United Kingdom.²¹⁶ As of 2006, the three countries with the highest total installed capacity continued to be Germany (18,428 MW), Spain (10,027 MW), and the United States (9149 MW).²¹⁷ India has overtaken Denmark as the fourth largest wind market in the world with 4430 megawatts.²¹⁸ As Global Wind Energy Council Chairman Arthouros Zervos said in 2006, "The overall picture confirms that the right political framework is crucial to sustain the growth of wind power around the world and to open new markets."²¹⁹

An examination of international experiences with wind power development supports the following conclusions: (1) a commitment to alternative energy source development is crucial to kindling corporate investment in new projects and research; (2) it is important for countries to have one national voice on alternative energy development issues, as overarching national policies are preferable to varied localized action;²²⁰ (3) monetary subsidies, such as underwriting the construction of transmission lines to move wind generated electricity from rural areas containing wind farms to urban areas, can successfully generate investor interest;²²¹ and (4)

available at <http://www.awea.org/pubs/documents/globalmarket2004.pdf>.

²¹⁴ GLOBAL WIND ENERGY REP. 2005, *supra* note 213.

²¹⁵ *Id.*

²¹⁶ *Id.*

²¹⁷ *Global Wind Power Industry*, *supra* note 212.

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ Although a number of states have policies and legislation that support wind power and alternative energy development, including renewable portfolio standards that require a minimum amount of electricity to be from renewable sources, there are no analogous federal policies. To erase any federalism concerns, the authors suggest federal preemption in this entire field. See *infra* pp 55–57.

²²¹ While the authors do not necessarily urge the United States to adopt an "uneconomic" subsidy system, there are more nuanced ways in which the federal government can offer monetary support. The current federal incentive for wind energy production is the Production Tax Credit ("PTC"). Enacted in 1992, the PTC provides a 1.5 cent tax credit per kilowatt-hour of electricity produced commercially from a qualified wind energy facility.

the process of constructing a market for alternative energy sources is aided when it is coordinated and efficient, thereby making investment in alternative energy projects an economically viable opportunity, even for smaller companies with less capital.

The remainder of this section surveys various international approaches to wind power development. These lessons could prove to be useful templates for spurring wind power development in the United States.

A. Europe

In Europe, a large amount of public and government support exists for renewable energy development. In 2005, European wind energy capacity grew by 18% to a total of 40,500 megawatts, representing 69% of the global total at the end of 2005.²²² The commitments many European governments have made to assist “clean energy” entrepreneurs are now paying dividends. Europe serves as a more welcoming environment for emerging alternative energy companies than the United States, where commentators have noted erratic support, a lackluster market, and more stringent financial rules inhibit potential start-ups and investors.²²³ In marked contrast, European governments have supported alternative energy development by readily advancing the necessary new infrastructure that new projects need, including new power lines.²²⁴ According to the Jefferies Group, an investment bank based in New York, Europe is home to more than half of the world’s twenty-two most valuable publicly traded wind and solar power companies.²²⁵ In 2006, “clean energy” companies raised about \$4.4 billion from investors on European stock markets, about four times the amount raised in stock markets in North America.²²⁶ Encouraging these companies to invest in wind development projects in the United States, while at the same time allowing new domestic companies to grow and flourish, will be

See 26 U.S.C. § 45 (2004). Scheduled to expire on December 31, 2007, the PTC was recently extended through December 31, 2008 by Section 207 of the Tax Relief and Health Care Act of 2006 (H.R. 6111). A business can take the credit by completing Form 8835, “Renewable Electricity Production Credit,” and Form 3800, “General Business Credit.” The credit is a part of the General Business Credit under 26 U.S.C. § 38, and can be found at Section 45 of the Internal Revenue Code, 26 U.S.C. § 45. For examples of some of the complex tax consequences of similar incentives, see generally 85 Gorgonio Wind Generating Co. v. Comm’r, 68 T.C.M. (CCH) 1071 (1994); Tanner v. Comm’r, 63 T.C.M. (CCH) 2819 (1992); Van Duzer v. Comm’r, 61 T.C.M. (CCH) 2791 (1991).

²²² *Global Wind Power Industry*, *supra* note 212.

²²³ James Kanter, *Europe Encouraging the Clean Energy Industry*, N.Y. TIMES, Jan. 23, 2007, available at http://www.nytimes.com/2007/01/23/business/worldbusiness/23venture.html?_r=2&oref=slogin&oref=slogin.

²²⁴ *Id.*

²²⁵ *Id.*

²²⁶ *Id.*

crucial in the years to come.²²⁷

Political regulation appears to have driven much of Europe's investment in alternative energy. European governments were forced to act when the European Union imposed mandatory pollution caps on carbon dioxide emissions in response to purported climate change.²²⁸ This move kindled the creation of numerous new energy companies, each with the singular goal of grabbing a piece of the newly created market. Many European governments fueled this development further by backing the use of new alternative energy technologies with considerable monetary subsidies.²²⁹ In Germany, for example, consumers that sell renewable energy are offered highly favorable tariffs; additionally, France and Norway offer incentives to switch to alternative energy sources.²³⁰ Many alternative energy projects depend directly and indirectly on these public subsidies to generate profits.

As a result, numerous corporate success stories have emerged. The French firm Areva, the largest maker of nuclear reactors, recently bid \$1 million for a wind turbine firm, REpower of Germany.²³¹ REpower, one of Germany's major wind turbine producers, has a presence in Europe, Japan, China, India, and Australia.²³² Thus, these international firms buy up smaller specialized companies to expand their reach globally, beyond local borders.

As European firms try to reduce their carbon emissions to E.U. standards, commercial interest increases for businesses in the wind power sector. In September 2005, GE's Energy Financial Services unit, in what was then its third investment in wind power generation in Germany, acquired the Alsleben wind power project, one of Germany's largest wind farms, from EAB Technology Group.²³³ The wind power sector has

²²⁷ The now notorious and defunct Enron Corp. was one of the major owners (directly and indirectly) of various wind power businesses in the United States and Europe through its wholly owned subsidiary, Enron Wind Corp. See *Mission Iowa Wind Co. v. Enron Corp.*, 291 B.R. 39, 40 (S.D.N.Y. 2003) (vacating the order approving the debtors' allocation of sale proceeds in a bankruptcy case related to the earlier bankruptcy case of the parent Enron Corporation); see also *Zond Minn. Const. Co., LLC v. Marathon Elec. Mfg. Corp.* (In re Enron Corp.), 2005 U.S. Dist. LEXIS 2131, *3 (S.D.N.Y. 2005); *Gamesa Eolica, S.A. v. GE*, 359 F. Supp. 2d 790, 793-94 (W.D. Wisc. 2005) ("In May of [2002], [GE Wind Energy LLC] acquired substantially all of the wind turbine assets of Enron Wind, including all of the goodwill and technology assets . . .").

²²⁸ Kanter, *supra* note 223.

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Nuclear Firm Targets Clean Power*, BBC NEWS, Jan. 22, 2007, <http://news.bbc.co.uk/2/hi/business/6286921.stm>.

²³² *Id.*

²³³ Press Release, General Electric, In Third German Wind Power Investment, GE's Energy Fin. Servs. Unit Acquires 55-MW Project (Sept. 13, 2005), *available at*

become a competitive source of energy in Germany and is considered an energy “darling” of both the government and investors alike.²³⁴ As this sector grows and matures, it will likely give rise to increasing international investment from investors on other continents.

1. Germany

Germany leads the global wind energy march with the largest and most successful wind power production. As of 2004, Germany led the world in cumulative wind energy capacity with 16,629 megawatts.²³⁵ The German environment ministry reported that this increased to over 18,000 megawatts in 2005, and reportedly reached 18,428 by 2006.²³⁶ The wind energy sector produces between 3% and 5% of Germany’s electricity; and according to the German Wind Energy Association, the industry employed some 61,600 people in 2004.²³⁷ Germany’s success stems from a commitment developed during the 1990s to encourage renewable energies and cut carbon emissions.²³⁸ The German government created tax breaks and other incentives to add electricity to the German power grid, thereby boosting the nascent wind sector and helping it to develop into a viable and competitive source of energy.²³⁹ The public sector did not act alone in facilitating the growth of German wind power. The insurance sector also proved to be crucial to Germany’s development of wind power by offering wind sector investors insurance on risky wind turbines in the early years of technological development.²⁴⁰ This insurance effectively redistributed the risk associated with undertaking a wind power development, thereby increasing investment potential.

The fruits of government and private investor support in Germany are obvious. In the northern German state of Schleswig-Holstein, wind currently generates over 30% of all locally consumed electricity.²⁴¹ Schleswig-Holstein has generated over 300 million euros in revenue through its contributions to the national power grid and has created nearly 5000 new jobs in a few short years.²⁴² German firms, including Enercon,

http://www.geenergyfinancialservices.com/press_room/press_releases/prs_2005_0913.pdf.

²³⁴ Allianz, *Wind Energy in Germany: A Renewable Case Study*, June 8, 2006, http://knowledge.allianz.com/en/globalissues/climate_change/climate_renewable_energy/wind_energy_germany.html [hereinafter *Wind Energy in Germany*].

²³⁵ GLOBAL WIND ENERGY REP. 2005, *supra* note 213, at 4.

²³⁶ *Wind Energy in Germany*, *supra* note 234; see also *Global Wind Power Industry*, *supra* note 212.

²³⁷ GLOBAL WIND ENERGY REP. 2005, *supra* note 213, at 4.

²³⁸ *Id.*

²³⁹ *Id.*

²⁴⁰ *Id.*

²⁴¹ *Id.*

²⁴² *Id.*

REpower, and Siemens Wind Power have become major players in providing turbines, parts, and expertise for projects around the globe.²⁴³ In 2005, German revenues from wind exports jumped 65%, increasing from 1.8 billion to 3 billion euros.²⁴⁴ As Germany turns from land-based to offshore wind power production in the North Sea and the Baltic Sea,²⁴⁵ the German environment ministry projects that wind power could supply up to 25% of the power consumed in Germany by 2025.²⁴⁶

2. Norway

In 2006, Norwegian development company Havsul filed for permission to build the world's largest wind farm off the western coast of Norway.²⁴⁷ The \$2.4 billion project is expected to be online by 2011 if the developer can win concessions from the Norwegian government.²⁴⁸ Success by the Havsul project could enhance the prospects of American offshore wind power projects, including Cape Wind; yet, like Cape Wind—its success will hinge on whether the project can survive a gauntlet of regulation and litigation.

3. Spain

In 2004, Spain installed the most new wind energy capacity of any single country, in furtherance of its ambitious goal to produce 12% of its energy (or 29% of its electricity) from renewable energy by 2010.²⁴⁹ A common thread among nations that have been successful in the rapid development of new wind energy capacity is the existence of concrete guidelines and goals.

4. Denmark

Denmark far outpaces all other nations, producing over 20% of its electricity from wind, the highest proportion of electricity generated from wind in the world.²⁵⁰ Experienced Danish wind industry companies are

²⁴³ GLOBAL WIND ENERGY REP. 2005, *supra* note 213, at 4

²⁴⁴ *Id.*

²⁴⁵ For a discussion of offshore wind power development in Germany, *see generally* Bela Hieronymus Buck et al., *Extensive Open Ocean Aquaculture Development within Wind Farms in Germany: The Prospect of Offshore Comanagement and Legal Constraints*, 47 OCEAN & COASTAL MANAGEMENT 95, 95–122 (2004); German WindEnergy Association, at <http://www.wind-energie.de/home/> (last visited Feb. 22, 2007).

²⁴⁶ *Wind Energy in Germany*, *supra* note 234; *see also* *Global Wind Power Industry*, *supra* note 212.

²⁴⁷ *Global Wind Power Industry*, *supra* note 212.

²⁴⁸ *Wind Energy in Germany*, *supra* note 234.

²⁴⁹ *Id.*

²⁵⁰ *Id.*

now moving towards development in the American market.²⁵¹ For example, Vestas Wind Systems recently announced its establishment of a new turbine blade factory in the United States.²⁵² Encouraging international investors to come to the United States will prove crucial in fostering a ripe domestic wind energy market.

5. United Kingdom

In the United Kingdom, there are currently 136 wind power projects, featuring 1733 turbines, producing 1962.85 megawatts of electricity, enough to supply over one million homes.²⁵³ The United Kingdom has committed itself to reach ambitious renewable energy targets by promoting both onshore and offshore wind energy projects.²⁵⁴ The United Kingdom's looming wind energy boom is an interesting case study for the United States.

In order to meet its Kyoto Protocol target of a 12.5% reduction in greenhouse gas emissions from 1990 levels, averaged over 2008–2012, the United Kingdom must look for “cleaner” sources of energy.²⁵⁵ According to a 2005 report by the Sustainable Development Commission (SDC), the United Kingdom has the best and most geographically diverse wind resources in Europe.²⁵⁶ The U.K. Government has also been a strong proponent of wind energy development by setting ambitious goals and boosting financial support for renewable energy. Wind farms are expected to produce 7% of the United Kingdom's energy needs by 2010, and play a crucial role in the United Kingdom's stated goal in its Energy White Paper of generating 20% of its energy from renewable resources by 2020.²⁵⁷ In 2003, only 3% of the country's electricity came from renewable sources, compared to other European nations such as Denmark which already generates 20% of its electricity from wind farms.²⁵⁸ Nonetheless, Energy Minister Stephen Timms stressed that wind power would play a central role

²⁵¹ Danish Wind Energy Association, *Danish Companies to Benefit From a Positive Wind Mill Market in the USA* (Dec. 14, 2006), <http://www.windpower.org/composite-1445.htm>.

²⁵² *Id.*

²⁵³ British Wind Energy Association, UK Wind Energy Database, <http://www.bwea.com/ukwed/index.asp> (last visited Feb. 22, 2007).

²⁵⁴ British Wind Energy Association, Reference – Frequently Asked Questions, <http://www.bwea.com/ref/faq.html> (last visited Feb. 22, 2007).

²⁵⁵ *Wind Farms 'Must Take Root in UK'*, BBC NEWS, May 19, 2005, <http://news.bbc.co.uk/2/hi/science/nature/4560139.stm>.

²⁵⁶ *Id.*

²⁵⁷ *Britain Unveils Wind Energy Plans*, BBC NEWS, Dec. 18, 2003, http://news.bbc.co.uk/2/hi/uk_news/england/3329537.stm.

²⁵⁸ *Id.*

in the United Kingdom's renewable energy plans.²⁵⁹ The renewable energy sector has become a point of emphasis in the United Kingdom, as the United Kingdom stresses government subsidization of renewable energy research and development. The government has also stressed that wind farm projects be built close together so developers can pool their resources and help keep costs low.²⁶⁰ The United States could potentially learn to act as a "facilitator" for wind projects in a similar fashion.

Established in 1978, the British Wind Energy Association (BWEA), a trade and professional body for U.K. wind and marine renewable industries, representing over 300 companies, has assumed a leading role as an advocate for the development of wind power in the United Kingdom by stressing widespread commercialization.²⁶¹ New research by the BWEA indicates that the United Kingdom is in danger of missing its 2010 renewable energy target. Chis Tomlinson of the BWEA, commented:

Some wind projects are taking two to three years to determine. This is not an issue about whether a project is approved or refused, but instead is about ensuring we have a planning system that is able to deliver timely, robust decisions which address all the issues. The current delays are not good for anyone involved in the process.²⁶²

Although developers in the United Kingdom, like their American counterparts, must often deal with delays in construction and extensive government procedures, the United Kingdom has shown substantial progress towards streamlining its system.

The United Kingdom has proven successful in fostering offshore wind power development, especially after receiving a substantial boost in 2004 with the passage of the Energy Act, which enabled the development of wind power projects outside territorial waters.²⁶³ This act consolidated the process, as compared to the Cape Wind example in the United States where statutes that had no relation to energy development carried the day. The United Kingdom possesses potentially the largest offshore wind resource in

²⁵⁹ *UK Unveils Green Energy Plans*, BBC NEWS, Feb. 24, 2003, http://news.bbc.co.uk/2/hi/uk_news/2792731.stm; see also *Go-Ahead For Offshore Windfarms*, BBC NEWS, Oct. 22, 2003, http://news.bbc.co.uk/2/hi/uk_news/england/3203779.stm (Energy Minister Timms remarked, "Wind power technology is a clean and green alternative to fossil fuels.").

²⁶⁰ *Windfarms Get Minister's Backing*, BBC NEWS, Nov. 22, 2002, http://news.bbc.co.uk/2/hi/uk_news/england/2504581.stm.

²⁶¹ British Wind Energy Association, About BWEA, <http://www.bwea.com/about/index.html> (According to the BWEA, "wind has been the world's fastest growing renewable energy source for the last seven years"; the BWEA recently amended its mission in 2004 to also champion wave and tidal energy.) (last visited Mar. 29, 2007).

²⁶² British Wind Energy Association, Onshore and Planning, <http://www.bwea.com/planning/index.html> [hereinafter Onshore and Planning] (last visited Mar. 29, 2007).

²⁶³ GLOBAL WIND ENERGY REP. 2005, *supra* note 213, at 5.

the world, with relatively shallow waters and strong winds extending far into the North Sea.²⁶⁴ Studies estimate that the United Kingdom has over 33% of the total European potential offshore wind resources; if actualized, wind power could satisfy the United Kingdom's electricity needs nearly three times over.²⁶⁵ Offshore wind energy is expected to play a crucial role in attempts to reach the United Kingdom's 2010 target for renewable energy generation, and is taken very seriously by the U.K. energy sector. The government's emphasis on offshore projects has yielded successful results. The first large-scale offshore wind farm in the United Kingdom, North Hoyle, was commissioned in 2003.²⁶⁶ Companies involved in the U.K. offshore market now include multinational energy and utility companies.²⁶⁷ The BWEA has successfully initiated what they describe as a "stakeholder dialogue" with interested parties, including fishermen, tourist boards, and bird protection groups. The Environmental Council has been instrumental in gaining frequent consent for wind power projects in the United Kingdom by establishing this dialogue and using a third-party mediator.²⁶⁸ This stands in stark contrast to the litigious dialogue often found at the center of similar projects in the United States.

The United Kingdom recently approved the construction of two offshore wind farms in the Thames Estuary, one of which will be the world's largest when it is completed.²⁶⁹ At a cost of approximately £2 billion, however, the projects will not come cheap.²⁷⁰ The larger London Array project features 341 turbines rising from the sea approximately twelve miles off the Kent and Essex coast, as well as multiple offshore substations and meteorological masts.²⁷¹ A private consortium made up of Shell WindEnergy Ltd., E.ON U.K. Renewables, and Core Ltd. is behind the London Array project.²⁷² The comparatively smaller Thanet project will be located seven miles off coast and will feature 100 turbines. Thanet is

²⁶⁴ British Wind Energy Association, Offshore Wind, <http://www.bwea.com/offshore/info.html> [hereinafter Offshore Wind] (last visited Mar. 29, 2007).

²⁶⁵ Onshore and Planning, *supra* note 262.

²⁶⁶ Offshore Wind, *supra* note 264.

²⁶⁷ *Id.*

²⁶⁸ *Id.*

²⁶⁹ *Offshore Wind Farms Get Go-Ahead*, BBC NEWS, Dec. 18, 2006, http://news.bbc.co.uk/2/hi/uk_news/england/kent/6188133.stm [hereinafter *Offshore Wind Farms Get Go-Ahead*] (Discussing the location of the new farms: "The larger London Array project covers ninety square miles (232 square km) between Margate in Kent and Clacton, Essex. The second wind farm, called the Thanet scheme, will cover 13.5 square miles (35 square km) off the north Kent coast.").

²⁷⁰ Estimates call for the London Array scheme to cost approximately £1.5 billion, while the smaller Thanet project may cost £450 million. *Id.*

²⁷¹ *Id.*

²⁷² *Id.*

being developed by Warwick Energy.²⁷³

Together, the Thames Estuary schemes will produce enough electricity to power over one million households according to the U.K. government.²⁷⁴ These projects are part of a concerted effort by the United Kingdom to reach a five-fold increase in the United Kingdom's renewable energy resource by 2020.

The United Kingdom is not merely rubber-stamping projects to meet its goal to the detriment of environmental laws. Concerns over avian health surround wind power projects throughout the world. It is important to note that the plans for the London Array scheme have already been amended to prevent harm to red-throated divers, a bird rarely seen in U.K. waters.²⁷⁵ Indeed, new wind power plans in the United Kingdom often must survive public inquiry and are the target of environmental campaigners, particularly the Royal Society of the Protection of Birds (RSPB).²⁷⁶ In response to a recent plan to construct a wind farm on Romney Marsh at Little Cheyne Court on the Sussex border, environmentalists warned that thousands of birds could potentially be at risk.²⁷⁷ U.K. projects also commonly draw the ire of local community groups that take exception to the aesthetic consequences of building the giant wind turbines, and often assert the "not in my back yard" argument, in an attempt to protect the beauty of local landscapes.

Prospective developers in the United Kingdom often are forced to undertake years of legally required surveys prior to submitting an application. Following a public inquiry, a government planning inspector and local councils consider the plan for denial or approval. In many ways, these regulations mirror those in the United States, raising the question: can the United States also increase its wind power generation without adverse environmental consequences? As its projects move forward, the United Kingdom will provide much-needed insight that may aid future U.S. projects.

²⁷³ *Id.*

²⁷⁴ *Id.*

²⁷⁵ *Offshore Wind Farms Get Go-Ahead*, *supra* note 269.

²⁷⁶ *Wind Farm Inquiry Hears Evidence*, BBC NEWS, Oct. 12, 2004, http://news.bbc.co.uk/2/hi/uk_news/england/3736182.stm (Professor Philip Scott, from the University of London, recently described wind farms as a "desecration" of the landscape and "a wanton waste of one of our remaining wildernesses.").

²⁷⁷ *'Birds at Risk' Fear at Wind Farm*, BBC NEWS, Oct. 11, 2004, http://news.bbc.co.uk/2/hi/uk_news/england/3729726.stm; *see also Bellamy Opposes Marsh Wind Farm*, BBC NEWS, July 26, 2004, http://news.bbc.co.uk/2/hi/uk_news/england/kent/3923147.stm (discussing how various environmental campaigners were on both sides of a recent debate regarding a marsh wind farm).

B. India

In power-starved India, President Dr. A.P. J. Abdul Kalam has discussed the need for a comprehensive renewable energy policy featuring mandatory and time-bound provisions.²⁷⁸ “In India, environmental issues and social issues, such as poverty alleviation and economic development are, in principle, treated as interrelated” and are being dealt with using all-encompassing resources.²⁷⁹ Unlike its U.S. and U.K. counterparts, the Indian wind power sector has been afforded relaxed regulatory treatment. Recent reports indicate that the Indian wind power sector is not an industry required by the government to obtain an “environmental implementation permit” by submitting an “environmental impact assessment report,” an “environmental management plan,” or a “risk analysis report,” as are a number of other industries in India.²⁸⁰ It is interesting to note that India has stressed the development of wind power not just as a cleaner alternative to fossil fuels, but also as a bountiful and reliable source of electricity in a country strained by growing electricity demands.

India, one of the most populous countries in the world, currently has a total electric capacity of 130,000 megawatts, but some estimate that it will require a mind-boggling 400,000 megawatts of electric power by the year 2030.²⁸¹ According to the Indian Wind Energy Association, the country now produces 6053 megawatts of wind power; however, its installed wind power grew in the last fiscal year by an encouraging 47%.²⁸² By contrast, in 2004, the total installed wind energy capacity in India was only 3000 megawatts.²⁸³ Interestingly, much of this growth has been “fueled by favorable investment tax policies” and the work of the India Renewable Energy Development Agency (IREDA), which promotes and finances private-sector investments in wind power.²⁸⁴ President Kalam has said that he believes at least 16% of India’s total energy requirement can be

²⁷⁸ *India Eyes 16% of Power From Wind*, GULF TIMES, Nov. 7, 2006, available at http://www.gulf-times.com/site/topics/article.asp?cu_no=2&item_no=116305&version=1&template_id=48&parent_id=28 (President Kalam said, “To tap the potential of wind power optimally, we need to review our policies toward renewable energy in general and wind power, solar power and bio-fuels in particular . . . A comprehensive renewable energy policy with mandatory and time-bound provisions is an urgent need of the hour.”).

²⁷⁹ Tetsuji Uemura, Nomura Research Institute, *India’s Environmental Strategy and Future Cooperation with Japan*, 96 NRI Papers 5 (2005).

²⁸⁰ Uemura, *supra* note 279, at 7.

²⁸¹ GLOBAL WIND ENERGY REP. 2005, *supra* note 213, at 2.

²⁸² *Id.*

²⁸³ *Id.*

²⁸⁴ Eric Martinot, *Renewable energy markets and the Global Environment Facility*, FINANCIAL TIMES RENEWABLE ENERGY REPORT 12, Feb. 2000, at 18–22, available at http://www.martinot.info/Martinot_RER12.pdf.

produced by wind energy by the year 2030.²⁸⁵ The President has also stressed the need for better research and development to improve designs and apply newer technologies.²⁸⁶ Should the Indian wind energy sector continue to grow at its current pace, India will likely require less fossil fuel to foster its rapidly increasing demand for electricity.

C. African Nations

Although Africa only has 4% of the world's wind turbines, producing a total of approximately 250 megawatts of power, signs of progress exist.²⁸⁷ Tunisian authorities have invested in renewable energies, including wind power, to save money in response to high oil prices.²⁸⁸ The Tunisian National Electric Company (STEG) recently set up three new wind farms with a total capacity of 120 megawatts in the governorate of Bizerta, thereby increasing Tunisia's overall wind power capacity to 180 megawatts and making Tunisia the foremost producer of wind power in Africa.²⁸⁹ Additionally, Morocco has also seen a steady growth in wind power capability.²⁹⁰ Given the continent's vast size, however, African nations currently may be failing to capitalize on the potential of wind power.

D. China

China set up a state agency, the State Environmental Protection Administration (SEPA), in 1998 to assess the damage that its rapid industrialization was causing to the environment.²⁹¹ This growth has left China as the "second largest emitter of energy-related carbon dioxide emissions" in the world, behind only the United States.²⁹² China, though, is attempting to reverse the recent trend. In 2005, China installed nearly 500 megawatts of new wind power capacity, more than double its 2004 figure.²⁹³ This development was in direct anticipation of the country's new Renewable Energy Law, which went into effect on January 1, 2006.²⁹⁴ The

²⁸⁵ H.E. Dr. Abdul Kalam, President of India, Address at the Annual Conference of the World Wind Energy Association, NEW DELHI, ENVIRONMENT NEWS, Nov. 6, 2006, available at <http://www.presidentofindia.nic.in/scripts/sllatest1.jsp?id=869>.

²⁸⁶ *Id.*

²⁸⁷ *Tunisia Increases Investments in Wind Power, National Production Should Reach 180 Mw By 2008*, TUNISIA ONLINE, Nov. 14, 2006, available at <http://allafrica.com/stories/200611150391.html>.

²⁸⁸ *Id.*

²⁸⁹ *Id.*

²⁹⁰ *Global Wind Power Industry*, *supra* note 212.

²⁹¹ Paul Maidment, *Pollution and Prosperity*, FORBES, Nov. 27, 2006, available at http://www.forbes.com/2006/11/27/china-india-energy-biz-energy-cx_pm_1127energy.html.

²⁹² *Id.*

²⁹³ *Global Wind Power Industry*, *supra* note 212.

²⁹⁴ *Id.*; see also Maidment, *supra* note 291.

law introduced a target of generating 10% of the country's electricity from renewable resources by 2010, up from the current 3% level.²⁹⁵ China has a goal of producing 5000 megawatts of energy from wind power by the end of 2010.²⁹⁶ This goal has produced different results in different parts of China. For example, "wind power is being experimented with to generate power in Inner Mongolia and Gansu Province, where wind may supply electricity to rural villages that are still not on the Chinese power grid."²⁹⁷ Thus, wind may bring sustainable power to areas of China that fossil fuel-created electricity does not, or cannot, efficiently reach.

E. Australia

"The Australian wind power market nearly doubled in 2005 with creation of 328 megawatts of new capacity, bringing Australia's total wind power capacity to 708 megawatts."²⁹⁸ According to AusWind CEO Dominique Lafontaine, this growth was in direct response to the "implementation of a state based market mechanism and a commitment by state governments to establish an emissions trading scheme" that will effectively "provide financial incentives to continue this [kind of] growth."²⁹⁹ Australia's total capacity ranks below that of most continents examined herein, which is to be expected, given its relatively low population. Like China, however, wind may be able to fill an energy void by creating electricity for even the most remote areas of the country.

F. Egypt

Egypt passed what is known as "Law 4" in 1994 with the intended goal of preserving the environment.³⁰⁰ "This law restructured the existing environmental ministry and created the Egyptian Environmental Affairs Agency ("EEAA") to draft laws, create and enforce regulatory standards." Law 4 also enabled the EEAA to establish short-term and long-term "plans for environmental management, coordinate local, regional and national environmental protection efforts, and regularly report on the state of Egypt's environment."³⁰¹ In addition, "Egypt's New and Renewable Energy Authority has recently worked together with the Danish and German governments in an attempt to bring large-scale wind projects to the

²⁹⁵ Maidment, *supra* note 291.

²⁹⁶ *Id.*

²⁹⁷ *Id.*

²⁹⁸ *Global Wind Power Industry*, *supra* note 212.

²⁹⁹ *Id.*

³⁰⁰ Energy Information Administration, Egypt: Environmental Issues, *available at* <http://www.eia.doe.gov/emeu/cabs/egyptenv.html> (last visited Mar. 29, 2007).

³⁰¹ *Id.*

coast of the Red Sea.”³⁰² The ability to work together with experienced international partners is an important aspect of developing alternative energy markets. Multinational cooperation could play a key role in the development of new wind power technologies and practices in the United States.

V. POTENTIAL SOLUTIONS THAT WILL AID THE FUTURE OF WIND POWER DEVELOPMENT

The international examples mentioned above illuminate possible solutions that have already or could in the future generate investor interest in wind power in the United States. Borrowing from the United Kingdom, the United States can begin to exploit offshore wind resources. Getting there, however, will require greater public and private interactions, as well as alterations to the current legal framework.

An important change to the climate of American offshore wind power development occurred in 2005. Through section 388 of the Energy Policy Act of 2005,³⁰³ Congress allocated power within the Department of Interior’s Minerals Management Service (“MMS”) “to grant easements in Federal waters on the Outer Continental Shelf to commercial offshore wind energy developments.”³⁰⁴ The MMS replaces the Army Corps of Engineers, who previously maintained the responsibility for reviewing projects and permit requests.³⁰⁵ This change also requires that the MMS design lease structures for offshore wind projects wherever applicable.³⁰⁶

Section 388 represents the first step by Congress towards developing a review process dedicated solely to offshore alternative energy. This kind of streamlined action with a sole focus on energy development mirrors the kind of policies that have worked effectively in other nations, particularly in Europe. Section 388 authorizes the Secretary of the Interior, consulting with other federal agencies, to “grant a lease, easement, or right-of-way on the outer Continental Shelf for activities not otherwise authorized” under the OCSLA, “the Deepwater Port Act of 1974 (33 U.S.C. § 1501 *et seq.*), the Ocean Thermal Energy Conversion Act of 1980 (42 U.S.C. § 9101 *et seq.*), or other applicable law,” where the activity will produce or support production, transportation, or transmission of energy from sources other than oil and gas—including wind power.³⁰⁷

Section 388 consolidates and recognizes power in the MMS to review

³⁰² *Id.*

³⁰³ Section 388 is codified at 43 U.S.C. § 1337 (2007).

³⁰⁴ Cape Wind, America’s First Offshore Wind Farm on Nantucket Sound, <http://www.capewind.org/article72.htm> (last visited Mar. 27, 2007) [hereinafter Cape Wind].

³⁰⁵ *Id.*

³⁰⁶ *Id.* See also 43 U.S.C. § 1337(p).

³⁰⁷ Cape Wind, *supra* note 304. See 43 U.S.C. § 1337(p).

and approve offshore energy related projects at the federal level.³⁰⁸ The section 388 amendment also required that the MMS “issue any necessary regulations in order to carry out” the goals of the section.³⁰⁹ To that end, the MMS set forth an Advance Notice of Proposed Rulemaking on December 30, 2005.³¹⁰ In that Advance Notice, the MMS recognized that the majority of applications received for non-oil and gas development projects will be for renewable energy sources, including “wind, wave, current, and solar.”³¹¹

In addition, the MMS is currently in the midst of drafting a document, a Programmatic Environmental Impact Statement (EIS), which will evaluate the environmental impacts of the National Offshore Alternate Energy-Related Use (“AERU”) Program and Rule authorized by the Energy Policy Act of 2005, including all “foreseeable potential monitoring, testing, commercial development, operations, and decommissioning activities in Federal waters on the OCS.”³¹² The Programmatic EIS is necessary for compliance with the requirements of NEPA “in the establishment of a national offshore alternate energy-related use program and rules.”³¹³ Because the Programmatic EIS will focus on the AERU program and rules, the MMS expects that “subsequent NEPA documents prepared for site-specific alternate energy-related use projects” will feed off of “this programmatic EIS and the Record of Decision.”³¹⁴ The MMS expects to release a Draft Programmatic EIS in February 2007, followed by a public comment period from February through April 2007.³¹⁵ The MMS will evaluate and incorporate the public comments into the Final Programmatic EIS, due for publication in August 2007.³¹⁶ The MMS will issue a Record of Decision in September 2007.³¹⁷

A. Passage of a National Wind Power Act

Although Congress took a step in the right direction when it

³⁰⁸ See 43 U.S.C. § 1337(p).

³⁰⁹ *Id.* § 1337(p)(8).

³¹⁰ *Alternate Energy-Related Uses on the Outer Continental Shelf*, 70 Fed. Reg. 77,345 (Dec. 30, 2005) (to be codified at 30 C.F.R. pt. 285).

³¹¹ *Id.*

³¹² OCS Alternative Energy and Alternative Use Programmatic EIS, Frequently Asked Questions, <http://ocsenergy.anl.gov/faq/index.cfm#EIS> (last visited Mar. 29, 2007) [hereinafter OCS FAQs].

³¹³ OCS Alternative Energy and Alternative Use Programmatic EIS, Background Information, <http://ocsenergy.anl.gov/> (last visited Mar. 29, 2007) [hereinafter OCS Background].

³¹⁴ *Id.*

³¹⁵ OCS FAQs, *supra* note 312.

³¹⁶ *Id.*

³¹⁷ *Id.*

streamlined oversight of offshore wind power projects into the MMS through passage of the Energy Policy Act of 2005, criticism remains. The United States still appears to lack a consistent vision for wind power development. Indeed, there exists a prominent dichotomy between federal regulation of onshore and offshore wind power projects. Room for substantial improvement abounds. The authors believe that, given the litany of federal regulations that apply to wind power, Congress should simplify the process by passing a single piece of legislation that provides an authoritative framework for the growth of wind power in the United States, consistent with overarching federal objectives for the expansion of alternative energy sources as outlined by the Energy Policy Act of 2005. This kind of focused strategy has proven effective to jumpstart wind power projects in nations such as the United Kingdom.³¹⁸ Consistent with some of the international examples above, creating a streamlined and efficient process for wind energy development, backed by strong government support, is necessary to encourage both domestic and international investment.

In theory, a "National Wind Power Act" would consolidate federal oversight of onshore and offshore wind power developments into a single agency within the Department of Energy, rather than the Department of the Interior. The National Wind Power Act would give greater authority to the Department of Energy's existing Office of Energy Efficiency and Renewable Energy ("EERE").

Similarly, Congress created a new operating unit within the Department of Energy, the National Nuclear Safety Administration in 2000.³¹⁹ As created, the semi-autonomous agency is "responsible for enhancing national security through the military application of nuclear energy."³²⁰ To that extent, the mission of the NNSA is:

[T]o enhance United States national security through the military application of nuclear energy; to maintain and enhance the safety, reliability, and performance of the United States nuclear weapons stockpile, including the ability to design, produce, and test, in order to meet national security requirements; to provide the United States Navy with safe, militarily effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants; to promote international nuclear safety and nonproliferation; to reduce global danger from weapons of mass destruction; to support United States

³¹⁸ See GLOBAL WIND ENERGY REP. 2005, *supra* note 213, at 5.

³¹⁹ National Nuclear Safety Administration, About NNSA, <http://www.nnsa.doe.gov/aboutnnsa.htm> (last visited Mar. 29, 2007).

³²⁰ *Id.*

leadership in science and technology.³²¹

Borrowing from the role carved out for the NNSA, an expanded EERE would continue to promote and facilitate the growth of alternative energy in the United States, both onshore and offshore, and would provide for centralized review of all proposed alternative energy projects. It also would initiate a unitary permit process, work with other federal agencies to ensure implementation of federal energy policy, and regulate existing alternative energy projects to ensure environmental compliance. In this capacity, the EERE would serve as the nation's definitive authority and lone voice on wind power development, replacing the piecemeal fabric that currently exists.

This proposed National Wind Power Act would provide basic guidelines and call for the EERE to promulgate additional regulations specific to wind power. The National Wind Power Act would incorporate the rules and procedures found in existing laws that govern wind power in the United States and fuse them into a single, cohesive act. Going forward, this reduction—from multiple, sometimes overlapping statutes into a single piece of legislation governing wind power—will reduce the compliance cost of parties subject to its terms. Affected parties will no longer need to familiarize themselves with differing procedural requirements and reporting obligations. Instead, the National Wind Power Act will devise one process for creating and maintaining wind power projects either on land or offshore; this includes setting forth the requirements for obtaining an operating permit, receiving public comment, and performing an Environmental Impact Statement. The National Wind Power Act will not abrogate the substance of the requirements currently imposed upon wind power projects by the MBTA, NEPA, the ESA, the NWRSA, the NHPA, and the OCSLA, among others, but may alter their procedures. In practice, this could affect the use of suits solely as a dilatory tactic to prevent the development of wind power projects. In particular, the National Wind Power Act would prescribe heightened requirements for citizen suits, thereby reducing costly litigation for potential developers. Collectively, these sweeping changes aim to encourage private investment in wind power through a streamlined and simplified permitting process, reduce the time from a project's proposal to construction, reduce the risk of protracted litigation, and centralize decision-making.³²²

³²¹ *Id.*

³²² As it stands currently, prospective developers are often forced to retain contractors to advocate for them and offer assistance during the complex process of attaining governmental and regulatory permits. See *Leading Edge Developmental Servs. v. EnXco Inc.*, 2006 U.S. Dist. LEXIS 92654, at *3–*5 (D. Iowa 2006).

B. Development of Wind Power Along the Great Lakes

The second recommendation to aid the development of future wind power projects in the United States focuses on the “where” question. As shown above, the Cape Wind project in Nantucket Sound illustrates the catch-22 of wind power. On one hand, there is the desire to supplement the use of fossil fuels through energy created by wind turbines; but, on the other, there are the seemingly inescapable negative aesthetic effects of wind turbines. Wind turbines require relative proximity to electricity grids and population centers to make both practical and economic sense. Thus, aesthetic concerns will arise where wind farms are visible from the shoreline. One solution, perhaps, is to move projects further offshore as Prof. Kennedy suggested for Cape Wind, following the lead of the United Kingdom’s North Hoyle project.³²³

The location of wind farms is particularly important because until recently, electricity generated by wind could not be stored in the ground and reused at later times without great cost.³²⁴ As a result, there are currently only two wind storage facilities in the world, one in Germany and the other in Alabama, although the Iowa Stored Energy Park Agency recently announced plans for a third site to be located in Iowa.³²⁵ The goal is for private businesses to eventually partner in the project, forming an advantageous public-private sector relationship.³²⁶ This storage solution may allow wind projects to move further offshore, with the electricity applied to the power grid when needed.

Another potential solution would be to place offshore wind farms in areas less aesthetically-sensitive than Nantucket Sound. In fact, standing in stark contrast to the owners of property along Nantucket Sound, citizens and government officials in at least one portion of the Great Lakes region are openly courting the development of offshore wind farms. The Cuyahoga Regional Energy Development Task Force, a twenty-two-member task force comprised of government officials, as well as legal and business experts, is expected to recommend to Cuyahoga County commissioners in February 2007 that the region pursue a four to ten turbine demonstration project located three miles out in Lake Erie from Cleveland, Ohio.³²⁷ The goal of the demonstration project would be to attract

³²³ Offshore Wind, *supra* note 264.

³²⁴ David Elbert, *Plant to store wind power: Air pumped into rock will be energy source at Dallas County site*, DES MOINES REGISTER: ONLINE EDITION, Jan. 6, 2007, available at <http://www.desmoinesregister.com/apps/pbcs.dll/article?AID=/20070106/BUSINESS/701060345/1029/archive>.

³²⁵ *Id.*

³²⁶ *Id.*

³²⁷ Tom Breckenridge, *Wind power along Lake Erie just might fly*, THE CLEVELAND PLAIN DEALER: ONLINE ED., Jan. 12, 2007, available at <http://www.cleveland.com/news/>

worldwide attention, boost regional alternative-energy use, and spawn economic development in the field.³²⁸ Task force members including Lubrizol Corp., Parker Hannifin Corp. and Eaton Corp. could carve out a niche as global manufacturers of wind power components.³²⁹ Preliminary research compiled by the task force shows that wind turbines “sitting at least three miles out could catch fruitful wind speeds averaging [sixteen] mph.”³³⁰

The task force also expects that ten turbines could generate up to twenty megawatts of electricity.³³¹ Green Energy Ohio (“Green Energy”), a not-for-profit organization based out of Columbus, Ohio, has partnered with the city of Cleveland to install a data tower 165 feet above the city’s water intake crib,³³² three and a half miles offshore in Lake Erie from the Cleveland harbor, to gather data for potential wind harvesting.³³³ Green Energy already monitors wind speeds at various sites across the state with the “goal of determining the viability of [those] sites for utility-scale wind electricity production.”³³⁴

Any approved Lake Erie project will need to find a source of funding, although task force members are optimistic that money might be available from Ohio’s Third Frontier program,³³⁵ “which promotes high-tech innovation [throughout Ohio], as well as the U.S. Department of Energy.”³³⁶ If completed, the Lake Erie venture would be the world’s first freshwater wind turbine development, and could pave the way for significant regional economic development.³³⁷ A report from the

plaindealer/index.ssf?/base/cuyahoga/1168594872278740.xml&coll=2&thispage=1.

³²⁸ *Id.*

³²⁹ *Id.* For a detailed list of potential manufacturers of various components and sub-components of wind turbines, see George Sterziner & Matt Svrcek, Renewable Energy Policy Project, Technical Report (2004), <http://www.repp.org/articles/static/1/binaries/WindLocator.pdf>.

³³⁰ Breckenridge, *supra* note 327.

³³¹ *Id.*

³³² For more information on Green Ohio’s Cleveland Crib Monitoring program, see <http://www.greenenergyohio.org/page.cfm?pageID=700>.

³³³ Frank Hinchey, *Debate intensifies on benefits and risks of wind farms*, OHIO OUTDOOR NEWS, Apr. 28, 2006, at 8, available at http://www.fws.gov/midwest/greatlakes/hinchey_windpower_article.pdf.

³³⁴ Green Energy Ohio, Completed Ohio Wind Monitoring Sites, <http://www.greenenergyohio.org/page.cfm?pageID=120> (last accessed Mar.29, 2007).

³³⁵ The Third Frontier Project, a 10-year, \$1.6 billion initiative, began in February 2002 to expand Ohio’s high-tech research capabilities and promote innovation and company formation to create high-paying jobs for generations of Ohioans. For more information on the Third Frontier Project, including the programs that it currently funds, see http://www.ohiochannel.org/index.cfm?action=third_frontier_project.home.

³³⁶ Breckenridge, *supra* note 327.

³³⁷ *Id.*

Renewable Energy Policy Project ranks Ohio second only to California in the potential number of new jobs created by, and average investment received from, wind power.³³⁸ This information alone should raise optimism regarding the effect that wind power development could have on the Great Lakes region.

Irrespective of funding concerns, any Lake Erie wind power project must also examine potential environmental impacts, including those on avian and marine life.³³⁹ Lake Erie is home to various endangered or threatened species, including the Lake Erie water snake, American burying beetle, bald eagle, copperbelly water snake, Indiana bat, lakeside daisy, Scioto madtom, purple cat's paw pearly mussel, running buffalo clover,³⁴⁰ and the migratory piping plover, whose critical habitat is also listed in certain areas.³⁴¹ Importantly, state and private parties would be required to seek incidental take permits under the ESA if testing shows that planned activities are likely to result in takings of those listed species.³⁴² Other negative effects would need to be weighed against the positive economic impact before such projects could move forward. As has occurred in the United Kingdom, potential developers should begin to establish an open dialogue with local environmental groups as soon as possible in an attempt to foster compromise rather than litigation.

Congress should encourage and facilitate public and private sector partnerships with Great Lakes states such as Ohio to help foster the growth of wind power throughout the region. Importantly, wind power development in the Great Lakes region could take advantage of proximity to one of the country's major population centers, as over 10% of the United States's population lives within the Great Lakes basin area.³⁴³ Congress could also aid wind power through economic incentives, including long-term, substantial tax credits that encourage business investment, and by

³³⁸ Sterziner & Svrcek, *supra* note 329.

³³⁹ See, e.g., Tom Henry, *Lake-based wind tower raises hope, concern: Potential for renewable energy source competes against likely danger to wildlife*, TOLEDO BLADE, Sept. 4, 2005, available at <http://toledoblade.com/apps/pbcs.dll/article?AID=/20050904/NEWS08/50904054/-1/NEWS>.

³⁴⁰ U.S. Fish & Wildlife Service, Reynoldsburg, Ohio Ecological Services Office, *Listed species with lead in Ohio*, <http://www.fws.gov/midwest/reynoldsburg/endangered/species.html> (last accessed Mar. 29, 2007).

³⁴¹ For more on piping plover and its critical habitat, see Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for Wintering Piping Plovers, 50 C.F.R. § 402.05(a) (2003), available at http://www.fws.gov/midwest/Endangered/pipingplover/final_rule.pdf. See also U.S. FISH & WILDLIFE SERVICE, PIPING PLOVER RECOVERY PLAN—GREAT LAKES POPULATION, available at http://ecos.fws.gov/docs/recovery_plans/2003/030916a.pdf (last visited Mar. 29, 2007).

³⁴² See generally 15 U.S.C. § 1539(a) (2000).

³⁴³ Environmental Protection Agency, Great Lakes: Basic Information, <http://www.epa.gov/glnpo/basicinfo.html> (last accessed Mar. 29, 2007).

implementing renewable portfolio standards, although a formal discussion of these topics is outside of the scope of this article.³⁴⁴

Development of utility-scale wind power in the Great Lakes will have its own share of challenges, including concerns over migratory birds and bats, freezing waters, waves, and a source of funding, but assuming that scientific evidence shows that wind power will not cause a large-scale negative environmental impact to the region, then wind power appears to be a promising future source of clean energy and jobs for the Great Lakes area.

C. Encourage Business Innovation: Examining the Potential Effects of the Wind Spire Design on Wind Power Development

In the absence of a legislative change that spurs the development of wind power, the nation's developers must look to innovative business solutions that harness this untapped resource without causing any negative environmental consequences. At least one possible solution to the problem of avian and bat mortality that wind turbines may cause may also come from the shores of Lake Erie.

Cleveland State University ("CSU") engineering professor Majid Rashidi, has partnered with entrepreneur Mark Cironi, CEO of Green Energy Technologies, Inc., an Akron, Ohio company, to develop a new way to capture wind.³⁴⁵ Rashidi's idea: to build a screw-shaped tower with multiple, smaller rotors, sitting inside of its curves, attached to the outside of the design rather than the traditional windmill design.³⁴⁶ Dubbed a "wind spire" or "SmartEnergy Spire,"³⁴⁷ this design utilizes Bernoulli's principle to do something other turbines currently in use do not—it will cause winds to gain intensity while moving through the spire's design.³⁴⁸ Although CSU holds a provisional patent on Rashidi's design,³⁴⁹ Cironi and his Green

³⁴⁴ For an in-depth discussion of governmental tax-based policy choices to encourage development of wind power, see generally Real de Azua, *supra* note 16; see also James W. Moeller, *Of Credits and Quotas: Federal Tax Incentives for Renewable Resources, State Renewable Portfolio Standards, and the Evolution of Proposals for a Federal Renewable Portfolio Standard*, 15 FORDHAM ENVTL. L. REV. 69, 72 (2004); Robert W. Bernhard, Note, *Federalism and The Siting Of Offshore Wind Energy Facilities*, 14 N.Y.U. ENVTL. L.J. 374 (2006).

³⁴⁵ Chris Sheridan, *A spire built to inspire: Is this the future breezing into town?*, THE CLEVELAND PLAIN DEALER, Oct. 1, 2006, available at http://www.cleveland.com/news/plaindealer/chris_sheridan/index.ssf?/base/opinion/1159605501268330.xml&coll=2.

³⁴⁶ *Id.*

³⁴⁷ See Cleveland State University, *Harnessing the Power of Wind: Taking a Good Idea and Making it Better*, [http://www.csuohio.edu/research/TTS/Wind%20Power%20\(final%20approval\).pdf](http://www.csuohio.edu/research/TTS/Wind%20Power%20(final%20approval).pdf) (last visited Mar. 29, 2007) [hereinafter, Cleveland State University].

³⁴⁸ For a graphic explaining the wind spire design, see <http://www.cleveland.com/news/wide/index.ssf?/news/wide/csuwindmill.html>.

³⁴⁹ Sheridan, *supra* note 345.

Energy Technologies hold the exclusive rights to manufacture and sell the wind spire worldwide.³⁵⁰

The innovative wind spire attempts to solve many of the problems that plague current wind turbines. First, the design of wind spires will cost less and be easier to maintain than traditional wind turbines, as the spires are able to avoid the massive strain caused by the large turning blades of turbines, and the spire's parts are not as difficult to access.³⁵¹ The manufacturing costs of wind spires will be less than that of traditional turbines thanks to their ability to be mass produced.³⁵² Cironi further suggests that the wind spire's operational costs will be hundreds of dollars less per kilowatt hour than traditional turbines.³⁵³

Importantly, a major advantage of the wind spire design is that it can produce electricity at much lower speeds than traditional wind turbines (due to the blade size of traditional turbines).³⁵⁴ This increases the potential energy that can be captured, as the wind speed necessary to create electricity decreases. Cleveland State notes that "a wind spire is able to rotate into the incoming direction of the wind, with production capacity rated at two times greater than a conventional wind turbine configuration because of the amplification caused by the spire system's innovative design."³⁵⁵ Thus, a wind spire may be able to both create electricity at times when a traditional wind turbine cannot and be able to create much more of it.

Whereas traditional wind turbines require extensive, open space due to their large blades, the wind spire lacks blades. This has a profound effect upon the location of potential projects. The bladeless wind spire is narrow and may even be woven into the urban fabric. In fact, the 2007 state budget for CSU calls for \$400,000 towards placing the prototype wind spire on the CSU campus.³⁵⁶ University president Michael Schwartz, an ardent supporter of the proposal, stated, "So far, it has proven out in computer studies and wind tunnel studies, so we'd like to get one up and operating soon."³⁵⁷ Due to its design, wind spires are expected to have a versatile application, and may "provide electricity to the current power grid . . .

³⁵⁰ GreenLakeBlueSky, Green Energy Technologies, Inc., <http://www.gcbl.org/economy/sustainable-business/sustainable-business-green-energy-technologies-inc> (last accessed Mar. 29, 2007).

³⁵¹ Sheridan, *supra* note 345.

³⁵² See Cleveland State University, *supra* note 347.

³⁵³ GreenLakeBlueSky, *supra* note 350.

³⁵⁴ See Cleveland State University, *supra* note 347.

³⁵⁵ See *id.*

³⁵⁶ Aaron Marshall, *Cuyahoga Projects Included in State Budget*, THE CLEVELAND PLAIN DEALER, Dec. 6, 2006, available at <http://www.cleveland.com/news/plaindealer/index.ssf?/base/news/1165397920158890.xml&coll=2>.

³⁵⁷ *Id.*

[incorporate and] include RF communications electronics in the same structure . . . [and] provide electricity to large organizations.”³⁵⁸

Further, the design of the proposed wind spire may be able to drive additional wind power investment by alleviating some of the concerns over the possible environmental effects of wind energy. In theory, the wind spire design should reduce the threat that traditional wind turbines pose to birds and bats. The narrow design of the tower and inclusion of several small turbines rather than a large one will result in a smaller area of danger for wildlife. Opponents to a proposed wind power project will be less capable of relying upon statutes like the ESA, as the threat to wildlife becomes less of an issue, thereby reducing the likelihood of delay or prohibition of projects. By reducing the downside risk to a proposed project that some statutes cause, investors should be more likely to contribute the necessary capital for private wind power developments, making projects more viable and numerous. Increased wind power development across the United States then may begin with better engineering and technology, such as the wind spire. Greater innovations and ideas in the wind sector will only increase the viability of wind as a legitimate energy source.

The wind spire design illustrates how engineering innovation can overcome current obstacles, both practical and legal, that inhibit proliferation of wind energy in the United States. The wind spire design also creates hope that subsequent innovations may ameliorate the other notable problems associated with wind power development, including effects on wildlife populations and aesthetic concerns.

VI. CONCLUSION

If wind power is to develop into a meaningful alternative energy source and supplement the United States's power needs, both domestic and international investment must be encouraged. Clarifying the interrelation between this nation's environmental laws and wind power development projects would be a large step towards convincing investors to devote the necessary capital to fund wind power development in the United States. A more simplified statutory scheme, particularly with regards to the permitting process, would aid in the proliferation of entrepreneurs and expand the wind sector's domestic market. As discussed above, current wind power developers face a labyrinth of laws and regulations that are each devoted to small and discrete pieces of the environmental puzzle. The environmental laws governing wind power projects lack a cohesive voice, due to the piecemeal manner by which the statutes were promulgated. Flexibility in the regulatory system would promote the development of

³⁵⁸ See Cleveland State University, *supra* note 347.

wind projects and allow investors to perceive less risk in supporting these projects. As the wind power dilemma shows, it can be counterproductive to reduce environmental issues into black and white terms—this is not a case of the “good guy” environmental advocates standing in solidarity across from “bad guy” big industry.³⁵⁹ Clean, sustainable energy can be achieved, but it appears that compromise from proponents and opponents alike must be reached. Improving public awareness and support for wind power development projects could prove decisive in slowing the use of environmental statutes to halt these potentially beneficial projects. As the public support for these projects increases, the confidence of investors and developers alike will grow—translating into a revived alternative energy market. By contrast, environmental laws must not become so compromised as to disregard the negative effects of wind power generation on humans and the environment.

A 2005 poll conducted by the Yale Center of Environmental Law and Policy as a part of its Environmental Attitudes and Behavior Project showed that more than 90% percent of Americans thought that dependence on foreign oil was a serious problem and almost 70% considered it a very serious one; even greater numbers wanted greater clean energy technologies.³⁶⁰ Clearly, the delicate balance of the environmental status quo versus the need for clean power does not appear to be one that will resolve itself. The world currently uses eight-four million barrels of oil every day, and the world’s appetite is expected to grow by 40% in the next twenty years as America expands and China and India modernize.³⁶¹ Therefore, the development of alternative energy sources will prove crucial to the entire world in the next century. Our dilemma, then, becomes one that affects the world writ large.

Similarly, a survey of recent comments by U.S. Presidents shows an awareness of the impending world energy crisis; less apparent, though, are the steps toward a solution. While one could argue that the creation of a sustainable energy policy and development of meaningful alternative energy sources has progressed, albeit at a snail’s pace, it has constantly been mentioned as a goal by American presidents since the 1973 oil embargo.³⁶² The most recent offering came in 2006 from current president

³⁵⁹ See generally Marian R. Chertow & Daniel C. Esty, *Environmental Policy: The Next Generation*, Issues in Science and Technology, available at <http://www.issues.org/14.1/esty.htm> (last visited Mar. 27, 2007).

³⁶⁰ Yale Center for Environmental Law & Policy, Environmental Poll (2005), <http://www.yale.edu/envirocenter/environmentalpoll.htm>; see also ‘Global fear’ Over Energy Plans, BBC News, July 13, 2006, http://news.bbc.co.uk/1/hi/in_depth/5170152.stm (discussing similar global poll results).

³⁶¹ Frank Sesno, *Behind the Scenes: Powering the Planet*, CNN.COM, July 4, 2006, <http://www.cnn.com/2006/US/03/16/bts.sesno.oil/index.html>.

³⁶² Kevin L. Doran, *Can the U.S. Achieve a Sustainable Energy Economy From the*

George W. Bush, who announced in his 2006 State of the Union Address, "America is addicted to oil . . . The best way to break this addiction is through technology."³⁶³ Perhaps Dr. Rafidi's wind spire may prove to be the beginning of this necessary innovation.

The true problem at our current stage involves how to take action. Left to their own devices, our various environmental statutes mentioned above will continue to be used to stall the development of important alternative energy sources in the United States. As in *Don Quixote*, where most observers should see profitable windmills that can help this nation's energy policy progress for years to come, others will see "monstrous giants present[ing] themselves" that must be engaged in battle and slain.³⁶⁴ One's perspective on the matter might be the result of his or her corresponding property lines. For example, to those critics who have suggested moving the Cape Wind project further offshore, what becomes out of sight might also become out of mind. At some point, however, property owners' individual aesthetic concerns must necessarily give way to energy creation for the greater good. The question, of course, is where that line falls.

The development of the fuel of tomorrow must not be dictated solely by the laws of yesteryear but must, rather, be reexamined in the current time. As international examples show, fostering growth in the wind energy sector requires a focused commitment. The passage of a National Wind

Bottom-Up? An Assessment of State Sustainable Energy Initiatives, 7 VT. J. ENVTL. L. 95 (2005–2006) (collecting the statements of recent American presidents: President Nixon declared, "We will break the back of the energy crisis; we will lay the foundation for our future capacity to meet America's energy needs from America's own resources." President Richard Nixon, Address Before a Joint Session of the Congress Reporting on the State of the Union (Jan. 30, 1974), in N.Y. Times, Jan. 31, 1974, at A20. A year later, President Ford announced, "I am recommending a plan to make us invulnerable to cutoffs of foreign oil. It will require sacrifices, but it—and this is most important—it will work." President Gerald Ford, Address Before a Joint Session of the Congress Reporting on the State of the Union (Jan. 15, 1975), in N.Y. Times, Jan. 16, 1975, at A24. President Carter later observed, "Our excessive dependence on foreign oil is a clear and present danger to our nation's security. . . . At long last, we must have a clear, comprehensive energy policy for the United States." President Jimmy Carter, Address Before a Joint Session of the Congress Reporting on the State of the Union (Jan. 23, 1980), available at <http://www.presidency.ucsb.edu/sou.php>. President Clinton proclaimed "America [has] led the world to reach a historic agreement committing our nation to reduce greenhouse gas emissions through market forces, new technologies, [and] energy efficiency." President William J. Clinton, Address Before a Joint Session of the Congress Reporting on the State of the Union (Jan. 27, 1998), in The Weekly Compilation of Presidential Documents, Feb. 2, 1998, at 129–39.).

³⁶³ President George W. Bush, Address Before a Joint Session of the Congress Reporting on the State of the Union (Jan. 31, 2006), in *We Strive to Be a Compassionate, Decent, Hopeful Society*, N.Y. TIMES, Feb. 1, 2006, at A18.

³⁶⁴ MIGUEL DE CERVANTES SAAVEDRA, *DON QUIXOTE*, pt. 1, ch. VIII (John Ormsby, trans.), available at http://www.online-literature.com/cervantes/don_quixote/; see also *Ecogen, LLC v. Town of Italy*, 438 F. Supp. 2d 149, 151–52, n.2 (W.D. N. Y. 2006).

Power Act could provide our nation with the terms and conditions by which U.S. wind power develops and evolves throughout the remainder of this century. This statute could counterbalance the need for environmental protection with the marketplace's requirements of simplification and predictability at each stage of wind power development. Additional scientific studies on avian and bat mortality, like those currently underway, will help to produce a more informed wind energy policy and statute. By formulating one cohesive, planned U.S. wind energy policy into a single statute, this updated regulatory framework will provide the guidelines by which citizens, businesses, and governmental actors "carpe ventem" for years to come.³⁶⁵

³⁶⁵ From the Latin for "seize the wind," Wind Powering America annually offers its Carpe Ventem Awards to innovating wind power projects. The Bowling Green Municipal Utilities won such an award on April 4, 2006, for the development of the AMP-Ohio/Green Mountain Energy Wind Farm, Ohio's first commercial wind energy farm near Bowling Green. U.S. Dep't of Energy Efficiency and Renewable Energy, *Wind Powering America: Awards*, last updated Jan. 26, 2007, available at http://www.eere.energy.gov/windandhydro/windpoweringamerica/wpa_awards.asp.