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NEPA REVIEW OF OFFSHORE WIND FARMS: ENSURING EMISSION REDUCTION BENEFITS OUTWEIGH VISUAL IMPACTS

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Abstract: Wind power may greatly reduce overall emissions of air pollutants from fossil fuel plants. Benefits could range from fewer premature deaths to reduced global warming, and cover the gamut of goals that the National Environmental Policy Act (NEPA) articulates. Previous NEPA reviews of wind projects, however, have focused on local aesthetic objections and given only cursory treatment to emission reductions. This imbalance threatens to frustrate, rather than further, NEPA's goals. Beginning with the offshore wind farm proposed near Cape Cod, Massachusetts, reviewers must accord the prominence and depth of treatment to emission offset benefits that NEPA requires. Local aesthetic preferences must not be permitted to overshadow broad regional benefits.

To turn, turn, will be our delight,
'Til by turning, turning, we come round right.

—Shaker Song, *Simple Gifts*¹

INTRODUCTION

The first National Environmental Policy Act (NEPA)² review of a proposed offshore wind farm is underway.³ Potential environmental

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¹ *Simple Gifts* (1848), reprinted in THE GIFT TO BE SIMPLE: SONGS, DANCES AND RITUALS OF THE AMERICAN SHAKERS 136 (Edward D. Andrews ed., Dover Publ'ns 1967) (1940), available at <http://www.contemplator.com/folk3/simple.html> (last visited Jan. 5, 2004).

² National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4370(f) (2000). Many states have similar environmental review statutes.

³ See CAPE WIND ASSOCS., FREQUENTLY ASKED QUESTIONS ABOUT THE CAPE WIND PROJECT, at <http://www.capewind.org/> (last visited Dec. 30, 2003).

impacts of the 420-megawatt Cape Wind project in the waters of Cape Cod, Massachusetts range from widely discussed visual impacts to lesser understood air emission reductions. Another developer has proposed offshore wind farms up and down the eastern seaboard.⁴ NEPA does not instruct reviewing agencies on the relative weight one type of impact should receive versus another, and it is up to agencies in NEPA reviews of offshore wind to ensure that visual aesthetics do not eclipse emission reductions.

Most people would prefer wind energy to other currently available power sources, if only it were invisible. Renewable energy does not involve environmentally disruptive fuel extraction from limited resources, reliance on foreign fuel imports, water flow disruptions, or nuclear waste generation. Wind power offers an increased jobs-to-power generation ratio⁵ and zero emissions to land, water, and air. Large-scale wind projects can reduce fossil fuel plants' running time, significantly decreasing emissions of air pollutants. Benefits from the reduced emissions include fewer air quality related illnesses and premature deaths, decreased global warming and acid rain, and reduced haze. Offshore wind projects are particularly promising because the ocean can satisfy wind turbines' need for broad, windy spaces, allow developers to use economies of scale, and meet the high energy demands of nearby densely populated areas that lack suitable land space.

Popular visual aesthetic preferences are the primary obstacle to obtaining the emission reductions and other benefits wind power offers.⁶ It is easy for the layperson to see how large offshore wind farms in the ocean will alter local ocean viewscapes. Emission reductions, conversely, are difficult even for the energy analyst or transmission engineer to pinpoint. Thus, those who value emission reductions and other benefits of wind power above aesthetics are at a great disadvantage in NEPA review. The temptation in NEPA review to focus on di-

⁴ See WINERGY, at <http://www.winergyllc.com/sites.shtml> (last visited Dec. 30, 2003).

⁵ See NAT'L ASS'N OF STATE ENERGY OFFICIALS, WIND ENERGY OPPORTUNITIES, at http://www.naseo.org/energy_sectors/wind/naseowind.pdf (last visited Dec. 30, 2003).

⁶ See MASS. EXECUTIVE OFFICE OF ENVTL. AFFAIRS, EOEА No. 12643, CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE ENVIRONMENTAL NOTIFICATION FORM 11 (2002), available at <http://www.nationalwind.org/events/offshore/020925/presentations/Wickersham.pdf> (last visited Dec. 30, 2003) [hereinafter MEPA CAPE WIND CERTIFICATE]. For example, Massachusetts's environmental review scoping document for Cape Wind states that "[t]he visual impacts of the project have been mentioned more than any other issue among comments received in opposition." *Id.*

rect local and adverse impacts rather than on indirect regional and beneficial ones exacerbates this problem.

This Article compares and contrasts the possible roles of visual and air emission impacts in NEPA review of offshore wind farms, examines why NEPA encourages unbalanced roles, and shows how agencies can correct the imbalance. While Cape Wind will merit considerable discussion as the first offshore wind project under serious environmental review in the U.S., this Article is directed at all offshore wind farms subject to NEPA review. Part I considers NEPA's lack of guidance on prioritizing values, as well as its preoccupation with discrete, local adverse impacts. Part II discusses the emission reduction and visual impacts of offshore wind projects, and examines the roles these impacts have played in NEPA review of terrestrial wind energy projects. Part III identifies ways that a NEPA Environmental Impact Statement (EIS) may be adapted to better allow agencies and citizens to review offshore wind projects, as well as other large-scale, zero-emission energy projects subject to environmental impact review.

I. WEIGHING IMPACTS UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT

While there is no precedent for offshore wind, it is settled that courts apply a highly deferential standard of review to NEPA decisions.⁷ Agencies are free to choose how to weight each type of environmental impact of a proposed project, provided they consider each "significant" impact and their decisions are not arbitrary or capricious. Even if public outrage over visual impacts is powerful, and emission reductions are more difficult to pinpoint, agencies should devote the attention to emission reductions necessary to allow decisionmakers to take a hard look at this highly significant impact. In order to accomplish this, agencies will need to take an in-depth look at the consequences of not proceeding with an offshore wind farm,⁸ and explicitly recognize that emission reductions are a benefit of offshore wind farms to be weighed carefully and thoroughly against any detriments.

⁷ See discussion *infra* Part I.B.

⁸ NEPA regulations and caselaw refer to the alternative of not proceeding with a proposed agency action, such as permit approval or project funding, which often results in a project not going forward, as the "no build" or "no action" scenario or alternative. 10 C.F.R. §§ 503.13(3), 1021.321(c) (2003); 40 C.F.R. § 1502.14(d); see also *Found. for Horses & Other Animals v. Babbitt*, 995 F. Supp. 1088, 1091 (C.D. Cal. 1998); *Bergen County v. Dole*, 620 F. Supp. 1009, 1023 (D.N.J. 1985), *aff'd*, 800 F.2d 1130 (3d Cir. 1986).

A. NEPA's Goals

Utility-grade wind power is highly consistent with NEPA's goals. Section 101(a) requires the federal government to "create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."⁹ Section 101(b) establishes "the continuing responsibility of the Federal Government to use all practicable means" to achieve certain policy goals.¹⁰ Large-scale offshore wind power can further NEPA's goals.

Section 101(b)(1) requires the federal government to use all practicable means to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."¹¹ Offshore wind can reduce future generations' obligations to manage nuclear waste and fossil fuel pollution effects, and increase the amount of fossil fuels left for them.

Section 101(b)(2) requires the federal government to use all practicable means to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings."¹² Offshore wind can offset fossil fuel emissions that would otherwise pose health and safety risks to Americans, create jobs, reduce emissions of visibility-impairing pollutants, offer sleek new structures that many view as beautiful, and create new tourist attractions.

Section 101(b)(3) requires the federal government to use all practicable means to "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences."¹³ Offshore wind can provide an endless and free source of power with no harmful emissions or health risks and negligible safety risks, reducing health and safety hazards associated with fossil fuel plants.

Section 101(b)(4) requires the federal government to use all practicable means to "preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice."¹⁴ Offshore wind can continue a tradition of using wind energy that dates to early sailboats, and that has included significant use of windmills

⁹ 42 U.S.C. § 4331(a) (2000).

¹⁰ *Id.* § 4331(b).

¹¹ *Id.* § 4331(b)(1).

¹² *Id.* § 4331(b)(2).

¹³ *Id.* § 4331(b)(3).

¹⁴ *Id.* § 4331(b)(4).

over the years for grain milling, water transport, salt production, and other purposes, while reducing the disproportionate impacts fossil fuel plants can have on persons of color, lower income, and non-U.S. origin.

Section 101(b)(5) requires the federal government to use all practicable means to “achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.”¹⁵ Offshore wind will create a power source that is accessible to the most populated parts of the U.S.

Section 101(b)(6) requires the federal government to use all practicable means to “enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”¹⁶ The federal government should use all practicable means to enhance offshore wind, a renewable resource.

While describing the ways in which offshore wind will achieve NEPA’s goals is conceptually simple, it is technically difficult, requiring complex modeling of electricity power pools; air patterns; resulting impacts on human health, global warming, and environmental justice; and other beneficial impacts such as environmental protection and improved visibility. Furthermore, NEPA does not prescribe the relative weight to be accorded to any of these impacts. The lack of guidance on the balancing of interests in NEPA review makes it easy to overemphasize simple issues like visual impacts and underemphasize more complex issues like emission reductions. Agencies that focus on adverse, local impacts intensify this imbalance, but they must correct it if they are to use all practicable means to achieve NEPA’s goals.

B. *Administrative Discretion*

NEPA is a purely procedural statute. Compliance requires review, not results. As the Supreme Court has said, “NEPA merely prohibits uninformed—rather than unwise—agency action,”¹⁷ and judicial review is usually limited either to whether an EIS is required, or to whether an EIS is adequate.¹⁸ Courts will only invalidate an agency’s decision if the

¹⁵ 42 U.S.C. § 4331(b)(5).

¹⁶ *Id.* § 4331(b)(6).

¹⁷ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989); *see also Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 378 (1989) (commenting on the “demand that courts ensure that agency decisions are founded on a reasonable evaluation ‘of the relevant factors’”).

¹⁸ Judicial review is not permitted until an agency issues a final action, such as a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS). 40 C.F.R. § 1500.3 (2003). NEPA compliance is reviewed under the Administrative Procedure

agency failed to take a “hard look” at the relevant impacts¹⁹ or to “articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’”²⁰ Under the Administrative Procedure Act, a court may overturn an agency decision if it was “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”²¹ In other words, only if “there has been a clear error of judgment” will the courts second-guess the agency’s decision.²²

C. *Balancing Significant Impacts*

It may seem odd that a statute characterized as “procedural” has no procedure for weighing relative adverse and positive impacts or regional versus local impacts. But, this is the case with NEPA. NEPA regulations require that EISs discuss impacts “in proportion to their significance,”²³ but give little further guidance. In fact, NEPA’s implementing regulations tend to broaden, rather than narrow, the discretion that agencies have in implementing NEPA’s requirements.²⁴ Lead agencies in NEPA review have a responsibility to balance beneficial and adverse impacts of proposed actions.²⁵ It is up to the agencies to determine where to place each issue in an EIS and how much discussion to devote to that issue.

Act, 5 U.S.C. §§ 551–559, 701–706. See, e.g., *Marsh*, 490 U.S. at 375; *Welch v. U.S. Air Force*, 249 F. Supp. 2d 797, 808 (N.D. Tex. 2003).

¹⁹ *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.21 (1976).

²⁰ *Davis Mountains Trans-Pecos Heritage Ass’n v. U.S. Air Force*, 249 F. Supp. 2d 763, 776–77 (N.D. Tex. 2003) (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)).

²¹ 5 U.S.C. § 706(2) (A).

²² *Citizens to Pres. Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971).

²³ 40 C.F.R. § 1502.2(b).

²⁴ NEPA regulations provide that a cost-benefit analysis, when included in an EIS, should be discussed in relation to “any analyses of unquantified environmental impacts, values, and amenities . . . the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations.” 40 C.F.R. § 1502.23.

²⁵ See, e.g., *Natural Res. Def. Council, Inc. v. Morton*, 458 F.2d 827, 833 (D.C. Cir. 1972) (stating that the Final EIS must include “a basis for (a) evaluation of the benefits of the proposed project in light of its environmental risks, and (b) comparison of the net balance for the proposed project with the environmental risks presented by alternative courses of action”); *Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1113, 1123 (D.C. Cir. 1971); *Welch v. U.S. Air Force*, 249 F. Supp. 2d 797, 848 (N.D. Tex. 2003) (“Defendants were required to balance the favorable and adverse effects of the agency action . . .”); see also DANIEL R. MANDELKER, *NEPA LAW AND LITIGATION* § 6.1 (2d ed. 1992).

Section 102(2)(C) requires agencies to conduct environmental reviews on all "major Federal actions significantly affecting the quality of the human environment."²⁶ Agencies have used the EIS as the vehicle to implement this requirement. The NEPA regulations define "effects" and "impacts" to be synonymous, and to include "ecological . . . aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative."²⁷ Neither the statute nor the regulations, however, attributes relative weights to these various impacts. Read in isolation, this language puts aesthetics and health on an equal footing.

Few cases discuss the relative weight to be accorded various factors under NEPA, and those that do tend to state that agencies are not required to accord greater weight to environmental impacts than to other impacts.²⁸ "Environmental amenities' will often be in conflict with 'economic and technical considerations,'" the Court of Appeals for the D.C. Circuit stated soon after NEPA's enactment.²⁹ The court elaborated: "To 'consider' the former 'along with' the latter must involve a balancing process. In some instances environmental costs may outweigh economic and technical benefits and in other instances they may not. But NEPA mandates a rather finely tuned and 'systematic' balancing analysis in each instance."³⁰ One court has asserted that "economic and social impacts occupy a lesser tier of importance in an EIS than do purely environmental or ecological concerns,"³¹ but judicially-imposed balancing instructions like this one are the exception to the rule.

D. Harms Versus Benefits

The implementation of NEPA has focused on the harms, rather than the benefits, of proposed projects and technologies.³² Agencies and courts have tended to interpret statutory phrases like "prevent or

²⁶ 42 U.S.C. § 4332(2)(C) (2000).

²⁷ 40 C.F.R. § 1508.8.

²⁸ See, e.g., *Fund for Animals v. Babbitt*, 2 F. Supp. 2d 570, 576 (D. Vt. 1997) (stating that agencies need not give more weight to environmental concerns than other concerns); see also *Strycker's Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223, 227 (1980) (providing that an agency need not "elevate environmental concerns over other appropriate considerations" in selecting an action under NEPA).

²⁹ *Calvert Cliffs' Coordinating Comm.*, 449 F.2d at 1113.

³⁰ *Id.*

³¹ *Ass'n Concerned About Tomorrow, Inc. v. Slater*, 40 F. Supp. 2d 823, 831 (N.D. Tex. 1998).

³² See, e.g., Joel A. Gallob, *In Search of Beneficial Environmental Impacts: Superconductive Magnetic Energy Storage, the National Environmental Policy Act, and an Analysis of Environmental Benefits*, 14 HARV. ENVTL. L. REV. 411, 412-15 (1990).

eliminate” to mean only “avoid adverse impacts from the proposed agency action.” For example, section 102(1)(C)(ii) requires each EIS to include “any adverse environmental effects which cannot be avoided should the proposal be implemented,”³³ and NEPA regulations direct agencies to make best efforts to “avoid or minimize any possible adverse effects”³⁴ and to explore alternatives “that will avoid or minimize adverse effects.”³⁵ Read in isolation, these directives require only consideration of *adverse* consequences of the proposed agency action. Yet, when NEPA is read as a whole, it becomes clear that agencies can, and should, carefully consider the *benefits* of proposed actions as well.

For example, many NEPA provisions empower agencies to use NEPA to examine the benefits of proposed projects. NEPA requires agencies to consider items including “alternatives to the proposed action,”³⁶ including the no build option, and “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity.”³⁷ The differences in short- and long-term air impacts of using fossil fuels as opposed to using wind are striking. Section 101(a) uses the verbs “restore,” “create,” and “maintain” to describe NEPA’s goals regarding the environment.³⁸ A stated purpose of NEPA is “to promote efforts which will prevent or *eliminate* damage to the environment and biosphere and *stimulate* the health and welfare of man.”³⁹ NEPA also states that it is the responsibility of the federal government to work to “*enhance the quality of renewable resources*.”⁴⁰ NEPA directs the Council on Environmental Quality “to formulate and recommend national policies to *promote the improvement* of the quality of the environment,”⁴¹ and “to develop and recommend to the President national policies to *foster and promote the improvement* of environmental quality.”⁴² The Council

³³ 42 U.S.C. § 4332(2)(C)(ii) (2000).

³⁴ 40 C.F.R. § 1500.2(f) (2003).

³⁵ *Id.* § 1500.2(e).

³⁶ 42 U.S.C. § 4332(2)(C)(iii).

³⁷ *Id.* § 4332(2)(C)(iv).

³⁸ *Id.* § 4331(a).

³⁹ *Id.* § 4321 (emphasis added).

⁴⁰ *Id.* § 4331(b)(6) (emphasis added).

⁴¹ *Id.* § 4342 (emphasis added).

⁴² 42 U.S.C. § 4344(4) (emphasis added).

on Environmental Quality's implementing regulations clearly require a consideration of positive impacts.⁴³

Only a few cases have addressed the adequacy of NEPA review of beneficial impacts.⁴⁴ In one case, the Fourth Circuit found that the Federal Aviation Administration must prepare an EIS when a citizens' group claimed that the EIS would reveal environmental benefits of changing the airport's hours of operation.⁴⁵ Because EISs generally focus on adverse impacts, agencies reviewing environmentally friendly projects like offshore wind must create new models that ensure adequate consideration of benefits as well.

E. Local Versus Regional Impacts

Neither NEPA nor its implementing regulations provides any guidance on the geographic scope required for an EIS.⁴⁶ Because the judicial standard of review is highly deferential,⁴⁷ it is unlikely that a court will overturn the agency's decision to limit an offshore wind farm study area to the immediate vicinity of the project site, particularly if an agency can show that a broad geographic analysis of air emission impacts is infeasible.⁴⁸ While agencies must include reasonably foreseeable significant impacts on the human environment in each EIS, "remote and highly speculative consequences" do not require discussion.⁴⁹ Instead, the EIS only requires a "reasonably thorough discussion of the

⁴³ 40 C.F.R. § 1508.8(b) (2003) ("Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.").

⁴⁴ See Gallob, *supra* note 32, at 413 n.3 (describing the results of a September 15, 1989 keyword search on Westlaw's ALLFEDS database for "environment! benefit!" w/250 "impact statement" and stating that this search revealed only twenty-eight cases). An identical search run for the period of September 16, 1989 through July 17, 2003 revealed only eight additional cases.

⁴⁵ *Virginians for Dulles v. Volpe*, 541 F.2d 442, 445-46 (4th Cir. 1976).

⁴⁶ See, e.g., *Kleppe v. Sierra Club*, 427 U.S. 390, 414 (1976) ("[D]etermination of the extent and effect of [cumulate impacts], and particularly identification of the geographic area within which they may occur, is a task assigned to the special competency of the appropriate agencies.").

⁴⁷ See discussion *supra* Part I.B.

⁴⁸ See, e.g., *Kleppe*, 427 U.S. at 413-15. In finding that a comprehensive, regionwide EIS for coal reserve development on federal lands in the northern Great Plains region was not necessary, the Supreme Court stated that "[e]ven if environmental interrelationships could be shown conclusively to extend across [particular geographic] areas, practical considerations of feasibility might well necessitate restricting the scope of comprehensive [environmental impact] statements." See *id.* at 414.

⁴⁹ See *Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974) (citing cases).

significant aspects of the probable environmental consequences.”⁵⁰ It is reasonably probable that air emissions from fossil fuel plants will spread wide distances.⁵¹ In practice, however, it would be difficult for an agency to thoroughly consider all possible air impacts of a proposed project. Also, as stated in NEPA regulations, “NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.”⁵² This regulation tempts agencies to limit the scope of impacts considered to only those very close to the project site.

NEPA regulations require agencies to “[r]igorously explore and objectively evaluate all reasonable alternatives” to proposed projects.⁵³ Given the regional nature of power generation, this means that agencies should evaluate all reasonable alternatives within the power region of the proposed project. For example, since the Cape Wind project is to supply energy to the New England power grid, alternatives throughout New England should be considered.⁵⁴ Still, NEPA’s public review process to date does not adequately cover this geographic scope. Major public meetings on the proposed project have been held in the viewshed of the proposed project, rather than in areas like Fall River, Massachusetts, that would benefit from emission reductions. This limited scope of public review may minimize comment from citizens who would advocate in favor of the wind farm, thereby resulting in a record that is biased towards the preferences of those living near the project.

II. EMISSION REDUCTIONS VERSUS VISUAL IMPACTS

Opponents of offshore wind say that they would support wind in other places, but this stance could make large-scale wind energy impos-

⁵⁰ *Id.*

⁵¹ JONATHAN LEVY ET AL., HARVARD SCHOOL OF PUBLIC HEALTH, ESTIMATED PUBLIC HEALTH IMPACTS OF CRITERIA POLLUTANT AIR EMISSIONS FROM THE SALEM HARBOR AND BRAYTON POINT POWER PLANTS 28–29 (2000) (citation omitted) (“[T]here is evidence . . . that long-range transport of pollutants [from power plants] could potentially influence populations as much as 1000 km (over 600 miles) from the source.”), available at <http://www.hsph.harvard.edu/papers/plant/plant.pdf> (last visited Dec. 30, 2003).

⁵² 40 C.F.R. § 1500.1(b) (2003).

⁵³ *Id.* § 1502.14(a) (emphasis added).

⁵⁴ The scoping documents for both the NEPA and MEPA reviews of the Cape Wind project provide for consideration of alternatives in New England states outside Massachusetts. See U.S. ARMY CORPS OF ENG’RS, ENVIRONMENTAL IMPACT STATEMENT SCOPE OF WORK WIND POWER FACILITY PROPOSED BY CAPE WIND ASSOCIATES, LLC 2–3 (2002), available at http://www.cleanenergystates.org/JointProjects/offshore%20docs/Cape_Wind_EIS_Scope.pdf (last visited Dec. 30, 2003) [hereinafter SCOPE OF WORK EIS]; MEPA CAPE WIND CERTIFICATE, *supra* note 6, at 7.

sible in many regions of the country. Only utility-scale wind projects will make a significant dent in emissions of carbon dioxide and other pollutants. As Seth Kaplan, an attorney for the Conservation Law Foundation, remarked, “[t]he opponents of Cape Wind say they support renewable energy, but exactly what do they support? One or two turbines at town landfills? That’s not going to solve global warming.”⁵⁵

Wind energy, whether onshore or offshore, is arguably the only non-hydropower, clean renewable source currently capable of providing large-scale energy in densely populated coastal areas.⁵⁶ Because the ocean offers undeveloped open space,⁵⁷ strong winds,⁵⁸ and close proximity to densely populated areas, offshore wind farms have significant advantages over terrestrial wind farms in many coastal regions.⁵⁹

⁵⁵ Elinor Burkett, *A Mighty Wind*, N.Y. TIMES, June 15, 2003, § 6 (Magazine), at 48.

⁵⁶ Telephone Interview with Karen Adams, Chief of Permits and Enforcements, U.S. Army Corps of Engineers (Aug. 20, 2003). For the 420-megawatt wind farm proposed by Cape Wind, the Army Corps of Engineers decided to limit its review of alternatives to wind farms because wind was the only feasible renewable technology in the region that could produce as much power, or even half as much power, as Cape Wind promises. *Id.*

⁵⁷ Wind power is such a land-intensive energy source that the Army Corps of Engineers has applied an average land-to-wind power ratio of twenty acres to one megawatt—for class 4 wind areas such as the Cape Wind site—as “the general rule of thumb from the wind industry” in its preliminary screening criteria. See MASS. TECH. COLLABORATIVE, CAPE & ISLANDS OFFSHORE WIND STAKEHOLDER PROCESS, SIXTH MEETING, SUMMARY 2 (2003), at <http://wind.raabassociates.org/Articles/cape-mtg-sum3-12.final.doc> (last visited Jan. 5, 2004); U.S. ARMY CORPS OF ENG’RS, REGULATORY PROGRAM NEW ENGLAND DISTRICT, at <http://wind.raabassociates.org/articles/corpsadams312.ppt>. This translates into 8400 acres for a Cape Wind-sized project. See MASS. TECH. COLLABORATIVE, CAPE & ISLANDS OFFSHORE WIND STAKEHOLDER PROCESS, SIXTH MEETING, SUMMARY 2 (2003), at <http://wind.raabassociates.org/Articles/cape-mtg-sum3-12.final.doc> (last visited Jan. 5, 2004).

⁵⁸ See ARI REEVES, RENEWABLE ENERGY POLICY PROJECT, WIND ENERGY FOR ELECTRIC POWER 7 (Fredrick Beck ed., 2003), available at http://www.repp.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf (last visited Dec. 30, 2003). An offshore wind turbine can generally capture fifty percent more wind energy than a comparable onshore turbine. *Id.* Wind shear, which reduces the life of the turbine, is also lower offshore. *Id.*

⁵⁹ See MASS. EXECUTIVE OFFICE OF ENVTL. AFFAIRS, EOEa No. 12993, CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE ENVIRONMENTAL NOTIFICATION FORM: NANTUCKET SHOALS WIND TURBINE GENERATORS 2 (2003), available at <http://www.state.ma.us/envir/mepa/downloads/12993enf.doc> (last visited Dec. 30, 2003) [hereinafter NANTUCKET SHOALS WIND TURBINE GENERATORS]. State environmental policy act scoping documents on an offshore wind project proposed by Winergy LLC, a competitor of Cape Wind, have stated that “[i]n Massachusetts, the most promising areas for development of wind power lie primarily off the coast.” *Id.*

A. Air Emission Reductions: The Primary Benefit

1. The Power Grid

As many Americans learned in the August 14, 2003 blackout, energy transmission is a complex animal.⁶⁰ Even experts have trouble pinpointing where and when power from a particular source will show up as electricity.⁶¹ Power flows through the “grid,” a byzantine network of connections that allows electrons to flow, mix, and land where they will.⁶²

A rudimentary understanding of the regional power grid and the mix of different energy sources it uses, otherwise known as the “fuel mix,” is a prerequisite to estimating the change in emissions attributable to wind power. When wind power is providing electricity to the grid, less fossil fuel is burned, and harmful emissions are reduced accordingly.⁶³ The direct offsets are difficult to calculate in light of the complexity of the grid, the response time required to change coal or nuclear power generation, variations in pollutants from different power sources, and the bid system used to determine which power source fuels the grid at a given moment.⁶⁴ Estimates are possible, however, based on a look at the projected average fuel mix. One study found that, if 246 megawatts of wind energy supplied 32% of Cape

⁶⁰ James Glanz, *A Nation Unplugged; Its Coils Tighten, and the Grid Bites Back*, N.Y. TIMES, Aug. 17, 2003, § 4, at 1 (“The vast but shadowy web of transmission lines, power generating plants and substations known as the grid is the biggest gizmo ever built The grid is the invisible circulatory system of the things humanity relies on The incomprehensible complexity of the grid comes with its own irreducible pathologies . . .”).

⁶¹ See, e.g., N. AM. ELEC. RELIABILITY COUNCIL, SUMMARY OF TESTIMONY OF MICHEHL R. GENT, PRESIDENT AND CEO OF NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL (NERC) (2003) (describing the complex process of investigating possible technical and human factors in the August 14, 2003 blackout), at ftp://www.nerc.com/pub/sys/all_updl/docs/testimony/House_Cmte_Energy_Commerce_Testimony_090303.pdf (last visited Jan. 5, 2004).

⁶² *Id.*

⁶³ Coal plants are significant contributors of carbon dioxide, nitrogen oxides, sulfur dioxide, particulate matter, and persistent bioaccumulative toxins like lead, mercury, and dioxin to the environment. Because natural gas also produces carbon dioxide, emission reductions for carbon dioxide would be significant even if wind replaced natural gas rather than coal or oil. Cape Wind’s web site shows hourly energy that would be produced if the project were running, based on wind speeds measured by an anemometer in Nantucket Sound, and translates the projected energy production into emission offset estimates for carbon dioxide, nitrogen oxides, and sulfur dioxide from coal, gas, and oil. See CAPE WIND ASSOCS., SCIENTIFIC MONITORING STATION CURRENT CONDITIONS, at http://capewind.whgrp.com/index_accepted.html (last visited Dec. 30, 2003).

⁶⁴ See Interview with Michael B. Jacobs, Coordinator of ISO and Regulatory Affairs, TransEnergy U.S., in Concord, Mass. (Sept. 6, 2003).

Cod and Martha's Vineyard's energy needs in 2015, carbon dioxide emissions would be reduced by 415,203 tons that year, nitrogen oxides by 279 tons, and sulfur dioxide by 200 tons.⁶⁵

Perhaps the greatest obstacle to adequate NEPA analysis of an offshore wind farm is that, due both to the nature of the grid and the way that air pollutants are dispersed, the project's perceived adverse visual impacts will be largely limited to the wind farm's viewshed, while attendant emission reductions will occur over a broad area that barely overlaps with the project site.⁶⁶ The electricity used in one area may come from a far away source, and so the benefits of power generation are geographically separated from its detriments. In Massachusetts, for example, electricity comes from diverse power plants throughout the Northeast.

Determining the broad geographic impacts of emissions is complex, but it is far more feasible today than it was a decade ago.⁶⁷ With energy deregulation, many states now require utilities to disclose information on the sources and types of fuels used in particular areas and their emissions.⁶⁸ An agency or private entity preparing an EIS can easily determine the average fuel mix of a particular state and pinpoint emissions from each source.⁶⁹ Identifying the impacts that a new renewable energy source will have on the mix requires multiple simulations, since factors like price and availability are the basis for daily decisions about which power source to use.⁷⁰ Still, since wind

⁶⁵ CAPE LIGHT COMPACT, REGIONAL OPTIONS STUDY: STRATEGIC ELECTRIC SUPPLY & DEMAND OPTIONS FOR CAPE COD AND MARTHA'S VINEYARD 2005-2015, at 17 (review copy), <http://www.capelightcompact.org/reviewcopyros.pdf> (last visited Dec. 30, 2003). Natural gas would offset higher amounts of nitrogen oxides and sulfur dioxide but offset far less carbon dioxide. *Id.* at 9.

⁶⁶ Jay Wickersham, Lecture at New England School of Law (Mar. 25, 2003). In particular, Mr. Wickersham discussed issues of regional benefits versus local impacts, scope of alternatives, and aesthetic considerations as they applied to NEPA and MEPA review of the Cape Wind project. *Id.*

⁶⁷ See Interview with Michael B. Jacobs, Coordinator of ISO and Regulatory Affairs, TransÉnergie U.S., in Concord, Mass. (Sept. 6, 2003).

⁶⁸ See Richard L. Ottinger & Rebecca Williams, *Renewable Energy Sources for Development*, 32 ENVTL. L. 331, 344 & n.46 (2002). Massachusetts's Electric Utility Restructuring Act (Chapter 164 of the Acts of 1997) and similar statutes in other states foster renewable energy production through this disclosure and through other means. See MASS. GEN. LAWS ch. 25A, § 11D (2002).

⁶⁹ See, e.g., ENERGY EFFICIENCY AND RENEWABLE ENERGY, U.S. DEP'T OF ENERGY, STATE ENERGY INFORMATION, at http://www.eere.energy.gov/state_energy/states.cfm?state= (last visited Feb. 12, 2004); ENERGY INFO. AGENCY, U.S. DEP'T OF ENERGY, COAL, NUCLEAR, ELECTRIC AND ALTERNATE FUELS, at <http://www.eia.doe.gov/cneaf> (last visited Feb. 12, 2004).

⁷⁰ See Interview with Michael B. Jacobs, Coordinator of ISO and Regulatory Affairs, TransÉnergie U.S., in Concord, Mass. (Sept. 6, 2003).

power emits no pollutants, even the most conservative finding of emission reductions from a large-scale wind farm will be significant.

2. Human Health

The state's interest in protecting human health is more substantial than its interest in protecting aesthetic values. Public health agencies receive higher funding and greater statutory authority than tourism, art, and recreation agencies.⁷¹

While significant health effects require an EIS, social, economic, and psychological considerations alone do not, and need only be considered if other natural or physical environmental effects occur that are sufficiently interrelated with such effects.⁷² Furthermore, while NEPA does not prioritize interests, at least one court has stated that human health is the most important subject in an EIS.⁷³ Courts have held that agencies must conduct independent research when health effects are essential but unknown, provided this research is feasible.⁷⁴ While NEPA does not prescribe the required extent of study of the effects of air pollutants on human health, courts have found that even

⁷¹ For example, the 2002 U.S. budget included nearly \$197 billion for health and nearly \$231 billion for Medicare. Tourism, art, and recreation contributions were apparently too small to merit entries on the budget table. See OFFICE OF MGMT. & BUDGET, HISTORICAL TABLES, BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 2004, <http://www.whitehouse.gov/omb/budget/fy2004/pdf/hist.pdf>.

⁷² See *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 771–72, 778–79 (1983) (“If a harm does not have a sufficiently close connection to the physical environment, NEPA does not apply.”); *Breckinridge v. Rumsfeld*, 537 F.2d 864, 866 (6th Cir. 1976); 40 C.F.R. § 1508.14 (2003) (addressing “economic or social effects”).

⁷³ See, e.g., *Citizens Against Toxic Sprays, Inc. v. Bergland*, 428 F. Supp. 908, 927 (D. Or. 1977) (“No subject to be covered by an EIS can be more important than the potential effects of a federal program upon the health of human beings.”). One source states that:

[T]he text of NEPA sits like a Sphinx, while hordes scrutinize its face for clues as to its meaning. Though the language of the Act offers many clues, it contains no provision clearly directing federal agencies to evaluate the public health risks associated with proposed federal actions . . . [even though t]he quintessential purpose of NEPA is the protection of human health.

The Application of NEPA to Agency Actions Affecting Human Health, 13 *Envtl. L. Rep.* (Envtl. L. Inst.) 10,179, 10,182 (June 1983).

⁷⁴ See *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1248 (9th Cir. 1984) (stating that the health effects of herbicide required study). If the costs to conduct the independent research are exorbitant or the means to obtain the information are unknown, however, this analysis is not required. 40 C.F.R. § 1502.22(b). Even in such a case, the agency must identify the research that is available and the research that is not. *Id.* § 1502.22(b)(1); see also *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 354–55 (1989) (discussing the need for a “worst case analysis” regarding impacts of a Forest Service decision to allow a special use permit for a ski resort).

a “marginal degradation” of air quality could easily pose a significant impact on the environment for purposes of NEPA regulation.⁷⁵

The geographic scope of environmental review is critical in evaluating air impacts. While fossil fuel emissions are difficult to assign to specific populations because air pollutants can travel great distances,⁷⁶ some emissions, like particulate matter, can have a disproportionately high impact on persons living near power plants.⁷⁷ The air pollution reductions from Cape Wind will therefore have a greater impact on Southeastern Massachusetts and Rhode Island than other areas of New England, due to interactions between the power plants in this area. Because Cape Wind is in the same transmission-limited area as two coal plants and an oil-burning plant, the increased electricity production from Cape Wind would necessitate a decrease in electricity and attendant pollution from the other power plants in Southeastern Massachusetts and Rhode Island.⁷⁸

A study issued by the Harvard School of Public Health in 2000 found that premature deaths increase, on a per capita basis, with proximity to the Brayton Point coal plant near Fall River in Southeastern Massachusetts.⁷⁹ This study attributed 106 premature deaths per year to particulate matter emissions from the Brayton Point plant at current emission rates.⁸⁰ Mercury, a byproduct of burning coal, is also a significant concern for human health if ingested, as it bioaccumulates and causes neurological damage. The U.S. Environmental Protection Agency’s Toxic Release Inventory reported 234 pounds of mercury emissions from the stacks of electric utilities in Massachusetts

⁷⁵ See, e.g., *Public Citizen v. Dep’t of Transp.*, 316 F.3d 1002, 1024 (9th Cir. 2003). A recent district court case involving transboundary air pollution between Mexico and the United States acknowledged that an agency could determine there were no significant air impacts requiring an EIS after including a minimal discussion of health effects and Clean Air Act compliance in an Environmental Assessment. See *Border Power Plant Working Group v. Dep’t of Energy*, 260 F. Supp. 2d 997, 1016 (S.D. Cal. 2003). The court, however, did ultimately require an EIS in this case on other grounds. See *id.* at 1033.

⁷⁶ LEVY ET AL., *supra* note 51, at 28–29 (“[T]here is evidence . . . that long-range transport of pollutants could potentially influence populations as much as 1000 km (over 600 miles) from the source.”).

⁷⁷ See *id.* at 22–23.

⁷⁸ See Interview with Michael B. Jacobs, Coordinator of ISO and Regulatory Affairs, TransÉnergie U.S., in Concord, Mass. (Sept. 6, 2003).

⁷⁹ LEVY ET AL., *supra* note 51, at 23 & fig.8.

⁸⁰ *Id.* at 22. Even at target emission rates, the study estimated twenty-five premature deaths per year from Brayton Point emissions. *Id.* The geographic range that the study considered was quite broad, and even if this range were reduced to a 150-mile radius from Brayton Point, the study would still predict seventy-five premature deaths per year. *Id.* at 29.

in 2001.⁸¹ This is a substantial amount of mercury, as very small quantities can do significant damage.⁸²

3. Environmental Justice

Environmental Justice (EJ) addresses disparate environmental impacts on people of color, low income, and foreign origin.⁸³ Power plants and other locally unwanted land uses are more often sited in these communities than in wealthier areas that have more political clout. For example, Geographic Information System maps prepared by the Commonwealth of Massachusetts show minority and low-income populations near most major sources of air emissions, including power plants.⁸⁴ A significant portion of the population subjected to the health risks caused by the Brayton Point coal plant fits the profile of an area of EJ concern.⁸⁵ Minority and low-income populations exist on Cape Cod, Martha's Vineyard, and Nantucket, but these areas have lower populations overall than Fall River.⁸⁶ Persons with small fixed incomes tend to live and work close to power plants and other sources of air pollution, while oceanfront properties tend to have high real estate values and lower minority and low-income populations. Arthur Pugsley, a Massachusetts Senior Environmental Analyst, recognized how the Cape Wind project relates to EJ concerns

⁸¹ U.S. ENVTL. PROT. AGENCY, TOXIC RELEASE INVENTORY EXPLORER, at <http://www.epa.gov/triexplorer/chemical.htm> (last visited Dec. 30, 2003).

⁸² CONSERVATION LAW FOUND., HELP SAVE HOPE BAY: EPA ACCEPTING COMMENTS ON DRAFT PERMIT TO LIMIT BRAYTON POINT'S IMPACT, at http://www.clf.org/advocacy/Brayton_Point_page.htm (last visited Dec. 30, 2003) ("A single teaspoon of mercury is enough to poison an entire lake, rendering the fish unsafe to eat, but Brayton emits hundreds of pounds of mercury each year.").

⁸³ EPA defines environmental justice to be "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." OFFICE OF COMPLIANCE AND ENFORCEMENT, U.S. ENVTL. PROT. AGENCY, ENVIRONMENTAL JUSTICE, at <http://www.epa.gov/compliance/environmentaljustice/index.html> (last visited Dec. 30, 2003).

⁸⁴ See MASS. GEOGRAPHIC INFO. SYS., MASS. EXECUTIVE OFFICE OF ENVTL. AFFAIRS, ENVIRONMENTAL JUSTICE VIEWER, at <http://maps.massgis.state.ma.us/ej/airemissions.pdf> (last visited Dec. 30, 2003).

⁸⁵ See *id.* (showing that increased air emissions cover an area of EJ concern in Fall River, just southeast of the Brayton Point plant).

⁸⁶ See *id.* In addition, offshore wind farms could have a positive economic impact on minority and low-income populations closest to the project, because building and erecting turbines requires a large investment of labor that could be provided by people in low-income areas. See Ross Gelbspan, Editorial, *Choosing Wind-power or Climate Hell*, SOUTH COAST TODAY, May 19, 2003, <http://www.s-t.com/daily/05-03/05-18-03/b02op056.htm> (last visited Dec. 30, 2003).

when he stated, "I think environmental equity is an inescapable but unspoken thing You know that the alternative is an oil-fired plant in a minority neighborhood. We don't put them on the Vineyard."⁸⁷ Furthermore, minority and low-income populations often have significantly greater dietary exposure to bioaccumulative toxins like mercury, found in fish and other aquatic organisms, than other groups.⁸⁸ Mercury from power plants can fall in a wide range, so that fish in a broad area, which could also include Cape Cod, Martha's Vineyard, and Nantucket, may be impacted. Thus, even minority and low-income populations near Nantucket Sound could be disparately impacted by emissions that turbines there would have offset.

EJ is an important consideration in NEPA review. Executive Order 12,898 states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations"⁸⁹ The Council on Environmental Quality guidance describes EJ considerations for various stages of the NEPA process, including scoping, public participation, and determining the affected environment.⁹⁰ This guidance indicates that agencies should identify affected populations during the scoping process,⁹¹ and requires lead agencies to analyze human health effects, along with social and economic effects, on minority and low-income populations.⁹²

⁸⁷ Telephone interview with Arthur Pugsley, Senior Environmental Analyst, Massachusetts Environmental Policy Act Office (Aug. 20, 2003).

⁸⁸ For a detailed discussion of this issue, see U.S. ENVTL. PROT. AGENCY, FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE (2002), http://www.epa.gov/Compliance/resources/publications/ej/fish_consump_report_1102.pdf (last visited Dec. 31, 2003).

⁸⁹ Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 11, 1994). Many agencies, like EPA, the Department of Defense, and the Department of the Interior, that conduct NEPA review are subject to this Executive Order, although some independent federal agencies, like the Federal Energy Regulatory Commission, are not. See Jason Pinney, Note, *The Federal Energy Regulatory Commission and Environmental Justice: Do the National Environmental Policy Act and the Clean Air Act Offer a Better Way?*, 30 B.C. ENVTL. AFF. L. REV. 353, 372-73 & n.151 (2003).

⁹⁰ COUNCIL ON ENVTL. QUALITY, ENVIRONMENTAL JUSTICE: GUIDANCE UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT 10-14 (1997), available at http://www.epa.gov/Compliance/resources/policies/ej/ej_guidance_nepa_ceq1297.pdf (last visited Dec. 31, 2003) [hereinafter CEQ GUIDANCE].

⁹¹ *Id.* at 10-12. The guidance, however, states that if "a proposed agency action would not cause any . . . disproportionately high and adverse human health or environmental impacts, specific demographic analysis may not be warranted." *Id.* at 14 (emphasis added).

⁹² *Id.* at 8.

Non-NEPA law and policy also often mandate a consideration of EJ. For example, section 309 of the Clean Air Act⁹³ allows EPA to comment on air-related EJ issues in an EIS.⁹⁴ Many states have EJ offices, laws, or policies that may require review when state environmental impact review is involved.⁹⁵

Like environmental impact statutes, EJ tends to focus on opposing adverse impacts rather than promoting beneficial ones. As a result, EJ policies may not include provisions for advocacy of renewable energy projects. For example, unlike fossil fuel projects, renewable energy projects are not subject to elevated EJ review under the Massachusetts Environmental Policy Act.⁹⁶ The decision not to subject renewable energy projects to EJ review was made to reduce roadblocks to renewable energy projects.⁹⁷ An unintended consequence of this decision, however, is that it ignores emission reductions and therefore removes the argument that agencies should take a hard look at regional, as opposed to local, impacts of utility-scale wind projects on minority and low-income populations.⁹⁸ The final consequences of reduced state EJ scrutiny for a federal/state project like Cape Wind are not significant, since federal EJ requirements still apply. Nevertheless, this is an important example

⁹³ 42 U.S.C. § 7609 (2000).

⁹⁴ Pinney, *supra* note 89, at 393–95.

⁹⁵ See generally HILLARY GROSS ET AL., PUBLIC LAW RESEARCH INST., HASTINGS COLL. OF LAW, ENVIRONMENTAL JUSTICE: A REVIEW OF STATE RESPONSES (2000), at <http://www.uchastings.edu/plri/PDF/environjustice.pdf> (last visited Dec. 31, 2003). Particularly active states include Florida, Maryland, New Jersey, New York, Oregon, and Tennessee. *Id.* at 3. Massachusetts has also been active. *Id.* at 33. Massachusetts published an EJ policy in 2002. See MASS. EXECUTIVE OFFICE OF ENVTL. AFFAIRS, ENVIRONMENTAL JUSTICE POLICY OF THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS 8 (2002), http://www.state.ma.us/envir/ej/EJ_Policy_English_Full_Version.pdf (last visited Dec. 31, 2003) [hereinafter ENVIRONMENTAL JUSTICE POLICY].

⁹⁶ See ENVIRONMENTAL JUSTICE POLICY, *supra* note 95. The policy requires elevated EJ review for projects that trigger air thresholds rather than energy thresholds. *Id.* Air thresholds are based on projects' potential to emit pollutants, and hence would cover fossil fuel plants. See MASS. REGS. CODE tit. 301, § 11.03(8) (1998). Energy thresholds, in contrast, are based on projects' levels of megawatt production. MASS. REGS. CODE tit. 301, § 11.03(7). A project producing over 100 megawatts of energy, such as Cape Wind, would trigger the energy threshold. Since the policy does not require elevated EJ review for projects that trigger only the energy threshold, an opportunity to alert minority and low-income populations to the benefits that wind power in other areas could offer them is lost.

⁹⁷ Telephone Interview with Arthur Pugsley, Senior Environmental Analyst, Massachusetts Environmental Policy Act Office (Aug. 20, 2003); Telephone Interview with Jay Wickersham, Partner, Noble & Wickersham LLP (Aug. 6, 2003).

⁹⁸ The Cape Wind project will be too far from Fall River to necessitate EJ review because the Massachusetts EJ policy only requires this elevated review for air impacts of projects within five miles of minority and low-income populations. ENVIRONMENTAL JUSTICE POLICY, *supra* note 96, at 8.

of the need to consider regional as well as local impacts, and benefits as well as detriments, when conducting renewable energy environmental review.

4. Global Warming

All fossil fuel sources, including natural gas, emit substantial quantities of carbon dioxide. There is a growing scientific consensus that greenhouse gas emissions like carbon dioxide cause global warming.⁹⁹ Global warming's detrimental impacts are well documented to include accelerated spread of infectious disease and other adverse health impacts, rising seas, smaller land masses, and other environmental impacts.¹⁰⁰ NEPA and its implementing regulations do not specifically discuss global warming, and skeptics deny that global warming exists.¹⁰¹ Many states, however, are now seeking to reduce greenhouse gas emissions.¹⁰² Assuming global warming is a reasonably foreseeable consequence of fossil fuel emissions,¹⁰³ global warming under the no build scenario of offshore wind proposals should play a significant part in NEPA analysis.

B. Visual Impacts: The Primary Objection

Aesthetic objections are the single most important impediment to wind farm siting,¹⁰⁴ and this is likely to be particularly true when it

⁹⁹ For two recent articles on global warming's impacts on the environment, see Camille Parmesan & Gary Yohe, *A Globally Coherent Fingerprint of Climate Change Impacts Across Natural Systems*, 421 NATURE 37 (2003), and Terry L. Root et al., *Fingerprints of Global Warming on Wild Animals and Plants*, 421 NATURE 57 (2003). For a general lecture on global warming, see Videotape: *The Science of Global Climate Change* (Harvard University 2002), <http://www.med.harvard.edu/chge/course/atmospheric/climate/climate.htm> (last visited Jan. 5, 2004).

¹⁰⁰ See generally Paul R. Epstein, *Is Global Warming Harmful to Health?*, SCI. AMER., Aug. 2000, at 50.

¹⁰¹ See, e.g., Richard S. Lindzen, *Global Warming: The Origin and Nature of the Alleged Scientific Consensus*, REG., Spring 1992, available at www.cato.org/pubs/regulation/reg15n2g.html (last visited Dec. 31, 2003).

¹⁰² See, e.g., NORTHEAST INT'L COMM. ON ENERGY, THE COMM. ON THE ENV'T & OF THE CONFERENCE OF NEW ENG. GOVERNORS AND E. CANADIAN PREMIERS, CLIMATE CHANGE ACTION PLAN 2001, at 1-2 (2001), <http://www.massclimateaction.org/pdf/NECanadaClimatePlan.pdf> (last visited Dec. 31, 2003). In 2002, New Hampshire became the first state to enact a statute requiring decreased carbon dioxide emissions from fossil fuel plants. Multiple Pollutant Reduction Program, N.H. REV. STAT. ANN. §§ 125-O:1-10 (2003).

¹⁰³ NEPA review is not required for speculative impacts. See *Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974).

¹⁰⁴ PAUL GIPE, WIND POWER IN VIEW: ENERGY LANDSCAPES IN A CROWDED WORLD 178 (Martin J. Pasqualetti et al. eds., 2002) ("Despite all these other objections, visual intru-

comes to offshore wind because it is visible to so many people.¹⁰⁵ Americans do not view turbines as a part of the natural or historical landscape, despite the fact that thousands of windmills used to line the shores,¹⁰⁶ while innumerable sailboats continue to dot the horizon and sail coastal waters.

Like other offshore wind farms, the Cape Wind project will change the ocean landscape, with turbines appearing to be about one-half an inch above the horizon when viewed from the closest points on shore.¹⁰⁷ Opponents of offshore wind argue that the turbines will harm tourism and lower property values.¹⁰⁸ There are other objections as well, ranging from the public trust doctrine to avian and aquatic impacts, but each of these objections can be mitigated or explained.¹⁰⁹ Visual impacts cannot be avoided, and they are the greatest source of objections to wind farms. Pulitzer Prize-winning historian David McCul-

sions remain the root cause of opposition.”). State environmental policy act scoping documents on a number of proposals for wind off the shores of Massachusetts note that “visual impacts . . . have been mentioned more than any other issue among comments received.” See, e.g., NANTUCKET SHOALS WIND TURBINE GENERATORS, *supra* note 59, at 11.

¹⁰⁵ For example, a survey performed for Cape Wind Associates in 2002 identified view-related concerns as the most common reason for opposing the Cape Wind project. Memorandum from Opinion Dynamics Corporation, to Cape Wind Associates 7–8 (Oct. 3, 2002), http://www.capewind.org/downloads/public_opinion_survey.pdf. Statewide, 17% of survey respondents who opposed the project gave this as their basis for opposition, and another 17% cited generalized dislike. *Id.* at 7. In a sample of Cape Cod, Martha’s Vineyard, and Nantucket voters, 21% of respondents who opposed Cape Wind cited view-related reasons, and 16% cited general negative comments. *Id.* at 8. Overall, 31% of Cape Cod, Martha’s Vineyard, and Nantucket respondents opposed the project, as compared to 10% statewide who opposed it. *Id.* at 6. Studies in Europe have also shown that opponents of wind power value local aesthetics over environmental issues like climate change and nuclear power risks. See generally STEFFEN DAMBORG, DANISH WIND INDUS. ASS’N, PUBLIC ATTITUDES TOWARDS WIND POWER, at <http://www.windpower.org/en/articles/surveys.htm> (last visited Dec. 31, 2003).

¹⁰⁶ Jack Coleman, *An Old Wind Blows*, CAPE COD TIMES, July 8, 2003 (on file with author).

¹⁰⁷ Cape Wind President James Gordon has been cited as stating: “[s]ome would say that folks are afraid of seeing wind turbines that would look like a tiny mass about a half-inch tall off the horizon.” See David Kibbe, *Unions Tout Wind Farm Jobs*, CAPE COD TIMES, Apr. 25, 2003 (on file with author).

¹⁰⁸ Nevertheless, a recent study by the Renewable Energy Policy Project (REPP) found that wind turbines on land enhanced, rather than detracted from, residential property values. GEORGE STERZINGER ET AL., RENEWABLE ENERGY POLICY PROJECT, THE EFFECT OF WIND DEVELOPMENT ON LOCAL PROPERTY VALUES 2 (2003), available at http://www.repp.org/articles/static/1/binaries/wind_online_final.pdf (last visited Dec. 31, 2003). Nine out of ten new wind farms studied were associated with viewshed property values increasing faster than they rose in the comparable community. *Id.*

¹⁰⁹ These issues are beyond the scope of this Article. For further information on pros and cons, see CAPE WIND ASSOCS., at <http://www.capewind.org> (last visited Jan. 5, 2004), and ALLIANCE TO PROTECT NANTUCKET SOUND, INC., at <http://www.saveoursound.org> (last visited Jan. 5, 2004).

lough, a thirty-year resident of Martha's Vineyard, recently summarized the sentiment by stating: "I'm not against wind turbines. I'm against 130 of them over 400 feet tall right smack in the middle of one of the most beautiful places in America."¹¹⁰

How should permitting agencies balance the benefits of emission reductions against visual objections? NEPA gives no clear answer, but there are arguments that aesthetic considerations merit less weight than concrete environmental impacts. First, aesthetics did not become a valid subject of regulation until the 20th century, and aesthetics were not widely accepted as a pure basis for regulation until the 1980s. Second, courts have found that NEPA review should focus on objective, physical impacts, and that aesthetic impacts alone will rarely, if ever, require an EIS. Third, courts have stated that the existence of strong opposition does not necessarily constitute "public controversy" that would require an EIS.

1. History of Aesthetic Regulation

While U.S. law has come to recognize visual aesthetic injury and accept the protection of visual aesthetic values as a valid regulatory goal,¹¹¹ no body of common or statutory law considers whether visual aesthetics are more important than health in the hierarchy of values. In fact, until recently, visual beauty had no place as a right or a valid regulatory endpoint in the U.S., even under zoning laws.¹¹² While common law nuisance claims have often focused on aesthetics, the subjects of these claims have generally been nonvisual—noise, odor, and physical pollutants like effluents and dust. Courts have usually rejected visual aesthetic nuisance claims.¹¹³ But since the appearance of cases on the

¹¹⁰ Jennifer Peter, Associated Press, *Celebrities Protest Vast Wind Farm Proposed off Massachusetts Coast* (Aug. 12, 2003), available at http://www.enn.com/news/2003-08-12/s_7414.asp (last visited Dec. 31, 2003).

¹¹¹ As the environmental movement has developed and citizens have sought standing to sue on the non-human environment's behalf, courts have come to recognize aesthetic injury as a valid claim. See, e.g., *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 562–63 (1992); *Sierra Club v. Morton*, 405 U.S. 727, 734 (1972). In addition to local zoning ordinances, private homeowner associations often place aesthetic restrictions on land uses, and some states have passed or considered legislation to combat this practice when it comes to renewable energy facilities and energy-saving devices like clotheslines. See, e.g., Alexander Lee, *Clotheslines: A Simple Option*, 7 ALB. L. ENVTL. OUTLOOK 27, 27 (2002).

¹¹² See generally PATRICK J. ROHAN, ZONING AND LAND USE CONTROLS § 16.06(1)(a) (2003).

¹¹³ See Georgette C. Poindexter, *Light, Air, or Manhattanization?: Communal Aesthetics in Zoning Central City Real Estate Development*, 78 B.U. L. REV. 445, 486–88 nn.308–09 & 314 (1998).

issues of urban renewal,¹¹⁴ historic preservation,¹¹⁵ and billboard siting,¹¹⁶ courts now accept visual aesthetic considerations as valid subjects of local regulation.¹¹⁷

Human health is a more important public policy consideration than natural beauty.¹¹⁸ American law and society, however, often fail to reflect the principle that traditional conceptions of beauty are secondary to health, justice, and long life. From lawn pesticide applications to fad diets, the law gives society the autonomy to make choices that favor aesthetic values at the expense of human health and the environment. NEPA, however, empowers agencies to examine all the facts, thereby allowing agencies to make healthy choices. In reviewing the debate between landscape and air quality, and aesthetics and health, agencies can use NEPA to correct the imbalance.

2. NEPA and Aesthetic Regulation

NEPA's cryptic legislative history,¹¹⁹ though largely silent on aesthetics, does show an awareness that citizen groups tend to focus on one issue at a time, and fail to appreciate the downsides of their choices.¹²⁰ If NEPA is to solve this problem, lead agencies must ensure

¹¹⁴ See *Berman v. Parker*, 348 U.S. 26, 33 (1954), cited in *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104 (1978).

¹¹⁵ See *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 129 (1978). Attorney Jay Wickersham has noted that this is the landmark aesthetic regulation case. Memorandum from Jay Wickersham, Partner, Noble & Wickersham LLP, to Dorothy Bisbee (Aug. 12, 2003) (on file with author).

¹¹⁶ See ROHAN, *supra* note 112, § 16.06(1)(a) ("Indeed, it might be said that almost every important advance in the role of aesthetics came about in the context of a billboard case.").

¹¹⁷ See *Metromedia, Inc. v. City of San Diego*, 453 U.S. 490, 502, 508, 510 (1981).

¹¹⁸ See 42 U.S.C. § 7409(b) (2000). The Clean Air Act makes public health primary, and public welfare, which includes aesthetics, secondary. See *id.* § 7409(b)(1) (primary standards); *id.* § 7409(b)(2) (secondary standards); Zygmunt J.B. Plater, *The Embattled Social Utilities of the Endangered Species Act: A Noah Presumption and Caution Against Putting Gas-masks on the Canaries in the Coalmine*, 27 ENVTL. L. 845, 852 (1997) ("The political reality seems to be that morals and aesthetics are generally rated as less substantial and less socially useful than other utilities, particularly direct human health and safety, and cash.").

¹¹⁹ DANIEL R. MANDELKER, *NEPA LAW AND LITIGATION* § 2:2 (2d ed. 1992) ("NEPA's legislative history provides some but only limited guidance on the meaning of the statute.").

¹²⁰ For example, a NEPA House Report states:

[C]itizens may not always organize themselves to protect an environmental system. One group may be interested only in visual pollution, while another is interested in noise, and it is an unfortunate fact of life that the normal resolution of a pollution problem is to push it into another area which may not be so vigorously defended. The public concern with power generation facilities

that persons focused primarily on visual impacts will not monopolize the debate over renewable energy.

Variations of the word "health" appear five times in NEPA, in contrast to one appearance of the word "aesthetic."¹²¹ Moreover, where NEPA mentions aesthetics it is a single item of a lengthy list.¹²²

Less than three years after NEPA's enactment, an appellate court considered whether aesthetics warrant an EIS. In *Maryland-National Capital Park & Planning Commission v. U.S. Postal Service*, the D.C. Circuit decided that visual impacts of a new postal facility did not require in-depth NEPA review.¹²³ Addressing the difficulties of "precisely defining what is beautiful," the court explained:

[T]he difficulties have a bearing on the intention of Congress, and whether it contemplated, for example, a requirement of a detailed "environmental impact statement," and concomitant investigation, because of the possibility that each new Federal construction would be ugly to some, or even most, beholders, on such issues as: Is this proposed building beautiful? Or, what is the esthetic effect of placing the "controversial" Picasso statute [sic] in front of the Civic Center building in Chicago? These types of problems lead us to conclude that a "substan-

producing air pollution in the form of coal dust, oil droplets, and increased sulfur dioxide emissions has played a significant role in the encouragement of nuclear plants, which involve none of these problems but which may have their own problems in terms of radioactive and thermal pollution of cooling water. What we need is groups with a total environmental concern.

FRANK M. POTTER, JR., *Progress Means Pollution: An Idea Whose Time Has Come—and Gone*, in *THE ENVIRONMENTAL DECADE (ACTION PROPOSALS FOR THE 1970s)* 342 app.4 (1970).

¹²¹ Compare 42 U.S.C. § 4321 (stating that the purpose of NEPA is "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." (emphasis added)), *id.* § 4331(c) ("Congress recognizes that each person should enjoy a healthful environment . . ." (emphasis added)), *id.* § 4344(4) (providing that the Council on Environmental Quality must "develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation." (emphasis added)), and *id.* § 4372(d)(4) (stating that the Council on Environmental Policy director must perform work including "promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encouraging the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man." (emphasis added)), with *id.* § 4331(b)(2) (providing that it is the responsibility of the federal government under NEPA to work to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings." (emphasis added)).

¹²² See *id.* § 4331(b)(2).

¹²³ See 487 F.2d 1029, 1038–39 (D.C. Cir. 1973).

tial inquiry” or “hard look” was not contemplated, as a matter of reasonable construction of NEPA, where the claim of NEPA application is focused on alleged esthetic impact and the matters at hand pertain essentially to issues of individual and potentially diverse tastes.¹²⁴

Subsequent cases similarly minimized or refused to address the importance of aesthetic impacts to NEPA review.¹²⁵

The few appellate courts that have addressed the issue have found that nonphysical impacts are unlikely to require an EIS.¹²⁶ Regarding a temporary barge facility that would be visible on the water, the Seventh Circuit stated that “[a]esthetic objections alone will rarely compel the preparation of an environmental impact statement. Aesthetic values do not lend themselves to measurement or elaborate analysis.”¹²⁷ The court reasoned that an EIS was designed for analysis of more objective factors, and that an Environmental Assessment¹²⁸ would be sufficient to address aesthetic objections.¹²⁹

Offshore wind siting differs from this case because offshore wind is believed to have some significant nonaesthetic adverse impacts, and therefore an EIS may be required for reasons other than visual objections. Courts have held that once physical factors trigger an EIS, nonphysical factors like aesthetics should be considered as well.¹³⁰

It is important to note that many offshore wind projects, like Cape Wind, will be subject to Army Corps of Engineers permits under section 10 of the Rivers and Harbors Appropriation Act of 1899.¹³¹ Regulations for the permitting process explicitly include consideration of aes-

¹²⁴ *Id.*

¹²⁵ See DANIEL R. MANDELKER, *NEPA LAW AND LITIGATION* § 8.43 n.5 (2d ed. 1992) (citing cases).

¹²⁶ See, e.g., *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 772 (1983) (finding that only effects on the *physical* environment need be considered and that psychological impacts of fear of nuclear power plant disasters did not necessitate an EIS, because of the lack of “closeness of the relationship between the change in the environment and the ‘effect’ at issue”).

¹²⁷ *River Rd. Alliance, Inc. v. Corps of Eng’rs of U.S. Army*, 764 F.2d 445, 451 (7th Cir. 1985) (citing *Md.-Nat’l Capital Park & Planning Comm’n*, 487 F.2d at 1038–39).

¹²⁸ An agency may prepare an Environmental Assessment to determine whether a project will have significant impacts, such that NEPA review is required. 40 C.F.R. §§ 1501.4(b), 1508.9 (2003). After an Environmental Assessment is complete, the lead agency may issue a Finding of No Significant Impact, or may require an EIS. *Id.* §§ 1501.4(e), 1508.13.

¹²⁹ *River Rd. Alliance*, 764 F.2d at 451.

¹³⁰ *Breckinridge v. Rumsfeld*, 537 F.2d 864, 866 (6th Cir. 1976) (“Although factors other than the physical environment have been considered, this has been done only when there existed a primary impact on the physical environment.”).

¹³¹ 33 U.S.C. § 403 (2000).

thetics.¹³² Still, nothing in NEPA requires aesthetics to dominate the review.

3. The Role of Public Controversy

While NEPA is designed to involve the public in debate, it is not a vehicle for public preferences to override rational agency decisions. "The fact that there was public opposition" to a proposed project "cannot tip the balance" to require an EIS.¹³³ In considering whether an impact is intense enough to be "significant," NEPA regulations look to "[t]he degree to which the effects on the quality of the human environment are likely to be highly controversial."¹³⁴ Courts have found that the existence of public opposition alone does not render a proposal "highly controversial." In other words, "[o]pposition and a high degree of controversy . . . are not synonymous."¹³⁵ Instead, controversy exists where "a substantial dispute exists as to the size, nature or effect of the major federal action"¹³⁶ The nature of the effect is related to the baseline environment, so that a new use similar to existing uses would not be considered problematic.¹³⁷ NEPA asks agencies to weigh the merits of proposed agency actions, not to count the number of public comments received. Popular opinion is expressed through legislation, and lawmakers entrust agencies, with their specialized expertise, to implement laws.

IV. APPLICATION OF EISs TO OFFSHORE WIND ENERGY REVIEW

If NEPA is to foster careful consideration by both agencies and the public of the environmental impacts of federal agency actions, then the EIS should place the most important information in a place and form that allows readers to balance the costs and benefits of a proposed pro-

¹³² 33 C.F.R. § 320.4(a)(1).

¹³³ *River Rd. Alliance*, 764 F.2d at 451 (citing *Town of Orangetown v. Gorsuch*, 718 F.2d 29, 39 (2d Cir. 1983)).

¹³⁴ 40 C.F.R. § 1508.27(b)(4).

¹³⁵ *Town of Orangetown v. Gorsuch*, 718 F.2d 29, 39 (2d Cir. 1983).

¹³⁶ *Id.* (citing *Hanly v. Kleindienst*, 471 F.2d 823, 830 (2d Cir. 1972)).

¹³⁷ *See Hanly v. Kleindienst*, 471 F.2d 823, 830 (2d Cir. 1972). This court established a two-part test for "significance" that begins with "the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the area affected by it" *Id.* The second prong of the *Hanly* test considers "the absolute quantitative adverse environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area." *Id.* at 830-31. Cumulative visual impacts of offshore wind projects should not be significant, as boats and other uses closer to shore will obscure the view of the turbines.

ject against the alternatives, including the alternative of retaining the status quo.¹³⁸ The most significant issues demand priority.¹³⁹ In addition, Executive Order 12,898 requires agencies to “work to ensure that public documents . . . relating to human health or the environment are concise, understandable, and readily accessible to the public.”¹⁴⁰

A. Existing Wind Energy and Related NEPA Review¹⁴¹

A sampling of onshore wind power Environmental Assessments and EISs shows significant attention to the adverse impacts of wind farms, with brief, general statements about air impacts.¹⁴²

Some specific examples are cited below.

1. NEPA Review of Terrestrial Wind Farms and Other Alternative Energy Projects

The Bonneville Power Administration (BPA) has conducted a number of NEPA reviews of large-scale renewable energy projects. Of particular interest are the Condon Wind Project in Oregon and the Maiden Wind Farm in Washington State. EISs for both projects incorporate findings of a business plan that the BPA prepared to evaluate

¹³⁸ See 40 C.F.R. § 1502.14(d) (2003); see also *Welch v. U.S. Air Force*, 249 F. Supp. 2d 797, 816 (N.D. Tex. 2003) (“The CEQ intended that agencies compare the potential impacts of a proposed major federal action to the known impacts of maintaining the status quo. In other words, requiring consideration of the No Action alternative constitutes use of the current level of activity as a benchmark.” (citations omitted)).

¹³⁹ 40 C.F.R. § 1502.2(b) (“Impacts shall be discussed in proportion to their significance.”).

¹⁴⁰ Exec. Order No. 12,898, § 5–5(c), 59 Fed. Reg. 7629 (Feb. 11, 1994).

¹⁴¹ The author does not intend to criticize any particular environmental review. Each review is tailored to particular circumstances. The author has been particularly impressed by the efforts that the Massachusetts Executive Office of Environmental Affairs and the U.S. Army Corps of Engineers have taken in beginning environmental impact review of the nation’s first proposed utility-scale offshore wind project in Nantucket Sound.

¹⁴² None of the wind power NEPA documents reviewed contained an in-depth discussion of air emission reductions. See, e.g., SCOPE OF WORK EIS, *supra* note 54; BONNEVILLE POWER ADMIN., U.S. DEP’T OF ENERGY, NO. DOE/EIS-0321, CONDON WIND PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT 5 (2001), available at <http://tis.eh.doe.gov/nepa/eis/eis0321/tocindex.html> (last visited Jan. 4, 2004) [hereinafter CONDON FEIS]; BONNEVILLE POWER ADMIN. & COUNTY OF BENTON, WASH., U.S. DEP’T OF ENERGY, NO. DOE/EIS-0333, MAIDEN WIND FARM DRAFT NEPA/SEPA ENVIRONMENTAL IMPACT STATEMENT (2002) (on file with author) [hereinafter MAIDEN DEIS]. For the Final EIS for the Maiden Wind Farm, see BONNEVILLE POWER ADMIN. & COUNTY OF BENTON, WASH., U.S. DEP’T OF ENERGY, NO. DOE/EIS-0333, MAIDEN WIND FARM FINAL NEPA/SEPA ENVIRONMENTAL IMPACT STATEMENT (2003) (on file with author).

the use of renewable energy.¹⁴³ The BPA has clearly considered concomitant emission reductions resulting from operation of utility-scale renewable energy projects.¹⁴⁴ Still, for reasons specific to the BPA, the discussions have not been as prominent or detailed in EISs for these terrestrial projects as they should be for offshore wind projects.

There are several factors in the BPA's decision not to include a deeper evaluation of emission offsets in EISs for wind power. First, the agency concluded that natural gas burning combined cycle combustion turbines would likely be built if wind projects did not go forward.¹⁴⁵ Second, the agency issued a programmatic EIS in 1993 that "evaluates the environmental tradeoffs among generic resource types . . . and the cumulative effects of adding these resources to the existing system."¹⁴⁶ As BPA Environmental Specialist Sarah Branum has explained:

The reason we didn't put detailed info[rmation] on emission offsets in the wind EISs is that it would not have impacted the decision of whether to go forward with the project. We had a discrete project proposed to us by a private developer for a decision. Our NEPA alternatives were to 1) sign contracts with the developer for power purchase and transmission arguments, or 2) not sign contracts. Because we tiered the wind EISs to the Business Plan (BP) and Resource Programs (RP) EISs, we didn't have to look at the universe of alternative sources of energy and . . . all their various impacts—we did that in the BP and RP EISs.¹⁴⁷

¹⁴³ BONNEVILLE POWER ADMIN., U.S. DEP'T OF ENERGY, NO. DOE/EIS-0813, BUSINESS PLAN FINAL ENVIRONMENTAL IMPACT STATEMENT (1995) (on file with author) [hereinafter BUSINESS PLAN EIS].

¹⁴⁴ See *id.* § 4.5.4, at 4-159 ("The environmental effect of replacing new combustion turbines with conservation or renewable resources is to substitute the impacts of the conservation and renewables for the impacts of the combustion turbines."); see also *id.* at 4-160 fig.4.5-1 (finding that each average megawatt of wind power could replace 3310 tons of carbon dioxide, and smaller amounts of nitrogen oxides, total suspended particulates, and sulphur dioxide as compared to the same average megawatt generated by new combustion turbines that would otherwise be built to meet rising energy demand).

¹⁴⁵ CONDON FEIS, *supra* note 142, at 5.

¹⁴⁶ *Id.* at 37 (citing BUSINESS PLAN EIS, *supra* note 143; BONNEVILLE POWER ADMIN., U.S. DEP'T OF ENERGY, NO. DOE/EIS-0162, RESOURCE PROGRAMS ENVIRONMENTAL IMPACT STATEMENT (1993) [hereinafter RESOURCE PROGRAMS EIS]); see *supra* note 144.

¹⁴⁷ E-mail from Sarah T. Branum, BPA Environmental Specialist, BPA, to Dorothy Bisbee (Dec. 12, 2003, 14:30:31 PST) (on file with author).

Finally, it is notable that “the vast majority of power that [the BPA] markets” is derived from hydropower sources.¹⁴⁸ Air emissions are not a concern with hydropower.

The factors that argued against the BPA’s deeper consideration of emission offsets will not apply to offshore wind projects where oil and coal are major contributors to the energy mix, and programmatic EISs that consider comparative emission offsets are not available. For this reason, despite the high quality of the Condon and Maiden EISs, offshore wind project proponents should not use the Condon and Maiden EISs as models for the evaluation of emission offsets. Preparers of offshore wind EISs will, however, find useful material in the BPA’s Business Plan and Resource Program EISs.

The BPA Resource Program EIS compared adverse and beneficial impacts of thirteen alternatives that allowed the agency to increase available power through various combinations of conservation, efficiency improvements, coal, natural gas, combustion turbines, nuclear power, renewable energy, and energy imports. The EIS includes tables that allow the reader to compare and contrast environmental impacts, including air emission impacts.¹⁴⁹ The data in these tables are limited to certain criteria air pollutants and other environmental impacts, and they do not compare location-specific impacts on particular populations. Site-specific offshore wind power EISs should include discussions of pollutants and populations of particular concern to the power regions those sites will impact.

The 2001 Final EIS for the Condon Wind Project includes the following in its two-paragraph statement on the no action alternative:

Under the No Action Alternative, a greater proportion of other energy resources would be developed. The predominant resource is most likely to be combined-cycle combustion turbines (CTs) fueled by natural gas [The BPA]’s Resource Programs EIS (RP EIS) and Business Plan EIS in-

¹⁴⁸ *Id.*

¹⁴⁹ RESOURCE PROGRAMS EIS, *supra* note 146, summary, at 11 tbl.S-1, summary, at 16 fig.S-2, ch. 4, at 10–11 figs.4-1 & 4-2, ch. 5, at 53 tbl.5-15. Data in the Resource Programs EIS was calculated using several analytical models, including the Industrial Source Complex Short-Term (ISCST) model for criteria pollutants, *id.* ch. 5, at 2, and the Integrated System for Analysis of Acquisitions (ISAAC) resource acquisition model for decision analysis in the Northwest, *id.* ch. 5, at 3–4.

cluded an evaluation of the environmental impacts of energy resources including CTs.¹⁵⁰

The half-page discussion of air quality¹⁵¹ does not discuss emission reductions, and the table on potential impacts and mitigation does not compare project impacts against no action impacts for air or any other issue.¹⁵² The Final EIS added the following paragraph in the "Need for Action" section:

Technologies like wind power generation can help displace additions to the power system that might otherwise come from fossil fuel combustion or hydro-powered generation. Wind power can help meet energy needs without additional emissions of greenhouse gases. The Condon Wind Project is an opportunity to satisfy consumer demand for increasing the amount of renewable energy resources in the region's power supply.¹⁵³

This general paragraph alerts the reader to some of the benefits of alternative energy, but does not allow the reader to evaluate these benefits.¹⁵⁴ Section 5.10 of the Draft EIS provides the following brief mention of emission reductions and benefits to global warming concerns: "The proposed project would not generate emissions of gases (such as carbon dioxide) that contribute to global warming. To the extent wind energy reduces the amount of fossil fuel generation, global warming impacts can be avoided."¹⁵⁵

The Maiden Wind Farm Draft EIS, prepared jointly by the BPA and the County of Benton, Washington,¹⁵⁶ is similar to the Condon EIS, although there is more detail on emission reductions and the project itself is ten times larger. The discussion of air impacts of the no action alternative includes two paragraphs stating that the gas-burning combined cycle combustion turbines that would likely be built in place of

¹⁵⁰ CONDON FEIS, *supra* note 142, at 5.

¹⁵¹ *Id.* at 19.

¹⁵² *Id.* at 27.

¹⁵³ *Id.* at 29.

¹⁵⁴ This "Need for Action" statement in the FEIS was, however, a significant improvement over the Draft EIS, which did not mention emission reductions at all. BONNEVILLE POWER ADMIN., U.S. DEP'T OF ENERGY, NO. DOE/EIS-0321, CONDON WIND PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT § 1.2, at 1-1 (2001) [hereinafter CONDON DEIS].

¹⁵⁵ *Id.* § 5.10, at 5-5.

¹⁵⁶ MAIDEN DEIS, *supra* note 142.

the project would emit about 5.81 tons of nitrogen oxides and 3,094 tons of carbon dioxide per average megawatt per year.¹⁵⁷

Elsewhere, the U.S. Department of Energy (DOE) has been the lead agency in several environmental reviews of terrestrial wind power and other alternative energy proposals. DOE has a written policy that distinguishes between the “affected environment” and the “no action alternative,” which is critical to exploring emission reductions. DOE explains that:

[T]he affected environment’s air quality discussion might describe the general climate, wind, temperature, rainfall, ambient concentrations of air pollutants at the site, and current site emissions and emission rates. Also, this discussion would, as appropriate, identify existing air quality permits and specify the attainment status for criteria pollutants. In contrast, impact assessment for the no action alternative would project future site emissions and emission rates without the proposed action. The impact assessment also would identify the impacts of such future emissions on compliance with applicable air quality regulations and permits, the attainment status for criteria pollutants, and human health and environment.¹⁵⁸

Consistent with this policy, renewable electricity generation EISs should forecast what site emissions and cumulative emissions will be in the future in the event that the renewable project does not go forward. This calculation will require a projected increase in air emissions.

None of the eight Federal Register Notices of Intent for wind power EISs surveyed¹⁵⁹ specifically mentioned potential emission off-

¹⁵⁷ *Id.* § 3.12.5, at 3-130 to 3-131. The Draft EIS states: “Nitrogen oxides contribute to ozone generation in the lower atmosphere and carbon dioxide is considered a greenhouse gas. In addition to the emissions from generation itself, a gas turbine generation facility also would have emissions of sulfur oxides, nitrogen oxides, and particulates associated with the extraction of natural gas and transportation by pipeline.” *Id.* at 3-131.

¹⁵⁸ OFFICE OF NEPA POLICY AND COMPLIANCE, U.S. DEP’T OF ENERGY, MINI-GUIDANCE ARTICLES FROM LESSONS LEARNED QUARTERLY REPORTS § 2-2 (2000), (emphasis added), http://tis.eh.doe.gov/nepa/tools/guidance/ll_miniguide.pdf (last visited Dec. 31, 2003) [hereinafter MINI-GUIDANCE].

¹⁵⁹ *See, e.g.*, Notice of Intent to Prepare a Programmatic Environmental Impact Statement (EIS) to Evaluate Wind Energy Development on Western Public Lands, 68 Fed. Reg. 59,814 (Dep’t of the Interior Oct. 17, 2003); Notice of Intent to Prepare a Plan Amendment and Environmental Impact Statement for Wind Energy, 68 Fed. Reg. 47,928 (Dep’t of the Interior Aug. 12, 2003) (Ukiah Field Office Project in Lake and Colusa Counties, California); Notice of Intent to Prepare an Environmental Impact Statement/Land Use Plan Amendment, 67 Fed. Reg. 77,801 (Dep’t of the Interior Dec. 19, 2002) (Cotterel Mountain Wind Energy Project in Cassia County, Idaho); Notice of Intent to Prepare an Environmental Impact State-

set benefits or benefits to human health or the environment. This is significant because these publications are designed to notify members of the public who may wish to attend scoping meetings or otherwise become involved in the NEPA public participation process. Instead, renewable energy is referenced in a general way that assumes the reader already knows all the impacts. A Bureau of Land Management/DOE EIS announcement for a wind project in Wyoming summarizes the potentially significant impacts of the renewable energy project that the Draft EIS addresses, including avian mortality and visual changes, but makes no mention of any beneficial impacts.¹⁶⁰ The statement does not allow the reader to consider that *human* mortality may accelerate if wind farms are not built.¹⁶¹

2. First Stages of Offshore Wind Environmental Impact Review

The Cape Wind EIS will not be finished before 2004.¹⁶² Public participation and discussion has been substantial, including a series of public stakeholder meetings organized by the Massachusetts Technology Collaborative that were held on Cape Cod in 2002–03.¹⁶³ These meetings have included a number of presentations on the power grid, global warming, and air quality issues.¹⁶⁴ For those stakeholders in the project that reside in Cape Cod, Martha's Vineyard, and Nantucket,

ment, 66 Fed. Reg. 52,398 (Dep't of Energy Oct. 15, 2001) (Horse Heaven Wind Project in Benton County, Washington); Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Wind Farm at the Nevada Test Site, 66 Fed. Reg. 38,648 (Dep't of Energy July 25, 2001); Notice of Intent to Prepare an Environmental Impact Statement, 66 Fed. Reg. 31,624 (Dep't of Energy June 12, 2001) (Maiden Wind Farm in Benton and Yakima Counties, Washington); Notice of Intent to Prepare an Environmental Impact Statement, 66 Fed. Reg. 19,473 (Dep't of Energy Apr. 16, 2001); Notice of Intent for a Table Mountain Environmental Impact Statement Focusing on Wind Power Projects and Other Planned Energy Projects, 65 Fed. Reg. 83,078 (Dep't of the Interior Dec. 29, 2000).

¹⁶⁰ Notice of Availability of Draft Environmental Impact Statement for the Kenetech Windpower, Wyoming Wind Energy Project, 60 Fed. Reg. 3256-01 (Dep't of the Interior Jan. 13, 1995), available at <http://www.epa.gov/EPA-IMPACT/1995/January/Day-13/pr-374.html> (last visited Feb. 9, 2004).

¹⁶¹ *Id.*

¹⁶² Peter, *supra* note 110; Telephone Interview with Karen Adams, Chief of Permits and Enforcement, U.S. Army Corps of Engineers (Aug. 20, 2003).

¹⁶³ MASS. TECHNOLOGY COLLABORATIVE, CAPE & ISLANDS OFFSHORE WIND, at <http://wind.raabassociates.org> (last visited Dec. 31, 2003).

¹⁶⁴ Meeting summaries, presentations, and other documents are available at <http://wind.raabassociates.org/events.asp?type=dte> (last visited Dec. 31, 2003).

this process has offered a significant opportunity for public education about the offshore wind debate.¹⁶⁵

The Scope of Work for the Cape Wind EIS, issued in June 2002, suggests the benefit of emission reductions when it states that “[t]he EIS will include a description of compliance with the requirements of the Clean Air Act for construction and operation phases. Any potential for impact on the climate of the region should also be addressed.”¹⁶⁶ This brief mention of air and climate is twelfth in a list of thirteen considerations, does not explicitly identify air emission reductions, and does not establish a baseline for comparison purposes.

The Scope of Work does indicate that there will be a discussion of the New England power grid,¹⁶⁷ but it is not clear that this statement contemplates a detailed comparison of projected air emissions in New England with and without renewable energy. The Scope gives no information about a baseline of air emissions other than to say that the no action alternative “may be either an alternative not involving Corps jurisdiction or denial of the permit.”¹⁶⁸

At the state level, the Secretary of Environmental Affairs suggested that a gas plant on the mainland would be used to establish a baseline for the Cape Wind project.¹⁶⁹ This baseline, while a good start for a conservative analysis of benefits, fails to account for offsets from higher-polluting power sources like coal, which play a major role in the current power mix.¹⁷⁰

The Massachusetts Environmental Policy Act (MEPA)¹⁷¹ Certificate for the Cape Wind project states that comparison of emissions should be made between coastal and inland gas-fired plants and wind turbines.¹⁷² The MEPA Certificate states that “the EIR [Environmental Impact Report] should also briefly discuss the impacts of an oil-fired 420 MW plant and a coal-fired 420 MW plant.”¹⁷³

¹⁶⁵ Public meetings have not been geographically convenient for all affected persons, especially those living near polluting power sources elsewhere in the New England power region.

¹⁶⁶ SCOPE OF WORK EIS, *supra* note 54, at 7.

¹⁶⁷ *Id.* at 2.

¹⁶⁸ *Id.* at 3.

¹⁶⁹ MEPA CAPE WIND CERTIFICATE, *supra* note 6, at 7.

¹⁷⁰ See ENERGY INFO. ADMIN., U.S. DEP’T OF ENERGY, STATE ELECTRICITY PROFILES 2001 tbl.5, http://www.eia.doe.gov/cneaf/electricity/st_profiles/massachusetts/ma.html (last visited Dec. 31, 2003).

¹⁷¹ MASS. GEN. LAWS ch. 30, §§ 61–62H (2002).

¹⁷² MEPA CAPE WIND CERTIFICATE, *supra* note 6, at 7.

¹⁷³ *Id.*

B. *Suggestions for Offshore Wind EISs*

Pursuant to section 102(2)(C), each EIS should consider the following:

(i) The environmental impact of the proposed action; (ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented; (iii) Alternatives to the proposed action; (iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.¹⁷⁴

More specific NEPA regulations require consideration of the following in the part of the EIS that discusses environmental consequences: "(d) The environmental effects of alternatives including the proposed action (e) Energy requirements and conservation potential of various alternatives and mitigation measures. (f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures."¹⁷⁵

The discussion of these factors "forms the scientific and analytic basis" for the alternatives comparison portion in the EIS.¹⁷⁶ Since the no build scenario is considered an alternative, the EIS should discuss the environmental effects of emission reductions, consistent with these regulations, in considering the environmental consequences for any wind power project.

Given the broad geographic scope of fossil fuel emission impacts, the complexity of predicting energy uses and pollution effects, and the danger that local objections to visual aesthetics will dominate the debate, it is critical that agencies prepare EISs for offshore wind farms that fully explain the costs and benefits to agencies and the public. Otherwise, opponents will be able to shape confusing data into a form that appears to argue against a resource that may well have more benefits than costs.

¹⁷⁴ 42 U.S.C. § 4332(2)(C) (2000).

¹⁷⁵ 40 C.F.R. § 1502.16(d)-(f) (2003).

¹⁷⁶ *Id.* §§ 1502.14, 1502.16.

1. Place Discussions of Environmental Benefits in Prominent Locations

The location of discussions in NEPA documents can prejudice the reader's understanding of the review. For example, if air emission impacts are listed at the end of the document in a short paragraph, the reader may come away deciding that these impacts are less significant than those that were discussed first, and at more length. Additionally, these discussions must appear in the substantive portions of review documents, rather than only in preambles.¹⁷⁷

2. Use Adequate Geographic Scope

The localized nature of offshore wind farms' perceived adverse visual impacts, combined with the highly deferential nature of judicial review of agency decisions under NEPA, make it difficult to consider emission reduction benefits that may occur far from the project site. Nevertheless, it is critical that NEPA review of offshore wind cover a geographic scope that is adequate to allow full consideration of emission reductions that will result from the wind farm, no matter where these offsets or resulting improvements in air quality occur. From the beginning, it is important that lead agencies cast a wide geographic and socioeconomic net in seeking comments on offshore wind developments. If public meetings are primarily held on the coast, for example, and not in the neighborhoods of the power plants whose emissions the turbines will offset, emission reduction benefits will be obscured. People who will view the turbines are likely to attend the coastal meetings, while people who will benefit most from the emission reductions are less likely to attend. Thus, an opportunity for increased attention to health benefits and disparate impacts will be lost. This is particularly important in light of environmental justice considerations.¹⁷⁸

¹⁷⁷ The Massachusetts Secretary of Environmental Affairs' Certificate on the Cape Wind Environmental Notification Form contains an inspiring discussion of renewable energy opportunities in the Purpose section. The Alternatives section mentions that the Environmental Impact Report (EIR) should use a gas-fired terrestrial plant as a baseline for "such parameters as air emissions . . ." MEPA CAPE WIND CERTIFICATE, *supra* note 6, at 7. The discussion of these factors in the MEPA Certificate is an excellent start, but it will need to be expanded and placed prominently in the analysis in the EIR if the reader is to be expected to understand the choices being made in deciding for or against offshore wind.

¹⁷⁸ See CEQ GUIDANCE, *supra* note 90, at 11. The Council on Environmental Quality's EJ policy directs agencies to "seek input from low income populations, minority populations, or Indian tribes as early in the [NEPA] process as information becomes available." *Id.* This guidance document suggests outreach methods, means of identifying minority and low-income populations, and other techniques. *Id.* at 8-16.

3. Use the No Action Alternative to Model Air Emission Reductions

Consideration of the no action alternative often does not allow EIS readers to compare air pollution levels if the proposed project is built with the levels that will occur without the project. This is the case even when the project involves renewable energy proposals. For example, the EISs for the Maiden and Condon wind power projects by the BPA devoted short paragraphs to environmental impacts of the no build alternative.¹⁷⁹ Some NEPA documents address environmental benefits at length,¹⁸⁰ but in choosing not to place these discussions in the no action section or to highlight them in the Executive Summary, EIS preparers ensure that the benefits will receive less attention from EIS readers than the detriments.

A cursory no action alternative review is not appropriate for renewable energy projects. First, as DOE guidance emphasizes, the no action alternative is not the same as the affected environment.¹⁸¹ Consistent with DOE policy, renewable electricity generation EISs should forecast what site emissions and emission rates will be in the future in the event that the renewable project does not go forward. This calculation will require a projected increase in air emissions.

Determination of the baseline of air emissions in the no action alternative for purposes of evaluating the proposed agency action and other alternatives in energy projects is complex and controversial.¹⁸² If

¹⁷⁹ See *supra* Part IV.A.1; see also *supra* notes 150, 157.

¹⁸⁰ See, e.g., U.S. DEP'T OF ENERGY, NO. DOE/EA-1475, CHARITON VALLEY BIOMASS PROJECT FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT (2003), <http://tis.eh.doe.gov/nepa/ea/EA1475/index.html> (last visited Dec. 31, 2003). A recent final environmental assessment for a proposal to supplement coal at a generating station with switchgrass in a biomass co-fire feedstock operation with partial funding from the Department of Energy devoted ten pages to environmental impacts of the proposed project and one short paragraph to the no build alternative, despite the fact that biomass energy generation is thought to reduce global warming. See *id.* at 6, 25–35. While the assessment did not provide significant detail in its section covering environmental impacts of the no build scenario, it did discuss beneficial impacts of biomass use on carbon sequestration and reduced global warming in the Background section and in its discussion of the proposed action. See *id.* at 3–5, 7–14. Two of the five sentences devoted to the no action alternative concerned benefits of the proposal: “The potential long-term environmental benefits from the Proposed Action (less agricultural runoff, increased carbon dioxide sequestration, reduced sulfur oxide emissions) would not be realized. The goal . . . to eventually use switchgrass as a fuel to replace a portion of the coal burned . . . would be delayed or derailed.” *Id.* at 35.

¹⁸¹ MINI-GUIDANCE, *supra* note 158, at § 2–2.

¹⁸² See WORK GROUP ON THE COORDINATION OF FED. MANDATES, INTERAGENCY TASK FORCE REPORT ON NEPA PROCEDURES IN FERC HYDROELECTRIC LICENSING 1 n.1 & 4 (2000), http://www.ferc.gov/industries/hydropower/gen-info/itf/nepa_final.pdf (last visited Dec. 31, 2003). A task force including the Federal Energy Regulatory Commission, the Depart-

alternate energy sources will be needed to fill the demand that the renewable energy project would serve, then according to DOE guidance, the impacts of those energy sources should be considered in the baseline.¹⁸³ Yet, the same guidance documents that provide examples of no action alternative descriptions give no details on these impacts.¹⁸⁴

CONCLUSION

Offshore wind power can reduce emissions of air pollutants that are contributing to global warming and causing premature deaths. This is the most important impact of offshore wind, and it deserves immediate, in-depth attention. Used appropriately, NEPA can show decision-makers that when they choose to save the view, they also choose to perpetuate the adverse effects of fossil fuel use on human health and the environment.

ments of Interior, Commerce, and Agriculture, Environmental Protection Agency, and the Advisory Council on Historic Preservation “was unable to resolve” the issue of how to characterize the baseline. *Id.*

¹⁸³ See MINI-GUIDANCE, *supra* note 158, at § 2–2; see also HYDROELECTRIC LICENSING GROUP, FED. ENERGY REG. COMM’N, PREPARING ENVIRONMENTAL ASSESSMENTS: GUIDELINES FOR APPLICANTS, CONTRACTORS, AND STAFF 8 (2001), <http://www.ferc.gov/industries/hydropower/enviro/eaguide.pdf> (last visited Dec. 31, 2003) [hereinafter FERC GUIDELINES].

¹⁸⁴ FERC Guidelines provide several short examples for environmental effects of no action alternatives, including a one-paragraph example for a no action alternative to licensing a hydropower project that includes the following brief reference to air impacts: “The power that would have been developed from a renewable resource would have to be replaced from nonrenewable fuels. The noise and air quality impacts of the existing diesel fuel-fired generation system would continue unabated or at increased levels as the local electrical demand increased.” FERC GUIDELINES, *supra* note 183, at 41.