2597

Adams, Karen K NAE

From: Greg Hartman [gregor_12188@hotmail.com]
Sent: Tuesday, January 11, 2005 8:01 PM
To: Energy, Wind NAE
Subject: Proposed Wind Farm in Nantucket Sound

Colonel Thomas Koning
U.S. Army Corps of Engineers

Dearest Colonel,

The Army Corps of Engineers should deny Cape Wind's application to construct 130 turbines in Nantucket Sound. There is no federal authorization to use our public trust resources for this purpose. Nor does the developer have any property rights to exploit these public lands. Without federal authorization, any means for protecting coastal resources, or any process for compensating the public, this project cannot be in the public interest. That question must be answered by our representatives after national debate, not by one office of a federal agency improperly arrogating the authority of Congress.
In addition, the draft environmental impact statement that has been prepared is inadequate. More studies are needed before the Army Corps can assess the potential impacts of the Cape Wind project. Indeed, those studies are the very studies that Congress would require to shape a national policy on offshore wind energy. Without this critical information, there is simply no way to determine whether the Cape Wind project is in the best interests of both the public and wildlife.

Finally, the Bush Administration needs to develop responsible clean energy and ocean conservation programs. The continued failure to do so is sacrificing our environment to private developers.
As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is seriously flawed, because it ignores relevant information and draws conclusions based on inadequate research.

Sincerely,
Greg Hartman

2590

Adams, Karen K NAE

From: c.brooke@csuohio.edu
Sent: Tuesday, January 11, 2005 5:03 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
- A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

Cheryl Brooke
2641 Euclid Hts. BLvd. #6
Cleveland Hts., Ohio 44106

Adams, Karen K NAE 2599

From: marynellb@mindspring.com
Sent: Wednesday, January 12, 2005 12:28 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds - 12 months of radar observations of flying wildlife - A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

I often vacation in the area and bring family and friends with me. I also have many friends who live there year-round. I will not visit if this matter is not handled more responsibly and shall discourage family and friends from visiting as well. I shall urge my friends who live in the area to base their votes and for governement officials and to contact government officials as well as your agency based on your actions regarding this matter.

Thank you very much.

Sincerely,

Mary Nell Bryan
810 Summerly Drive
Nashville, Tennessee 37209

2599

2600

Adams, Karen K NAE

From: william podoba [billofeastlyme@sbcglobal.net]
Sent: Wednesday, January 12, 2005 9:56 AM
To: Energy, Wind NAE
Subject: Public comment to Cape Wind Project EIS

Dear Sir,
Attached are my comments to the Cape Wind Project EIS.

Thank You,
William Podoba
50 Charter Oak Drive
East Lyme, CT 06333

2600

Comments to Cape Wind Project

The EIS for the Cape wind project is delinquent in addressing the importance assigned to maintaining Cape Cod and the surrounding waters as a precious natural resource free of commercial development. There is value in maintaining these areas as much as possible in their natural state for ourselves, our children and future generations to use and enjoy. Development across our country has reduced public lands and waters available to our increasing population.

A majority of the U.S. population has access to Cape Cod to enjoy it's pristine environment and the value to maintain Cape Cod in a preservation condition is " priceless". A small percentage of the New England population will be impacted by the energy provided by this project and therefore it's benefit is minimal.

2601

Adams, Karen K NAE

From: friskiew1@juno.com
Sent: Wednesday, January 12, 2005 1:50 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
- A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

friskie wheeler
707 main st
branford, Connecticut 06405

2602

Adams, Karen K NAE

From: jpye@connellypartners.com
Sent: Wednesday, January 12, 2005 4:18 PM
To: Energy, Wind NAE
Subject: Please extend the public comment period on the Cape Wind DEIS

SAVE OUR SOUND
alliance to protect nantucket sound

Please immediately extend the public comment period on the Draft Environmental Impact Statement for the proposed Cape Wind project to 180 days. Any shorter time period is entirely insufficient to allow the public ample opportunity to provide input on such a lengthy and important document on a complex and controversial project.

Thank you for your prompt attention to this matter.

Sincerely,

Janet Pye

United States Department of Energy
Northeast Regional Office
CT, MA, ME, NH, NY, RI & VT
John F. Kennedy Federal Building, Suite 675
Boston, Massachusetts 02203-0002
www.eere.energy.gov/bro

2603

January 11, 2005

Karen K. Adams
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Subject: Impact of Renewable Energy Deployment on Natural Gas Prices in New England

Dear Ms. Adams,

Enclosed please find a copy of a study conducted by the Lawrence Berkeley National Laboratory. This study was conducted as a part of the "Technical Assistance Program" ("TAP") under which the U.S. Department of Energy provides technical expertise from the National Laboratories to assist the states and municipal entities in addressing issues related to economics, environmental implications to the use and/or acquisition of renewable energy technologies.

This study presents implications and forecasts financial savings to the New England region and to the U.S. economy resulting from the increased use of renewable energy technologies. The study develops the concept that there is an "inverse price elasticity of supply" for natural gas. The study shows that if natural gas demand is reduced by 1 percent, the price of natural gas will decline by .75 percent to 2.5 percent. (Note: The recent National Petroleum Council ("NPC") projects a 4 percent reduction in price for a 1 percent reduction in natural gas demand.)

It is also noteworthy that the study's base renewable energy capacity, stated as 402 MW by 2006, is projected to increase to 721 MW by the year 2009. As an example, if Cape Wind's proposed 445 MW project was factored in explicitly, then about 62 percent (445 MW/721 MW= 61.7%) of the regional and national benefits anticipated could be sourced to that project. The following table summarizes the potential contribution of a 445MW renewable energy project calculated on a percentage allocation basis:

	Contribution of 445MW Renewables to Consumer Gas Savings (2002 $):	
	New England	**National**
Inverse Elasticity =0.75	$17.2 MM	$244.0 MM
=1.50	$34.5 MM	$488.0 MM
=3.00	$69.0 MM	$975.9 MM
Memo:		
NPC=4.00	$92.0 MM	$1300.9 MM

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Based on the above table, it is very clear that a renewable project of that size will make a significant contribution to lowering regional and national natural gas prices. Additionally, given that increasing amounts of natural gas are likely to be imported in the future due to domestic supply constraints, the value of the US dollar should be favorably impacted due to fewer required imports of natural gas.

Sincerely,

Albert H. Benson
Project Manager

Attachment

2603

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY
Environmental Energy Technologies Division
1 Cyclotron Rd., MS 90-4000, Berkeley, CA 94720
ph: 510-486-5474, fax: 510-486-6996, RHWiser@lbl.gov

To Robert Pratt, Fran Cummings, Karlynn Cory
Massachusetts Technology Collaborative

From Ryan Wiser and Mark Bolinger
Lawrence Berkeley National Laboratory

Subject The Potential Impact of Renewable Energy Deployment on Natural Gas Prices in New England

Date September 20, 2004

INTRODUCTION

Concerns about the price and supply of natural gas have deepened in recent years both nationally and in New England. Renewable energy (RE) technologies can directly hedge natural gas price risk by reducing the need to purchase variable-price natural gas-fired electricity generation, and replacing that generation with fixed-price renewable electricity supply.

In addition to its direct contribution to price stability, an increasing number of studies show that renewable energy deployment can also put downward pressure on natural gas prices by reducing demand for gas among gas-fired generators. These gas price reductions are, in turn, expected to reduce electricity prices and – more importantly – directly reduce consumer natural gas bills. Many recent studies have found that this effect may be significant, substantially benefiting consumers. These studies are reviewed in the attached paper, published in the proceedings of a recent national energy conference.

An important consideration is that – strictly speaking – this price reduction represents a consumer benefit that comes at the expense of producers; it therefore represents a wealth transfer, not a net gain in social welfare. That said, current concerns about the price and supply of natural gas suggest that policymakers may want to pursue actions that reduce the strain of high prices on consumer energy bills.

Using previous studies as a guide, this memorandum focuses on New England, and calculates the potential impact of increased deployment of renewable energy on regional natural gas prices, as well as consumer benefits associated with those price reductions. We do this by extrapolating the findings of previous studies to the New England region. Pertinent caveats are noted, though we

direct the reader to the attached paper for further discussion of our general methods and the limitations to current research in this area. Below, we first estimate the potential long-term consumer gas savings that derive from increased renewable energy deployment in New England, based primarily on extrapolation from national studies. Subsequently, we extrapolate the results of an ACEEE/EEA study that, arguably, may do a better job at representing the regional, near-term impacts of renewable energy on natural gas prices. The renewable energy additions included in this analysis reflect the projected impact of renewables portfolio standards (RPS) in both Massachusetts and Connecticut through 2009.

LONG-TERM BENEFITS OF INCREASED RE DEPLOYMENT IN NEW ENGLAND

Most of the studies summarized in the attached paper look at the *national* impacts of *national* renewable energy deployment. As shown in the attached paper, the majority of the modeling studies that have been conducted (typically, though not always, using the EIA's National Energy Modeling System - NEMS) show that each 1 percent reduction in national natural gas demand may reduce the long-term wellhead price of natural gas by 0.75 percent to 2.5 percent. Some models predict even more significant national price reductions (e.g., the recent National Petroleum Council assessment shows an approximate 4 percent reduction in price from a 1 percent decrease in national gas demand). This estimate of the "inverse price elasticity of supply" for natural gas is somewhat consistent with the output of other national energy models, and with a very limited empirical economics literature on natural gas supply elasticities.

We therefore conclude that – while additional research and validation is important – a reasonable initial estimate is that a 1 percent reduction in national natural gas demand may lead to a long-term wellhead price reduction of 0.75 to 2.5 percent. This wellhead price reduction (in $/MMBtu terms) is expected to translate roughly one-for-one into retail natural gas prices.

Though the models used to create this estimate are arguably best-suited for long-term, national analysis, we have also sought to understand impacts of short-term, regional renewable energy deployment scenarios. Given that natural gas supply is generally constrained in the short-term, but better able to adjust over the long-term, one would expect deployment of renewable energy to cause a reduction in natural gas prices that is larger in the near-term than over the long-term. Similarly, a region that is transportation-constrained could experience regional price impacts that exceed average, national price impacts. Based on a number of modeling runs conducted in the EIA's National Energy Modeling System (not shown in the attached paper), we have found that NEMS generally predicts that regional penetration of renewable generation can lead to an initial regional gas price reduction that is 3 - 5 times as large as the national change in average wellhead prices. For example, a $0.1/MMBtu reduction in national wellhead prices can initially translate into a $0.3-0.5/MMBtu reduction in retail gas prices in the region in which the renewables deployment occurs. Over the ensuing 20 years, this regional multiplier dissipates and the regional impact is predicted to be virtually the same as the national impact.

Given the above findings, most of which are described in more detail in the attached paper (note that the regional results presented above are not highlighted in the attached paper), one can calculate the potential impacts of increased renewable energy deployment in New England. To do so, we assume the following:

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- An increase in renewable energy supply in New England of roughly 402 MW (generating 1,854 GWh per year) by 2006 and 721 MW (generating 3,357 GWh per year) by 2009. These additions reflect the projected impact of renewables portfolio standards (RPS) in both Massachusetts and Connecticut through 2009, as calculated by LaCapra Associates for the MTC. As a result of these additions, natural gas demand among New England generators is projected to fall by 6,312 GBtu in 2006 (i.e., from 485,110 to 478,798 GBtu) and 11,859 GBtu in 2009 (i.e., from 467,118 to 455,259 GBtu).[1] We assume that gas demand reductions in the years between 2006 and 2009 can be interpolated linearly from the 2006 and 2009 reductions, and that annual reductions after 2009 are fixed at 11,859 GBtu. Thus, in effect, we are only modeling the impact of the Massachusetts and Connecticut RPS through 2009, and then assuming that the impact remains constant through 2025.[2]

- We translate these gas savings into percentage reductions in national natural gas demand using forecasts of national natural gas demand for 2006-2025 from the latest EIA Annual Energy Outlook.

- We estimate the national average wellhead price reduction by applying inverse elasticity estimates of 0.75, 1.5, and 3, consistent with the studies summarized in the attached paper. On a national basis, we assume that reductions in wellhead prices translate directly, on a one-for-one basis, into reductions in retail gas prices.

- To estimate New England retail price reductions, we assume a regional multiplier of 3 in the initial year of our analysis (2006), declining linearly to 1 by 2025, the final year of our analysis. In other words, we assume that reductions in New England retail natural gas prices will, in 2006, be 3 times as large as reductions in national average wellhead prices in that year. This is consistent with previous analysis that we have conducted with NEMS, as reported earlier. This regional multiplier reflects the fact that New England has little native natural gas supply, and is therefore highly dependent on transportation from other regions – transportation that is, at times, tightly constrained, resulting in price effects that are amplified relative to changes in average wellhead prices. Particularly at such times, a reduction in natural gas demand resulting from renewables penetration in New England may have a large impact on regional gas prices.

- We estimate national and New England consumer gas bill savings by applying the resulting retail price reductions to total estimated gas demand as presented in the latest EIA Annual Energy Outlook nationally and for New England, respectively. This assumes that retail gas

[1] These numbers stem from a LaCapra Associates, Inc. analysis of the New England electricity market. It should be noted that this reduction in gas demand within the electricity sector – and more importantly the corresponding decline in natural gas prices – should ultimately induce at least some resurgence of demand among all gas-consuming sectors of the economy (i.e., with a downward-sloping demand curve, more natural gas is demanded at lower prices). We assume that LaCapra's analysis, which focused solely on the electricity sector, does not capture this "rebound effect" in its entirety. As such, the reductions in natural gas demand in New England presented here may be somewhat over-stated.

[2] This is a conservative assumption, given that the Connecticut RPS extends through 2010, and the Massachusetts standard is likely to increase beyond 2009. Even in the absence of further policy stimulus beyond 2009, the "learning effect" from adding 721 MW of new renewables capacity in New England by 2009 could reasonably be expected to result in additional renewables development in the years after 2009.

price reductions translate directly into consumer bill savings (both directly through gas bills and indirectly through electric bills).[3]

- Finally, by allocating the resulting consumer gas bill savings to the projected MWh of renewable energy supply, we estimate the natural gas-related consumer benefits that derive from each increment of renewable generation.

Though all of these assumptions are subject to uncertainty, we believe that the results can be used to estimate a plausible range of impacts, especially over the long-term, that are, at a minimum, consistent with those predicted by integrated energy models. The results of the analysis are presented below in Tables 1 through 3 (each presenting results for a different inverse supply elasticity), and Figures 1 and 2.

Table 1. Analysis Results (Inverse Elasticity = 0.75)

	Gas Demand Reduction	Reduction in Retail Gas Price		Consumer Gas Savings		Savings Per-MWh RE	
	New England (MMBtu)	New England (2002 $/MMBtu)	National	New England (2002 $)	National	New England (2002 $/MWh RE)	National
2006	6,311,850	$0.0020	$0.0007	$1,727,034	$16,030,719	$0.93	$8.65
2007	8,161,022	$0.0024	$0.0008	$2,162,953	$21,025,771	$0.92	$8.93
2008	10,010,194	$0.0029	$0.0010	$2,619,228	$26,613,764	$0.92	$9.32
2009	11,859,367	$0.0031	$0.0012	$2,835,566	$29,995,945	$0.84	$8.94
2010	11,859,367	$0.0028	$0.0011	$2,622,574	$29,414,246	$0.78	$8.76
2011	11,859,367	$0.0028	$0.0011	$2,611,470	$30,831,508	$0.78	$9.18
2012	11,859,367	$0.0028	$0.0012	$2,635,071	$32,468,479	$0.78	$9.67
2013	11,859,367	$0.0027	$0.0012	$2,563,291	$34,012,830	$0.76	$10.13
2014	11,859,367	$0.0026	$0.0012	$2,434,905	$34,738,514	$0.73	$10.35
2015	11,859,367	$0.0026	$0.0013	$2,423,511	$36,284,015	$0.72	$10.81
2016	11,859,367	$0.0024	$0.0013	$2,314,340	$36,557,676	$0.69	$10.89
2017	11,859,367	$0.0023	$0.0012	$2,190,982	$36,645,736	$0.65	$10.92
2018	11,859,367	$0.0021	$0.0012	$2,078,679	$36,122,937	$0.62	$10.76
2019	11,859,367	$0.0019	$0.0012	$1,974,568	$35,732,550	$0.59	$10.64
2020	11,859,367	$0.0018	$0.0012	$1,943,860	$37,066,205	$0.58	$11.04
2021	11,859,367	$0.0018	$0.0012	$1,917,084	$38,552,418	$0.57	$11.48
2022	11,859,367	$0.0016	$0.0012	$1,766,749	$38,280,457	$0.53	$11.40
2023	11,859,367	$0.0015	$0.0012	$1,675,214	$38,306,107	$0.50	$11.41
2024	11,859,367	$0.0013	$0.0012	$1,520,441	$38,249,579	$0.45	$11.39
2025	11,859,367	$0.0012	$0.0012	$1,376,784	$38,133,606	$0.41	$11.36
NPV Consumer Savings and Levelized $/MWh:				**$27,944,256**	**$395,426,364**	**$0.73**	**$10.04**

[3] Again, there is likely some "rebound effect" that we are not capturing, given that the LaCapra Analysis was limited to the electricity sector. In other words, lower gas prices (and gas bills) should cause consumers in all sectors to demand more gas. Integrated models such as the EIA's National Energy Modeling System, which models energy consumption in all sectors of the economy, are better able to capture this rebound effect.

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Table 2. Analysis Results (Inverse Elasticity = 1.50)

	Gas Demand Reduction	Reduction in Retail Gas Price		Consumer Gas Savings		Savings Per-MWh RE	
	New England (MMBtu)	New England (2002 $/MMBtu)	National	New England (2002 $)	National	New England (2002 $/MWh RE)	National
2006	6,311,850	$0.0039	$0.0013	$3,454,067	$32,061,437	$1.86	$17.29
2007	8,161,022	$0.0048	$0.0017	$4,325,906	$42,051,542	$1.84	$17.86
2008	10,010,194	$0.0058	$0.0021	$5,238,456	$53,227,527	$1.83	$18.64
2009	11,859,367	$0.0062	$0.0023	$5,671,132	$59,991,889	$1.69	$17.87
2010	11,859,367	$0.0057	$0.0022	$5,245,148	$58,828,492	$1.56	$17.52
2011	11,859,367	$0.0056	$0.0023	$5,222,939	$61,663,016	$1.56	$18.37
2012	11,859,367	$0.0055	$0.0023	$5,270,142	$64,936,957	$1.57	$19.34
2013	11,859,367	$0.0055	$0.0024	$5,126,581	$68,025,660	$1.53	$20.26
2014	11,859,367	$0.0053	$0.0024	$4,869,809	$69,477,028	$1.45	$20.70
2015	11,859,367	$0.0052	$0.0025	$4,847,022	$72,568,029	$1.44	$21.62
2016	11,859,367	$0.0049	$0.0025	$4,628,680	$73,115,352	$1.38	$21.78
2017	11,859,367	$0.0045	$0.0025	$4,381,963	$73,291,472	$1.31	$21.83
2018	11,859,367	$0.0041	$0.0024	$4,157,357	$72,245,875	$1.24	$21.52
2019	11,859,367	$0.0038	$0.0023	$3,949,136	$71,465,100	$1.18	$21.29
2020	11,859,367	$0.0036	$0.0024	$3,887,720	$74,132,411	$1.16	$22.08
2021	11,859,367	$0.0035	$0.0025	$3,834,169	$77,104,836	$1.14	$22.97
2022	11,859,367	$0.0032	$0.0024	$3,533,499	$76,560,914	$1.05	$22.81
2023	11,859,367	$0.0029	$0.0024	$3,350,427	$76,612,214	$1.00	$22.82
2024	11,859,367	$0.0026	$0.0024	$3,040,882	$76,499,158	$0.91	$22.79
2025	11,859,367	$0.0024	$0.0024	$2,753,569	$76,267,211	$0.82	$22.72
NPV Consumer Savings and Levelized $/MWh:				**$55,888,513**	**$790,852,727**	**$1.46**	**$20.08**

Table 3. Analysis Results (Inverse Elasticity = 3.00)

	Gas Demand Reduction	Reduction in Retail Gas Price		Consumer Gas Savings		Savings Per-MWh RE	
	New England (MMBtu)	New England (2002 $/MMBtu)	National	New England (2002 $)	National	New England (2002 $/MWh)	National
2006	6,311,850	$0.0078	$0.0026	$6,908,135	$64,122,875	$3.73	$34.59
2007	8,161,022	$0.0097	$0.0033	$8,651,813	$84,103,083	$3.67	$35.71
2008	10,010,194	$0.0115	$0.0041	$10,476,912	$106,455,054	$3.67	$37.27
2009	11,859,367	$0.0124	$0.0046	$11,342,264	$119,983,779	$3.38	$35.74
2010	11,859,367	$0.0113	$0.0044	$10,490,296	$117,656,984	$3.12	$35.05
2011	11,859,367	$0.0111	$0.0045	$10,445,879	$123,326,032	$3.11	$36.74
2012	11,859,367	$0.0110	$0.0047	$10,540,283	$129,873,914	$3.14	$38.69
2013	11,859,367	$0.0109	$0.0048	$10,253,162	$136,051,320	$3.05	$40.53
2014	11,859,367	$0.0105	$0.0049	$9,739,618	$138,954,057	$2.90	$41.39
2015	11,859,367	$0.0104	$0.0051	$9,694,043	$145,136,058	$2.89	$43.23
2016	11,859,367	$0.0097	$0.0050	$9,257,359	$146,230,704	$2.76	$43.56
2017	11,859,367	$0.0091	$0.0049	$8,763,927	$146,582,944	$2.61	$43.66
2018	11,859,367	$0.0083	$0.0048	$8,314,715	$144,491,750	$2.48	$43.04
2019	11,859,367	$0.0075	$0.0046	$7,898,272	$142,930,199	$2.35	$42.58
2020	11,859,367	$0.0073	$0.0048	$7,775,439	$148,264,821	$2.32	$44.17
2021	11,859,367	$0.0070	$0.0049	$7,668,338	$154,209,671	$2.28	$45.94
2022	11,859,367	$0.0064	$0.0049	$7,066,997	$153,121,828	$2.11	$45.61
2023	11,859,367	$0.0059	$0.0049	$6,700,855	$153,224,429	$2.00	$45.64
2024	11,859,367	$0.0053	$0.0048	$6,081,764	$152,998,316	$1.81	$45.58
2025	11,859,367	$0.0047	$0.0047	$5,507,138	$152,534,422	$1.64	$45.44
NPV Consumer Savings and Levelized $/MWh:				**$111,777,025**	**$1,581,705,454**	**$2.92**	**$40.15**

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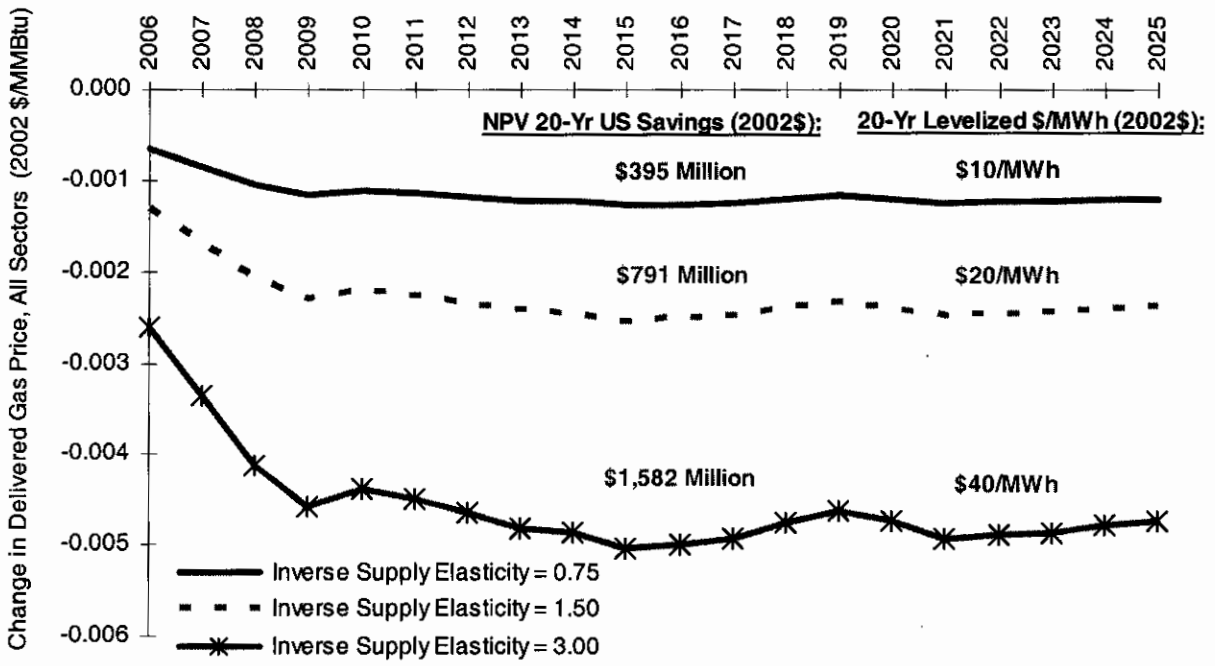

Figure 1. Aggregate Impact on National Delivered Gas Prices

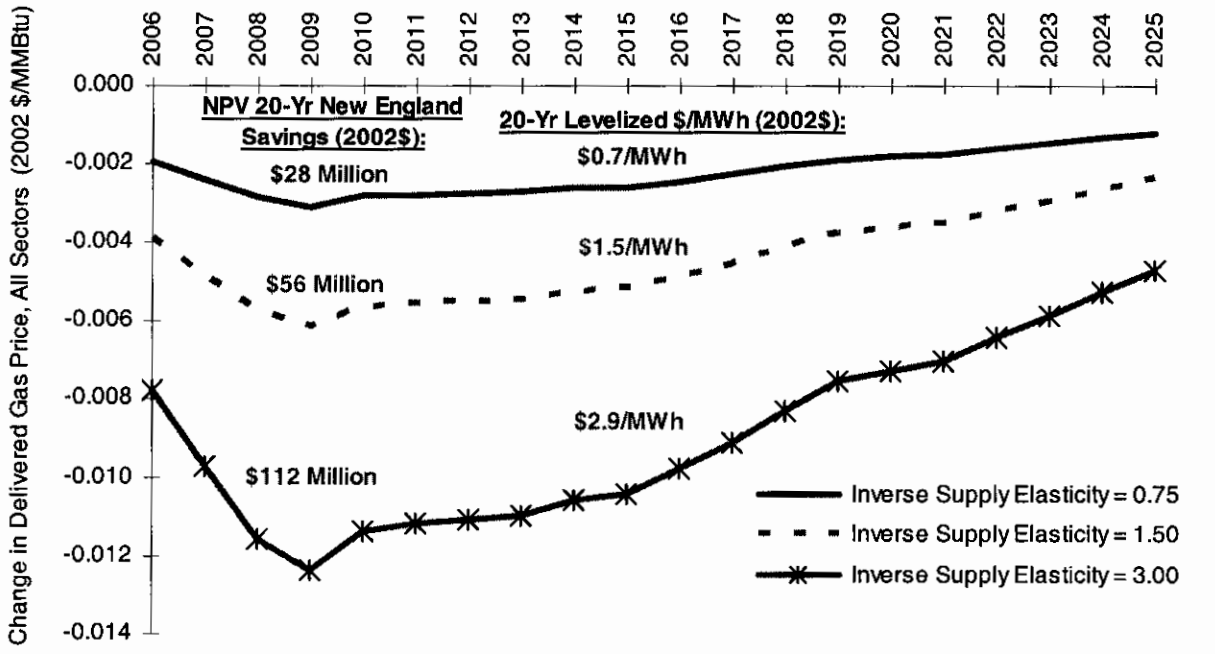

Figure 2. Aggregate Impact on New England Delivered Gas Prices

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EXTRAPOLATING NEAR-TERM REGIONAL IMPACTS FROM ACEEE/EEA

One would expect that regional penetration of renewable energy would have a larger near-term, regional impact on gas prices than predicted over the longer-term, on a national basis. This is due to both regional transportation constraints that exist in many regions, and because the supply of natural gas in the near-term is heavily constrained.

The regional multiplier used in the previous analysis seeks to approximate this effect, in a way consistent with its apparent treatment within NEMS. Because of the perceived limitations of NEMS and many other national energy models in predicting near-term, regional impacts of altered gas demand scenarios, however, in December 2003 ACEEE published a study using the EEA model. The EEA model is a full supply/demand equilibrium model of the North American gas market, most recently used as part of the influential National Petroleum Council assessment of natural gas supply and demand. The EEA model contains a great deal of regional representation, and allows for small changes in natural gas demand to have a disproportionately large impact on gas prices because they reduce prices on the margin, where they are the highest. In some regions, demand for gas can at times exceed the ability of the current transportation infrastructure, creating even greater price pressure that small savings can relieve.

The ACEEE study evaluated the potential impact of renewable energy and energy efficiency deployment on natural gas prices, both nationally and regionally. One of those scenarios involved renewable energy and energy efficiency deployment in the Northeast (New England, NY, and portions of PJM). While we recommend that MTC contact ACEEE and EEA directly to seek a specific analysis of increased RE deployment in New England, results from the 2003 ACEEE modeling run can be extrapolated to roughly estimate the potential impact of increased renewable energy deployment on New England gas prices. Results from this extrapolation are presented here.

Some of the most pertinent ACEEE/EEA results are presented in Table 4.

Table 4. Key Results from the ACEEE Analysis of Increased RE and EE in the Northeast

	2004	2005	2006	2007	2008
Ref: New England hub price (2002$/MMBtu)	4.91	6.02	4.22	4.54	3.82
EERE: New England hub price (2002$/MMBtu)	4.57	5.55	3.83	4.35	3.46
change in hub price (2002$/MMBtu)	-0.34	-0.47	-0.39	-0.19	-0.36
change in hub price (%)	-6.92%	-7.81%	-9.24%	-4.19%	-9.42%
Ref: Consumption all Northeast/PJM States (Bcf)	3,598	3,608	3,757	3,868	4,038
EERE: Consumption all Northeast/PJM States (Bcf)	3,480	3,449	3,525	3,557	3,640
change in consumption (Bcf)	-118	-159	-232	-311	-398
change in consumption (%)	-3.28%	-4.41%	-6.18%	-8.04%	-9.86%

As shown in Table 4, by the year 2008, a reduction in Northeastern gas consumption of 398 Bcf (408,746,000 MMBtu) is expected to lead to a reduction in New England hub prices of $0.36/MMBtu. Though not shown here, the detailed ACEEE/EEA results suggest that New England hub price reductions may not flow one-for-one to retail gas price reductions. Instead, on

average, approximately 80% of the hub price reduction flows to a reduction in the weighted average retail gas price (considering the residential, commercial, industrial, and power sectors).[4]

The New England renewables scenario provided by MTC shows a reduction in gas consumption of 11,859,367 MMBtu in 2009. Extrapolating the 2008 ACEEE ratio from Table 4 (i.e., \$0.36/MMBtu / 408,746,000 MMBtu) to MTC's 2009 projected reduction in gas demand (11,859,367 MMBtu) yields an expected price reduction at the New England hub of \$0.01/MMBtu. With approximately 80% of price changes at the New England hub price flowing through to changes in New England delivered prices, consumers see a price reduction of \$0.008/MMBtu.

Applying this price change to the EIA's total (i.e., among all sectors) projected New England demand for natural gas in 2009 (after netting out the RPS-induced reduction in demand) yields total consumer savings of \$7,673,265 (in 2002 \$). Spreading those savings over the total projected RPS-induced renewable generation in 2009 (3357 GWh) yields savings of \$2.3/MWh of renewable generation.[5] These results – consumer savings of \$7,673,265, or \$2.3/MWh, in 2009 – are slightly larger than results for that same year from the EIA/NEMS analysis, assuming an inverse supply elasticity of 1.5 (i.e., to arrive at similar results using our EIA/NEMS simplified method, one would need to assume an inverse supply elasticity of about 2.0).

CONCLUSIONS

Due to the uncertainty inherent in the shape of the supply curve for natural gas in the short- and long-term, one must be cautious in estimating the impact of increased RE deployment on natural gas prices in the New England region. Nonetheless, the two approaches to estimating this effect applied in this memo come to similar results. Specifically, the consumer gas savings benefits in New England associated with increased RE deployment equal approximately \$1-3/MWh on a 20-year levelized basis, with a most-likely outcome of perhaps ~\$2/MWh. The benefits of deployment of renewable energy in New England also flow to the remainder of the nation, however, in the form of lower wellhead gas prices. On a national basis, 20-year levelized consumer savings of \$10-40/MWh might be expected, with a most-likely outcome of perhaps ~\$20/MWh. National savings are so much larger than New England savings because the wellhead (and delivered) price reductions – though more muted than in New England – are applied to a much larger quantity of natural gas demand. The NPV of consumer gas savings in New England are calculated to be ~\$30 - \$110 million, with perhaps \$50 million as a central value estimate. National consumer gas savings are much higher, with a range of \$400 - \$1600 million, and a central estimate of ~\$800 million.

---

[4] While we can only speculate as to the actual cause of this apparent retail price dampening, one potential reason could be that retail prices tend to be more "sticky" than hub prices, since retailers presumably lock in at least some portion of their supply through short-term (and perhaps even long-term) contracts. Also note that we generally did not observe this dampening effect in NEMS, which could reflect the fact that NEMS is more of a long-term model, and one would expect changes in wholesale prices to completely flow through to retail prices over longer terms.

[5] Because significantly higher inverse supply elasticities are employed in the first few years of the EEA model, our decision to look only at 2008 – the last year of the EEA analysis – is somewhat conservative. On the other hand, we assume that the 2008 EEA relationship also holds for 2009; this extrapolation ignores the idea that initial reductions in gas demand – i.e., those that are on the margin – are likely to have a more sizable impact on gas prices (e.g., due to short-term pipeline constraints).

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80 Popple Bottom Rd
Sandwich, MA 02563
January 8, 2005

Ms Karen Kirk Adams
Cape Wind Energy Project Manager
Army Corps of Engineers, New England District
696 Virginia Rd
Concord, MA 01742-2751

Re: DEIS/
Proposed Wind Farm in Nantucket Sound

Dear Ms Adams:

I attended the public hearing on Dec. 7th in Yarmouth, MA, intending to present comments to the COE, but was not able to do so because I was so far down the list; and I couldn't stay past about 11:30 PM.

I am a retired engineer, having spent the last 25 years of my working life in the electric utility industry. My work included evaluations of alternate sites for large electric generating plants and management of various environmental studies regarding operation of these plants. I've lived on Cape Cod the past 15 years and enjoyed fishing and sailing excursions on Horseshoe shoals. Along with many other people in SE Massachusetts, I also suffer respiratory problems, which, I strongly suspect are, at least, partly due to fossil-burning power plants.

I commend the COE for performing its job in this matter in a reasonably complete and timely manner.

Until a couple of years ago, I was opposed to the large-scale use of wind farms for generating electricity, primarily due to the extremely large land areas required and my perception that they would be an unsightly scar on the landscape. (This is compared to another available, environmentally benign power source, namely, nuclear energy.) However, after studying the Cape Wind proposal and considering where we are with respect to the rest of the world, I have concluded that we should all wholeheartedly support Cape Wind's proposal. I believe that this is really a "no-brainer" decision - when one considers our disastrous dependence on foreign fossil fuels, the wars related to this dependency, adverse health and environmental impacts associated with continued burning of fossil fuels, and delays in development and license applications for next generation nuclear power plants.

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I am convinced that the wind farm will not have significant adverse impacts on fishing or other uses of Nantucket sound and that the perceived adverse visual impact is an acceptable risk. In fact, I strongly suspect that the latter impact will eventually be seen as a benefit by the local tourist industry and will be acceptable to most people who live on the shoreline within view of the windmills and by those who frequent Horseshoe shoals. It seems to me to be a pretty straightforward and highly favorable trade-off:

> The benefits – a beginning in the needed reduction in our dependency of foreign fuels and a reduction in the number of premature deaths, respiratory diseases, and harmful environmental effects of burning fossil fuels.
>
> The cost - acceptance of a perceived adverse visual impact for those of us who use and/or view Horseshoe shoals.

All of the many other concerns discussed in the DEIS and those expressed by the participants at the public hearings need to be addressed, of course; but, in my view, these other concerns pale in comparison to considerations of the relative impacts on our health and our energy security.

One of the most telling statements at the hearing in Yarmouth came from a tourist agent who had studied the visual impact issue very thoroughly, including a trip to offshore wind farm sites in Denmark. She concluded that the wind farm would benefit the local tourist industry and the local economy, contradicting the opinions of the two state politicians, who stated their opposition to the project at the beginning of the evening. I note with interest that, whereas the tourist agent's conclusions as well as the analyses in the DEIS are based on in-depth analyses and factual information, the opinions expressed by the politicians did not appear to be backed up by any such factual data or analyses.

Thank you for considering my views on this most important issue.

Sincerely,

G. James Davis

G. James Davis

OTHER McGRAW-HILL HANDBOOKS OF INTEREST

American Institute of Physics · American Institute of Physics Handbook
American Society of Mechanical Engineers · ASME Handbooks:
Engineering Tables
Metals Engineering—Design
Metals Engineering—Processes
Metals Properties
Beeman · Industrial Power Systems Handbook
Brady · Materials Handbook
Burington · Handbook of Mathematical Tables and Formulas
Burington and May · Handbook of Probability and Statistics with Tables
Cagle · Handbook of Adhesive Bonding
Callender · Time-Saver Standards for Architectural Design Data
Carrier Air Conditioning Company · Handbook of Air Conditioning System Design
Carroll · Industrial Instrument Servicing Handbook
Considine · Encyclopedia of Instrumentation and Control
Considine · Process Instruments and Controls Handbook
Considine and Ross · Handbook of Applied Instrumentation
Crocker and King · Piping Handbook
Davis · Handbook of Applied Hydraulics
DeChiara and Callender · Time-Saver Standards for Building Types
Dudley · Gear Handbook
Emerick · Heating Handbook
Fink and Carroll · Standard Handbook for Electrical Engineers
Flugge · Handbook of Engineering Mechanics
Harris · Handbook of Noise Control
Harris and Crede · Shock and Vibration Handbook
Heyel · The Foreman's Handbook
Hicks · Standard Handbook of Engineering Calculations
Huskey and Korn · Computer Handbook
Juran · Quality Control Handbook
Kallen · Handbook of Instrumentation and Controls
King and Brater · Handbook of Hydraulics
Klerer and Korn · Digital Computer User's Handbook
Koelle · Handbook of Astronautical Engineering
Korn and Korn · Mathematical Handbook for Scientists and Engineers
Lasser · Business Management Handbook
LeGrand · The New American Machinists' Handbook
Machol · System Engineering Handbook
Magill, Holden, and Ackley · Air Pollution Handbook
Manas · National Plumbing Code Handbook
Mantell · Engineering Materials Handbook
Maynard · Industrial Engineering Handbook
Maynard · Top Management Handbook
Morrow · Maintenance Engineering Handbook
Perry and Chilton · Chemical Engineers' Handbook
Perry · Engineering Manual
Rohsenow and Hartnett · Handbook of Heat Transfer
Rothbart · Mechanical Design and Systems Handbook
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Handbook of Fixture Design
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STANDARD HANDBOOK FOR MECHANICAL ENGINEERS

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WINDMILLS

BY

E. N. Fales

REFERENCES: Eiffel, "Etudes sur L'Helice Aerienne," Paris. Tests on Windmills, *Ergebnisse der Aerodynamischen Versuchsanstalt zu Göttingen*, Berlin, 1927, pp. 19, 139. Glauert, Windmills and Fans (in Durand, "Aerodynamic Theory," **4**). Fales, A New Propeller-type High-speed Windmill, *Trans. ASME*, **50**, AER-50-6, 1928. Putnam, "Power from the Wind," Van Nostrand. Golding, "Generation of Electricity by Wind Power," Spon. Fales, Propeller Design as Applied to Windmills, *Jour. IAeS*, **50**, June, 1936, p. 278. Food & Agriculture Organization of the UN, "Windmills for Water Lifting & the Generation of Electricity on the Farm," *Informal Working Bull.* 17, Rome, 1959. Food & Agriculture Organization of the UN, "New Sources of Energy (Solar, Wind & Geothermal)," *Conference Proc.*, Rome, 1961. Fateev, "Wind Power Installations—Present Position & Possible Lines of Development" (in Russian), USSR Acad. of Sciences, Moscow, 1959.

Windmill performance may be investigated theoretically under the Betz momentum theory which concerns the decelerations in the air traversing the windmill disk, and under the Drzwiecki blade-element theory which concerns the air forces produced on an element of the blade. It may be investigated empirically by models in a wind tunnel or on a moving vehicle.

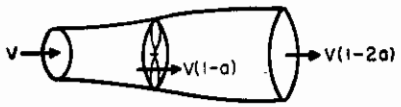

FIG. 1

The column of air arriving at the windmill with a velocity V is slowed down; its boundary is an expanding envelope as shown in Fig. 1. The diminution of velocity at the windmill disk may be expressed by the use of an interference factor a. From energy and momentum considerations, it can be shown that, behind the windmill, the diminution factor increases to an ultimate value of $2a$.

Energy is obtained from the wind by the slowing down of the air. Disregarding rotational and drag losses, the work obtainable from it per unit of time, P, is

$$P = 2\pi R^2 \cdot \rho V^3 \cdot a(1 - a)^2 \tag{1}$$

where R is the disk radius and ρ is the mass density of the air.

The power originally contained in a cylinder of air of radius R is given by

$$P = \tfrac{1}{2}\pi R^2 \cdot \rho V^3 \tag{2}$$

From Eq. (1) it may be seen that the power obtained is a maximum when $a = \frac{1}{3}$, in which case P is 59.2 percent of the power originally in the air. This may never be exceeded.

The **axial thrust**, representing the force tending to overturn a stationary windmill, or the "drag" on an airplane generator, is given by

$$T = 2\pi R^2 \rho V^2 a(1 - a) \tag{3}$$

This is a maximum at $a = \frac{1}{2}$ and grows smaller with smaller values of a. The thrust may be kept low by using a small a and a large diameter, thus taking a smaller percentage of power from the air.

The percentage of power removed from the air is proportional to the **power coefficient**

$$P_c = P/(\rho \cdot R^2 V^3) \tag{4}$$

It is a function of a, or of the geometric arrangement of the windmill, and of the **tip speed ratio** $2\pi nR/V$, where n is revolutions per second. P_c has been determined in wind-tunnel tests for various blade arrangements (Fig. 2). The higher the tip-speed ratio, the higher will be the power coefficient for a perfectly designed windmill.

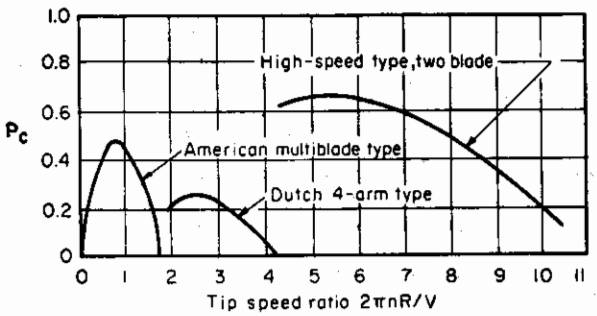

FIG. 2. Power coefficients of windmills.

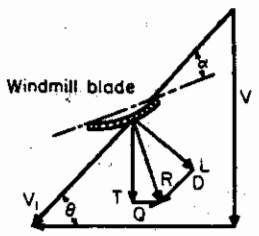

FIG. 3. Forces on windmill blade element.

Blade Elements. The action of the blade of a windmill is similar to that of a blade of an airplane propeller (see p. 11–78). A velocity, torque-force, and resistance-force diagram for a section of a windmill blade is given in Fig. 3. In this figure, V is the absolute wind velocity, V_1 the wind velocity relative to the blade element, α the angle of attack, R the force normal to the blade, L the lift, D the drag, T the thrust, and Q the torque-force. The following relations hold:

$$L = C_L \cdot \tfrac{1}{2}\rho V_1^2 S \qquad D = C_D \cdot \tfrac{1}{2}\rho V_1^2 S$$
$$Q = L \sin\theta - D\cos\theta \qquad T = L\cos\theta + D\sin\theta$$

where S is the elementary blade area, C_L and C_D are the lift and drag coefficients, respectively, and ρ is the mass density.

The conditions for maximum power output demand that at every radius r

$$(Bc)/(2\pi r) \cdot C_L = 4(1 - \cos\theta) \tag{5}$$

where B is the number of blades and c is the chord of the airfoil.

The angle θ is also an implicit function of the radius given by

$$\frac{2\pi nR}{V} \cdot \frac{r}{R} = \frac{\sin\theta(2\cos\theta - 1)}{(1 + 2\cos\theta)(1 - \cos\theta)} \tag{6}$$

Combining Eqs. (5) and (6), a plot as in Fig. 4 may be obtained giving the product $B \cdot c \cdot C_L$ for every tip-speed ratio and radius.

The angle of attack α corresponding to a given value of C_L is immediately obtainable from the known airfoil characteristics of the blade. The pitch of the blade is then fixed at $(\theta - \alpha)$.

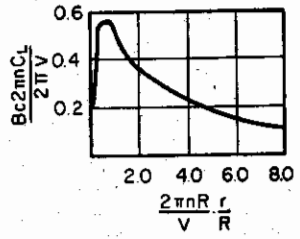

FIG. 4. (*From Glauert.*)

The number of blades B for maximum power decreases as $2\pi nR/V$ increases for usual values of $c \cdot C_L$, as indicated in the test results in Fig. 2. A windmill with one or two blades has maximum efficiency at high tip speeds, a multiblade windmill at low speeds.

The preceding theory ignores frictional drag of the blades, and flow distortion due to blade interference. These result in a loss of power roughly proportional to the tip-speed ratio. At high ratios, errors can be reduced by working backward from empirical tests (Fig. 2).

The **American multiblade type**, as used for pumping water on American farms, utilizes about 30 percent of the kinetic energy of the wind. The **Dutch four-arm type**

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utilizes about 16 percent. The **high-speed propeller type** utilizes about 42 percent. Other types include the **Savonius,** composed of two semicylindrical offset cups rotating about a vertical axis, and the **Flettner,** with four arms each consisting of a rotating cylinder actuated by a Savonius rotor (see *Mech. Eng.*, Nov., 1925, and Mar., 1927). Neither of these is efficient.

The American multiblade type has good starting torque to which quality is due its popularity in reciprocating-pump operation. It rotates at tip speeds about equal to the wind speed. The Dutch four-arm type is usually built in large sizes; it rotates at tip speeds two or three times the wind speed and has a low starting torque. An advantage is that its fabric sails may be reefed to avoid damage in high winds.

The **Stuart propeller-type two-blade mill,** whose performance is shown in Fig. 2, is a high-power mill. At ¾ radius the blade is a moderately thin airfoil, at an angle of about 4 deg and with a chord width of $R/6$. It collects more power from the air than the other two shown and turns at a tip speed six to eight times the wind speed. It is light and cheap and finds widespread use for driving electric generators, direct or geared. Above 10-ft diameter, three or four blades may be used. These are less powerful but avoid gyroscopic vibration when the mill veers with changing wind. Whether of one, two, three, or four blades, it has much less starting torque than the multiblade slow-speed type and requires an unloading clutch when applied to a reciprocating-pump drive. Very large windmills are vulnerable when stopped during a tempest because the wind creates, at the blade roots, bending moments which increase with the cube of the diameter. A single-blade propeller when stopped overcomes this difficulty by floating downwind like a weathervane.

The power coefficients P_c of Fig. 2 may be used for performance prediction of the three types of windmills.

$$\text{Horsepower} = P_{c\rho}\frac{(2R)^2V^3}{2{,}200}$$

The mass density ρ has the following standard values, in fps units: at sea level and 59 F, 0.002378; at 2,000 ft, 0.00224; at 4,000 ft, 0.00211.

For two-blade propeller windmills of diameter D ft, geared to electric generators of 70 percent efficiency, the maximum kilowatt output in winds of velocity V fps is expressed approximately by the formula

$$\text{kw} = 0.376 \times 10^{-6}D^2V^3$$

and the corresponding rpm is $105V/D$.

Since 1935, **propeller-windmill electric-generating** units of small capacity have been available, first in the form of 6-volt "wind chargers" for charging radio batteries, and later as 32-volt and 110-volt "farm-lighting" plants operating in conjunction with a suitable storage battery and sometimes with an auxiliary gasoline-engine-driven generator. A simple automatic reverse-current relay disconnects the battery from the generator when there is not enough wind to produce the minimum charging current. To cope with excessive winds, the propeller is in some cases mounted off center from the tower axis, so as to swing out of the wind. In other cases, the propeller is provided with automatic blade-pitch change, or with paddles that rotate edgewise to the air normally but open out to act as countertorque paddles above the critical rpm. The typical 6 volt unit has a capacity of 120 to 200 watts, and is driven direct by a two-blade propeller, 6 to 7½ ft diameter, mounted on the armature shaft. The 32-volt unit with direct drive has a 6- to 8-ft two-blade propeller and a 600-watt generator. Still larger units are geared and have three or four blades, 10- to 14-ft diameter, and output up to 2,500 watts.

Hundreds of thousands of these small-capacity windmills were successfully used in the United States prior to the spread of rural electrification in the 1950s, but they have now disappeared from the U.S. market. They were simple to operate by anyone familiar with the lighting circuit of an automobile.

Outside the United States, large plants, up to 200-kw output and 112-ft diam, continue to be of interest. Serious experiments have been made showing that self-regulating wind-electric plants can be built to feed a-c into a public power network. The design problems are much more difficult than for the small plants. For example, vibration while running and destruction by tempest while not running must be prevented, and constant a-c frequency must be maintained in varying wind. The great problem in a large windmill project is to appraise the wind energy available at the selected site. Continuous wind records should be taken at the site for at least 1 year, and preferably for 3 years. While nearby Weather Bureau Station records may indicate expected daily and monthly rates of change of average wind, they are not a substitute for on-the-spot measurements. The latter should be insisted upon at the start, even though they are time-consuming and expensive.

Thorough experimentation has been made in England under the Electrical Research Assoc. A representative plant on the Isle of Man is rated at 100 kw in a 45-mph wind, using a 50-ft three-blade rotor. In non-rotating condition, it has withstood 80-mph winds. In a period of 1,000 hr running time, it has fed 25,000 kwh in a public power network. Estimates in 1959 set the production cost as £50 to £100 per kw. A representative plant in Denmark has a 43-ft three-blade rotor with output 50 kw at 32 mph feeding a-c to a public power network (S. E. Zealand Elec. Supply Co.). In 5 months of winter 1952–1953, it produced 26,092 kwh. In Germany since the war, the Studiengesellschaft Windkraft e.V. at Stuttgart has been developing a 100-kw plant having a 112-ft diam three-blade rotor at the top of a 72-ft mast. In France, Électricité de France has experimented with plants of 130 kw and larger. Neyrpic in Grenoble has built a 42-ft three-blade plant using controllable pitch and a small pair of pilot windmills to hold the rotor into the wind. In Russia, two 25-kw plants of 59-ft diam are under experimentation by the G. M. Krzhizhanooski Power Inst. of the USSR Academy of Sciences, Moscow; the plants are designed not for feeding into networks but for remote locations. One hundred and fifty 10-kw plants with 39-ft rotors were formerly built; many were damaged by tempests, but 50 were still running in 1960. In Vermont, the Smith-Putnam plant, rated at 1,250 kw and with a 175-ft two-blade rotor, cost $1¼ million. In 22½ days of March, 1945, it fed a-c electricity into the local power network at the rate 805 kwh per kw per year.

Power in the Wind. Since only 59.2 percent of the kinetic energy of the wind is theoretically recoverable, it appears that, with a windmill of 70 percent aerodynamic efficiency and 90 percent gearing efficiency, 37 percent of the wind kinetic energy is the top limit to be expected in any practical application. Weather Bureau records of seven years (1918 to 1924) at Dayton, Ohio, were analyzed to characterize wind variation over a flat agricultural region. (Anemometer was located on tower above office building at center of the city.) The results showed the following general characteristics, which are typical of ordinary winds:

In each month, there is a well-defined group of wind velocities which predominate, and may be called the **prevalent** or frequent **winds.** There is also a well-defined group of winds which contain the bulk of the energy of each month called **energy winds.**

The energy winds produce about three-fourths of the total energy of a given month. Even in a calm summer month, 70 percent of the energy comes from winds which blow only 42 percent of the time.

Energy winds blow 2 out of 7 days; prevalent winds 5 out of 7 days.

The mean prevalent wind velocity is 2 mph less than the average monthly velocity.

The energy winds blow at velocities of about 2.3 times those of the prevalent winds.

The wind of highest energy has about 10 mph higher velocity than the most frequent wind.

For each month the energy of all the varying winds adds up to double the amount that would be computed from the average hourly velocity of that month.

Comparing the windiest month with the calmest month of the year, the average velocity in the former is 1¾ times as great as in the latter and the kwh energy 4½ times greater. Any regulating device which aims to hold the power output of a windmill constant throughout the year must be able to spill three times as much energy as is normally used.

Figure 5 shows the wind-velocity distribution, averaged for the 7 years, on which the above relationships are based.

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In estimating the power content of winds, gustiness must be allowed for. At Dayton, Ohio, the true velocity varied ±28 percent in 10 sec and ±45 percent in 38 sec from the average velocity.

In the greater part of the United States, 8 mph yearly average is the minimum wind velocity practical for propeller-type wheels. For very light multiblade wheels, which swing out of the wind above 15 mph, an operating range of 6 to 15 mph affords a

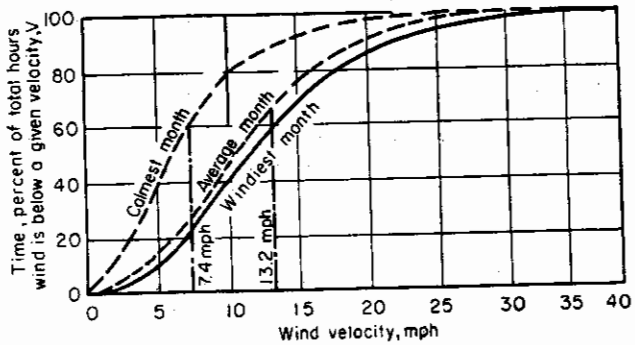

FIG. 5. Average hourly wind-velocity distribution at Dayton. (The average wind velocity for a whole month varies from 7.4 mph in the calmest month to 13.2 mph in the windiest month.)

monthly power output 14 percent greater than if the range were 8 to 15 mph. The high-wind regions of the United States, having 10 mph or more average yearly wind velocity, are a north-and-south strip 350 miles wide midway between the Atlantic and Pacific Oceans, the littoral of the Great Lakes, the Atlantic Seaboard, the Gulf Coast, and the Pacific Ocean near San Francisco and at the state of Washington. See Tables 1 and 2.

Table 1. Wind Velocities in the United States

Station	Avg velocity, mph	Prevailing direction	Fastest mile	Station	Avg velocity, mph	Prevailing direction	Fastest mile
Albany, N.Y.	9.0	S	71	Louisville, Ky.	8.7	S	68
Albuquerque, N.M.	8.8	SE	90	Memphis, Tenn.	9.9	S	57
Atlanta, Ga.	9.8	NW	70	Miami, Fla.	12.6	.....	132
Boise, Idaho	9.6	SE	61	Minneapolis, Minn.	11.2	SE	92
Boston, Mass.	11.8	SW	87	Mt. Washington, N.H.	36.9	W	150
Bismarck, N.Dak.	10.8	NW	72	New Orleans, La.	7.7	.....	98
Buffalo, N.Y.	14.6	SW	91	New York, N.Y.	14.6	NW	113
Burlington, Vt.	10.1	S	72	Oklahoma City, Okla.	14.6	SSE	87
Chattanooga, Tenn.	6.7	....	82	Omaha, Neb.	9.5	SSE	109
Cheyenne, Wyo.	11.5	W	75	Pensacola, Fla.	10.1	NE	114
Chicago, Ill.	10.7	SSW	87	Philadelphia, Pa.	10.1	NW	88
Cincinnati, Ohio	7.5	SW	49	Pittsburgh, Pa.	10.4	WSW	73
Cleveland, Ohio	12.7	S	78	Portland, Maine	8.4	N	76
Denver, Colo.	7.5	S	65	Portland, Ore.	6.8	NW	57
Des Moines, Iowa	10.1	NW	76	Rochester, N.Y.	9.1	SW	73
Detroit, Mich.	10.6	NW	95	St. Louis, Mo.	11.0	S	91
Duluth, Minn.	12.4	NW	75	Salt Lake City, Utah	8.8	SE	71
El Paso, Tex.	9.3	N	70	San Diego, Calif.	6.4	WNW	53
Galveston, Tex.	10.8	....	91	San Francisco, Calif.	10.5	WNW	62
Helena, Mont.	7.9	W	73	Savannah, Ga.	9.0	NNE	90
Kansas City, Mo.	10.0	SSW	72	Spokane, Wash.	6.7	SSW	56
Knoxville, Tenn.	6.7	NE	71	Washington, D.C.	7.1	NW	62

U.S. Weather Bureau records of the average wind velocity, and fastest mile, at selected stations. The period of record ranges from 6 to 84 years, ending 1954. No correction for height of station above ground.

Table 2. Beaufort Scale of Wind Force

(Compiled by U.S. Weather Bureau, 1955)

Beaufort number	Miles per hour	Knots	Wind effects observed on land	Terms used in USWB forecasts
0	Less than 1	Less than 1	Calm; smoke rises vertically	
1	1–3	1–3	Direction of wind shown by smoke drift; but not by wind vanes	Light
2	4–7	4–6	Wind felt on face; leaves rustle; ordinary vane moved by wind	
3	8–12	7–10	Leaves and small twigs in constant motion; wind extends light flag	Gentle
4	13–18	11–16	Raises dust, loose paper; small branches are moved	Moderate
5	19–24	17–21	Small trees in leaf begin to sway; crested wavelets form on inland waters	Fresh
6	25–31	22–27	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty	Strong
7	32–38	28–33	Whole trees in motion; inconvenience felt walking against wind	
8	39–46	34–40	Breaks twigs off trees; generally impedes progress	Gale
9	47–54	41–47	Slight structural damage occurs; (chimney pots, slates removed)	
10	55–63	48–55	Seldom experienced inland; trees uprooted; considerable structural damage occurs	Whole gale
11	64–72	56–63	Very rarely experienced; accompanied by widespread damage	
12 or more	73 or more	64 or more	Very rarely experienced; accompanied by widespread damage	Hurricane

Over an unobstructed plain, the wind velocity V at height H may be estimated from velocity V_0, measured at height H_0, from the relationship

$$V/V_0 = (H/H_0)^n$$

where $n = 1/2$ for wind under 5 mph, $n = 1/5$ from 5 to 35 mph, and $n = 1/7$ above 35 mph. Over irregular terrain having obstructions, only those velocities recorded at the site are valid for energy prediction.

2695

2606

Subject: Objection re wind farm
Date: Sunday, January 9, 2005 3:12 PM
From: John Q Birmingham <betteandjohn@comcast.net>
To: wind farm <windstop.org>

I AM A RESIDENT OF OSTERVILLE AND A RETIRED NANTUCKET SOUND BOATER OF MANY YEARS.

I AM ALSO A SUPPORTER OF CLEAN RENEWABLE ENERGY SOURCES. HOWEVER I STRONGLY OBJECT TO

THE CONCEPT OF USING THE PRISTINE WATERS OF NANTUCKET SOUND AS THE LOCATION FOR A

SOURCE OF THIS POWER. THE USE OF A LOCATION WHICH WOULD NOT DESTROY A BEAUTIFUL

UNTOUCHED NATURAL SETTING.AN ALTERNATIVE SITE FOR THESE WIND MILLS COULD BE THE

BARNSTABLE LAND FILL FOR EXAMPLE OR ANY NUMBER OF SUCH PLACES WHERE THE WIND BLOWS

FREELY ON OR OFF CAPE COD.

IT IS WITH MUCH HOPE THAT YOU WILL TAKE INTO CONSIDERATION THESE THOUGHTS WHEN YOU

ARE DELIBERATING THIS MATTER. THANK YOU.

ELIZABETH H. BIRMINGHAM

21 BAY STREET

BOX 303

OSTERVILLE, MA. 02655

Elizabeth H. Birmingham

2607

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: Mr & Mrs. Richard Leckerling

Address: 91 Peoda Rd
Edgartown, Mass

Phone Number (Please include area code): 508 627 6020

Email Address: rel @ woh.com

Please state your questions/comments in the space below:

The wind project can't possibly make any less sense. For the very marginal energy generation benefit, the project truly threatens an extraordinary national treasure. Our waterfront, sounds, and beaches cannot endulge the industrial intrusion proposed. In a remote location yes, but here no!

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2608

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: JEAN P. RUDNICK

Address: 20 PARK ST
BROOKLINE MA 02446-6253

Phone Number (Please include area code): 617 566-5063

Email Address:

Please state your questions/comments in the space below:

I think you need more time for your public comments. Where's your hurry? This is an enormous unprecedented project and if you are going to desecrate one of our most precious natural resources, you naturally should give it long & serious consideration, and there ought to be legislation to govern this and any future proposals.
Solar panels don't work without sun & wind turbines will not work without wind — you have no proof of success but you will have destroyed a glorious natural area of Nantucket Sound.

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2609

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: JOHN RIVERA

Address: 3 1/2 FRANKLIN STREET
NANTUCKET, MA 02554

Phone Number (Please include area code): (508) 325-5211

Email Address:

Please state your questions/comments in the space below:

I believe in alternative fuel power but why should these wind turbines be placed in precious and pristine Nantucket Sound? There is no public outcry for this. This is a private corporation getting something for nothing at the expense of Nantucket Sound. The benefits do not outweigh the potential damages.

John Rivera
1/7/05

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

Army Corps ignores sense of place

So the Army Corps hath, at length, spoken.

OK, not to worry, we've looked into this wind farm thing and guess what? Nothing to worry your little heads about.

Whom exactly do they imagine they are talking to in this document?

Back in the days when there used to be a position on the political spectrum to the left of right-center, before "liberal" became a curse word, there was the slogan "all power to the people." You know – as in democracy, majority rules, that sort of thing. The way the Corps of Engineers has weighed in, it's all power to this document. It's looking as though this hefty brick of paper in one pan of the balance is going to outweigh the whole rest of the region and all of us living in it.

BRENT HAROLD

We get to talk among ourselves for the next few weeks, but there is no mechanism for that talk to translate into a real say. Did anyone seriously think the Army Corps' report would come out any other way?

Choosing to limit themselves to the easily quantifiable, the authors of the report came to the only conclusion they could have. Yes, when the wind blows, the 24-square-mile industrial park of 130, 450-foot-high turbines will produce a considerable amount of electricity. Yes, the world would be a better place if nukes and oil could be replaced by a more benign alternative source of energy. The turbines will kill, they figure, only 364 birds a year (not 360, 365 – 364. Gotta feel reassured by the precision.) The plovers will continue to pipe.

But as a Times editorial pointed out, those issues were never central to the opposition to Cape Wind. The essential concern is aesthetic, which sounds lightweight until re-phrased as quality of life. The Corps report considers the impact on birds and fish; it seems insufficiently interested in impact on the portion of our own species that lives here.

Call it a farm if it makes you feel better, but the proposed generating plant is still going to be a huge industrial installation plunked right in the middle of the open sea shared by the Cape and islands.

The character of a place is not easily quantifiable. It is highly subjective. In the case of Horseshoe Shoal, it's partly what can be seen from that shore. But the knowledge we all share of what's out there. There will be a fundamental change in the nature of our place if Nantucket Sound goes from Category A – open, undeveloped sea – to Category B – developed, exploited.

Yeah, it's just a matter of feelings. What we lose is the way we feel about our place. And what we will get by way of compensation for our losses is still, after all the talk, approximately nothing. Neither the company nor the Corps commits to a schedule by which Pilgrim and Mirant will be eliminated. Neither claims there will be any appreciable reduction in energy costs to us – 30 cents a month is still the only figure I've heard.

You'd think that a 9-inch thick, 50-pound pronouncement on the fate of a region would be comprehensive, the last word on the subject. But, in fact, the Corps document leaves out almost everything important:

- How the proposed development will change the very essence of the region in question;
- The lack of any national ocean policy of which a local wind generating plant might play a role;
- The failure of the Horns Rev Danish wind farm, which was being pushed a short time ago as a big reason we should be happy about getting one of our very own;
- The track record of wind power elsewhere in the world, which casts doubt on whether this technology, even if it is allowed to visually pollute beloved open space everywhere, has a chance to make a significant dent in the energy problem.

Yes, this is a NIMBY issue: the NIMBYs are those living elsewhere who can't understand all the fuss about a few windmills on the horizon. From a distance it's easy enough to pay lip service to a fuzzy green ideal without really thinking about the realities of this technology, including the permanent price to be paid by this region.

Unless a way can be found to alter the current undemocratic, corporation-weighted process, we are heade for a sad conclusion to this controve sial issue.

Brent Harold of Wellfleet, a former E lish professor, is a writer, designer and carpenter. His column runs every oth Wednesday. Reach him at

2610

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: + MRS

Address:

Mr. Judson Phelps
53 Gingerbread Lane
Yarmouth Port, MA 02675-1110

Phone Number (Please include area code): 508-362-5921

Email Address:

Please state your questions/comments in the space below:

My wife & I are adamantly against the wind farm in Nantucket Sound - though we support wind farm development per se:

1) inadequate regulatory process laws that would set precedent (dangerous)
2) serious detriment to Nantucket's natural beauty & preservation - it would be akin to a wind farm in Yellowstone!
3) private profit at public's expense without public compensation
4) an untested implementation that should be explored/experimented in less risky locale. public & nature risk with unknown consequences.
5) Danish wind turbines currently experiencing significant & costly problems. (we have seen Danish wind turbines personally)

Judson Phelps
Barbara Phelps

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2611

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: Mr + Mrs. William K. Tell, jr

Address: 633 Steamboat Rd #5
Greenwich CT 06830

Phone Number (Please include area code): 203-629-9283

Email Address: _____

Please state your questions/comments in the space below:

We are strongly opposed to the construction of windmills on Nantucket Sound.

= Windmills are a hazard to all forms of navigation - recreational and commercial.

= Nantucket Sound belongs to all the people and is a great national treasure.

It must not be allowed to become an industrialized area.

The relatively small amount of energy produced cannot be worth so great a price to our shoreline.

This is boutique energy - enriching a few "businessmen" and stealing from us all.

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2612

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: ROBERT J DAVIS

Address: 10 MILL POND CT
COS COB CT. 06807

Phone Number (Please include area code): 203-661-1322

Email Address: ABDAVIS@OPTONLINE.NET.

Please state your questions/comments in the space below:

I have been coming to Cape Cod for 40 years, and bought a home in CHATHAM 10 years ago with plans to retire there.

I am a fisherman and boater, and am 100% OPPOSED to the proposed wind project. I do not want everything I have enjoyed in the past and look forward to in the future get project. The return is not worth the risk

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2613

Adams, Karen K NAE

From: David Baum [baumdavid@mac.com]
Sent: Thursday, January 13, 2005 10:44 AM
To: Energy, Wind NAE
Subject: Offshore Wind Project in Nantucket Sound

To Whom it May Concern:

I am a part-year resident of Martha's Vineyard and having followed the various discussions around the Cape Wind project, I am deeply opposed to it going forward. Nantucket Sound is one of the country's special places not just for the human population, but for the many various ocean species and plant life that comprise our eco-system. I find it hard to believe that the impact of wind turbines and transmission lines would not disrupt the natural patterns that currently exist in a very material way. In addition, while I applaud efforts to develop alternative forms of energy, I am hard pressed to believe that the Cape Wind project will have a material positive impact on energy costs for those on the Cape and Islands. I would much rather see time, efforts and money deployed to developing hybrid vehicles or fuel cells than wind turbines, particularly in one of America's most ecologically sensitive areas.

Thanks for your consideration.

David Baum
19 Atlantic Drive
Edgartown, MA 02539

Mailing Address:

60 Woodcrest Avenue
Short Hills, NJ 07078

973-564-5060

2614

Adams, Karen K NAE

From: Howard Rosenberg [hjrnovo@en.com]
Sent: Thursday, January 13, 2005 10:26 AM
To: Energy, Wind NAE
Subject: Testimony for Cape Wind Project

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road, Concord, MA 01742

Dear Karen:

As a member of the Rhode Island Commission on Mercury Reduction, I firmly support the approval the Cape Wind Project. It is in the best interest of the health of people and the environment. If approved, the wind energy project will be offset large releases of toxic Mercury, that would otherwise come from burning coal to generate electricity.

Thank you for your consideration,
Howard Rosenberg
Novomont Ventures

Howard Rosenberg
phone: 401-339-3382
email: hjrnovo@en.com

Dear Army Corps of Engineers:

~~2612~~

A 60-day review period is unreasonable to adequately review the massive 4,000-page Cape Wind Draft Environmental Impact Statement document. I respectfully request that you extend the review period to 180 days in order for the public to be as best informed as possible and provide you with thoughtful and unhurried input on this precedent-setting project.

2615

Sincerely, _____ Date 1/11/05

Print Name PETER FIELD

Address 857 MAIN ST, POBOX 16

City COTUIT State MA. Zip 02635

~~2619~~ 2616

Adams, Karen K NAE

From: Elizabeth Braun [ebraun@whrc.org]
Sent: Thursday, January 13, 2005 4:00 PM
To: Energy, Wind NAE
Subject: FW: Written Statement on the DEIS

written_DEIS_submission.doc

-----Original Message-----
From: Elizabeth Braun [mailto:ebraun@whrc.org]
Sent: Thursday, January 13, 2005 3:58 PM
To: windenergy@usace.army.mil; mepa@state.ma.us
Subject: Written Statement on the DEIS

On behalf of Director George M. Woodwell, attached please find our written statement for the Cape Wind Energy Project DEIS. These comments are in addition to the verbal and written statement made by our Deputy Director, Kilaparti Ramakrishna, at the December 7, 2004 public hearing in West Yarmouth.

If you have any questions or concerns, please let me know. We are sending these comments via mail as well.

Thank you -

Elizabeth Braun
Associate Director of Communications
The Woods Hole Research Center
508.548.9375, x. 109.

2617

2616

"If we have a world that is not working … as we do with climatic disruption, we look for solutions … we look to the sum of local actions in restoring the integrity of nature to make a world that works."

-- George Woodwell
Founder and Director
The Woods Hole Research Center

The Woods Hole Research Center is dedicated to science, education and public policy for a habitable Earth. We seek to conserve and sustain forests, soils, water, and energy by demonstrating their value to human health and economic prosperity. We sponsor initiatives in the Amazon, Africa, Russia, Boreal North America, the Mid-Atlantic, New England and Cape Cod. Our programs focus on the global carbon cycle, forest function, landcover/land use, science in public affairs, and education, providing primary data on the changes in land use around the world and enabling better appraisals of the trends in forests that influence their role in the global carbon budget. We work locally and regionally, assisting communities with resource management, and internationally, promoting policies that stabilize climate and protect the integrity of the global environment.

Founded in 1985 by George Woodwell, the Woods Hole Research Center has approximately 40 staff members, consisting of scientists, international law and policy experts, researchers, and administrative staff. Funding is provided through government grants; corporate and foundation support; and individual donors.

We withheld judgment on the wind farm proposal until the release of the Draft Environmental Impact Statement, but now, having thoroughly reviewed the statement, the staff and trustees of The Woods Hole Research Center are strongly in favor of the proposed wind farm on Horseshoe Shoal in Nantucket Sound. While we do not generally take public positions on matter such as this, what the wind farm would signify and accomplish is so consistent with our mission, we could not BUT take an institutional position in favor of it.

Our support of the proposal is based on two important factors. First, the world is facing a crisis of global climatic disruption that requires a substantial abandonment of fossil fuels for its solution. Second, this project is an excellent example of what can be done now in making the transition from non-renewable to renewable energy production without significant further environmental costs. It will stand as a model of progress by the United States in meeting its obligations to a world well aware of the US contributions to the global climatic disruption.

Wind-generated power has a proud history on Cape Cod. Centuries ago, residents relied on coastal winds to power the economy: gristmills and salt mills were welcome sights along the coast, tangible indicators of the region's farming and fishing. Today, in light of the most urgent problems of global warming, including the destruction of forests and the

2617 2616

disruption of ecosystems, we are again looking to tap the winds. The 130 wind turbines in the Cape Wind proposal have the potential to provide 75 percent of the Cape's annual electricity needs, power that will support the 21st century economies of Cape Cod: tourism, recreation, retail and commercial business, education and scientific research. This innovation creates a practice of renewable energy, a standard that the Woods Hole Research Center supports, especially for the potential role it can play in reversing global warming.

We talk about thinking globally and acting locally. With wind energy, we can do just that: mitigate global warming and reduce air pollution. Thousands of wind turbines spread across the United States would reduce our dependence on fossil fuels, and we would no longer need to contend with the effluents of mercury and oxides of sulphur and nitrogen generated by old-fashioned power plants, one of which is right in the Cape's backyard. Wind farms will be a new generation of electric power-generating facilities.

Innovative thinking can become progressive practice. The Gilman Ordway Campus of the Woods Hole Research Center is an example. Finished in early 2003, the 19,300 square foot facility is a model for 21st century construction in its use of energy, water, and environmentally friendly building materials. The building's design ensures that no harm is caused to the immediate environment and the larger world. As an institution, we have far exceed the goals of the United Nations Framework Convention on Climate Change and its Kyoto Protocol, all in a building that is comfortable and modern. Our model is already influencing others to emulate our successes and adopt our principles, as well as our methods and economies.

Climatic disruption has been well-covered by recent popular news media, including reports discussing the changes underway in the higher latitudes of the Northern Hemisphere. This region, including the glaciers of Greenland, the boreal forest, and the tundra, is experiencing the largest changes in climate, warming at a pace two to three times faster than the average warming of the earth. Should the glaciers continue to melt at the present rates, the global sea level will be raised by 20 feet, a change that would clearly impact Cape Cod. Should the warming in these latitudes continue, an increased occurrence of forest fires, coupled with a parallel increase in the decay of organic matter in soils releasing more and more carbon as carbon dioxide into the atmosphere, would perpetuate the cycle. While these predictions may seem extreme, they are fact.

These observations offer one small glimpse into the complexities and hazards associated with the global environmental crisis into which we are descending. Civilization has never faced such a challenge, and indeed, there is real question as to whether this civilization can survive it. Certainly, the next decades will be impacted by previous actions and behaviors. Correction of this trend is, clearly, a most urgent matter.

The Draft Environmental Impact Statement is a thoughtful document that reveals no overwhelming environmental problems with the wind farm. On the contrary, it shows that the site is virtually ideal. Its shallow water is protected from high seas, and it is subject to an attractive wind regime. It is close to the region where the power will be used. There

are simply no substantial environmental arguments of against proceeding. The position against the proposal for aesthetic reasons is short-sighted.

2616

The Woods Hole Research Center most enthusiastically supports the facts as set forward in the DEIS and encourages the continued development of this project. In doing so, we can take a significant step locally to dispel the threat of accumulating greenhouse gases that contribute to altering the earth's climate by welcoming this clean, innovative future.

Adams, Karen K NAE

267

From: Michael Barcellos [mbarcell@bbn.com]
Sent: Thursday, January 13, 2005 5:19 PM
To: Energy, Wind NAE
Cc: 'seth j.itzkan'
Subject: Nantucket Sound Wind Farm Project

To Whom it may concern:

The thought of 130 towers dotted with lights protruding hundreds of feet up out of a pristine area killing hundreds of birds annually, permanently spoiling a vista that many of us have enjoyed since we were children, sounds appalling. Maybe we have just overrun an area that cannot support more people? I can't help but consider it a tragedy and will be sure to get down there to take some pictures to remind me of my beloved Cape before the true quaintness and spectacular views and experiences are all but done.

Michael Barcellos

261B

Adams, Karen K NAE

From: Jim Curland [curland@earthlink.net]

Sent: Thursday, January 13, 2005 5:53 PM

To: Energy, Wind NAE

Subject: 130 wind turbines in the waters of Nantucket Sound

Colonel Thomas Koning
U.S. Army Corps of Engineers,
696 Virginia Rd.,
Concord, MA 01742-2751

Dear Colonel Koning,

The Army Corps of Engineers should deny Cape Wind's application to construct 130 turbines in Nantucket Sound. There is no federal authorization to use our public trust resources for this purpose. Nor does the developer have any property rights to exploit these public lands. Without federal authorization, any means for protecting coastal resources, or any process for compensating the public, this project cannot be in the public interest. That question must be answered by our representatives after national debate, not by one office of a federal agency improperly arrogating the authority of Congress.
In addition, the draft environmental impact statement that has been prepared is inadequate. More studies are needed before the Army Corps can assess the potential impacts of the Cape Wind project. Indeed, those studies are the very studies that Congress would require to shape a national policy on offshore wind energy. Without this critical information, there is simply no way to determine whether the Cape Wind project is in the best interests of both the public and wildlife.

Finally, the Bush Administration needs to develop responsible clean energy and ocean conservation programs. The continued failure to do so is sacrificing our environment to private developers.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is seriously flawed, because it ignores relevant information and draws conclusions based on inadequate research.

Sincerely,

Jim Curland
P.O. Box 806
Moss Landing, CA. 95039

Adams, Karen K NAE 2619

From: DREAMS@DC4PC.NET
Sent: Thursday, January 13, 2005 8:25 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
- A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

marci ausdall
4532 fertile valley rd
newport, Washington 99156

2620

Adams, Karen K NAE

From: drcrnp@aol.com
Sent: Thursday, January 13, 2005 8:47 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
- A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

deborah robbins
519 fairview rd
narberth, Pennsylvania 19072

Adams, Karen K NAE

2621

From: oefr@aol.com
Sent: Thursday, January 13, 2005 8:47 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
- A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

D. Mulei
42 Wolf Road
Lebanon, New Hampshire 03766

2627

Adams, Karen K NAE

From: sadiehazelwilma@socal.rr.com
Sent: Thursday, January 13, 2005 8:50 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

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Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

Kathy Boland
17361 Parthenia Street
Northridge, California 91325

2623

Adams, Karen K NAE

From: mstickford@nyc.rr.com
Sent: Thursday, January 13, 2005 8:54 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

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Sincerely,

Micki Stickford
172 spring st.
nyc, New York 10012

Adams, Karen K NAE

2624

From: JDD70@optonline.net
Sent: Thursday, January 13, 2005 8:56 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Jean Donovan
21 Teal Lane
Bedminster, New Jersey 07921

Adams, Karen K NAE

2625

From: sonne08@hotmail.com
Sent: Thursday, January 13, 2005 9:04 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Diane Sonneville
2622 11th Ave. B
Moline, Illinois 61265

2626

Adams, Karen K NAE

From: coriebe@msn.com
Sent: Thursday, January 13, 2005 9:11 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

C.E. Benton
1549 North Heights Dr. NW
Albany, Oregon 97321

Adams, Karen K NAE

2627

From: rbodeman@aol.com
Sent: Thursday, January 13, 2005 9:26 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Ruth A. Bodeman
1741 Wedgewood Common
Concord, Massachusetts 01742

2628

Adams, Karen K NAE

From: calibud@aol.com
Sent: Thursday, January 13, 2005 9:48 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Carolyn Skilton
30 Park Ave
S. Weymouth, Massachusetts 02190

2629

Adams, Karen K NAE

From: sherrykritzer@earthlink.net
Sent: Thursday, January 13, 2005 9:53 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Sherry Kritzer
PO Box 938
Moss Beach, California 94038

2630

Adams, Karen K NAE

From: sant508@aol.com
Sent: Thursday, January 13, 2005 10:07 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Lori Santos
1336 Old Bay Rd.
McHenry, Illinois 60051-9651

Adams, Karen K NAE 2631

From: blackwolfshadovv@aol.com
Sent: Thursday, January 13, 2005 10:07 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

connie bennington
4109 cedar ridge rd
dayton, Ohio 45414

2632

Adams, Karen K NAE

From: luvdmb@adelphia.net
Sent: Thursday, January 13, 2005 10:19 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Lisa Hoover
66 Agronomy Farm Road
Morgantown, West Virginia 26508

2633

Adams, Karen K NAE

From: W194657@wmconnect.com
Sent: Thursday, January 13, 2005 10:32 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Alfred Williams
RR#1,Browns Creek Road,
P.O.Box 51,
Tornado,, West Virginia 25202-0051

2634

Adams, Karen K NAE

From: deangi@ozemail.com.au
Sent: Thursday, January 13, 2005 11:14 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Angela Kelly
23 Ebelina Cres
Parkes
NSW, 2870
Australia

2635

Adams, Karen K NAE

From: whiteglove1@earthlink.net
Sent: Thursday, January 13, 2005 11:21 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Stacey Silver
18535 Cantara Street
Reseda, California 91335

2636

Adams, Karen K NAE

From: ekbooth@yahoo.com
Sent: Thursday, January 13, 2005 11:56 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Erik Booth
E5064 Anderson Rd
Ironwood, Michigan 49938

2637

Adams, Karen K NAE

From: lesxdon@yahoo.com
Sent: Friday, January 14, 2005 12:02 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Leslie Seki
2680 Butler Ave
Los Angeles, California 90064

2638

Adams, Karen K NAE

From: lindafulmer@yahoo.com
Sent: Friday, January 14, 2005 12:04 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Linda Fulmer
2680 Butler Ave
Los Angeles, California 90064

2639

Adams, Karen K NAE

From: mariejr9@hotmail.com
Sent: Friday, January 14, 2005 12:22 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Marie Raich
200 e 27th Street
#2J
New York, New York 10016

2640

Adams, Karen K NAE

From: justiceforever4all@hotmail.com
Sent: Friday, January 14, 2005 12:28 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Llauren Chavez
821 N. Ave 63
Los Angeles, California 90042

2641

Adams, Karen K NAE

From: nasselin3@comcast.net
Sent: Friday, January 14, 2005 12:52 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Neil Asselin
47545 American Way Drive
Macomb, Michigan 48044-2511

2642

Adams, Karen K NAE

From: troop395@comcast.net
Sent: Friday, January 14, 2005 1:52 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Patrick Heller
438 S 4th St
Colwyn, Pennsylvania 19023

2643

Adams, Karen K NAE

From: kcecmwells@yahoo.comm
Sent: Friday, January 14, 2005 5:29 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

KAREN WELLS
11440 HARBOR WAY
#5009
LARGO, Florida 33774

2644

Adams, Karen K NAE

From: fefesln@optonline.net
Sent: Friday, January 14, 2005 7:43 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

Phyllis Sloane
581 Waterview Road
Oceanside, New York 11572

2645

Adams, Karen K NAE

From: rmollyus@yahoo.com
Sent: Friday, January 14, 2005 7:45 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
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Sincerely,

Renee' Bellemare
5 Union St.
Rockland, Maine 04841

2646

Adams, Karen K NAE

From: freckledhedgehog@hotmail.com
Sent: Friday, January 14, 2005 8:54 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

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Sincerely,

Stacy Hall
4560 Shirley Street
Omaha, Nebraska 68106

2647

Adams, Karen K NAE

From: penny.cooper@mortgagefamily.com
Sent: Friday, January 14, 2005 9:00 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

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Sincerely,

Penny Cooper
3135 Swooping WIllow Ct W
Jacksonville, Florida 32223

Adams, Karen K NAE 2648

From: ggay@sarpc.org
Sent: Friday, January 14, 2005 9:03 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Gwen Gay
110 Beauregard Street
Mobile, Alabama 36633

Adams, Karen K NAE

2649

From: dcriswell@nvnacc.com
Sent: Friday, January 14, 2005 9:05 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning,

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Sincerely,

Deborah Criswell
310 Penn Lane
West Chester, Pennsylvania 19382

2650

Adams, Karen K NAE

From: theo_sullivan@ncsu.edu
Sent: Friday, January 14, 2005 9:05 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Theodora Sullivan
1017 Gardner Street
Raleigh, North Carolina 27607

Adams, Karen K NAE 2651

From: fmastri3@hotmail.com
Sent: Friday, January 14, 2005 9:21 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

frank mastri
165 silver st
bridgeport, Connecticut 06610

2652

Adams, Karen K NAE

From: janice_rudecki@cms.state.il.us
Sent: Friday, January 14, 2005 9:26 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

janice rudecki
914 E. Percy Ave.
springfield, Illinois 62702

Adams, Karen K NAE 2653

From: mdkerns@yahoo.com
Sent: Friday, January 14, 2005 9:27 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

michael-david kerns
11919 parklawn drive
#103
n. bethesda, Maryland 20852

2654

Adams, Karen K NAE

From: ldebridge@hotmail.com
Sent: Friday, January 14, 2005 9:37 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Liz deLaflore
P.O. Box 271042
Houston, Texas 77277

2655

Adams, Karen K NAE

From: kathy.day@comcast.net
Sent: Friday, January 14, 2005 9:37 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Kathy Day
4408 Leonard Parkway
Richmond, Virginia 23221

Adams, Karen K NAE

2656

From: Elizabeth_3850@msn.com
Sent: Friday, January 14, 2005 9:39 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Elizabeth Adams
119 Dahlgren St.
Atlanta, Georgia 30317

2657

Adams, Karen K NAE

From: richare@uc.edu
Sent: Friday, January 14, 2005 9:48 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

winnie richards
10 susan cir
#11
milford, Ohio 45150

2658

Adams, Karen K NAE

From: hwright@measinc.com
Sent: Friday, January 14, 2005 9:55 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

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U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Holly Wright
13822 Vacation Lane
Odessa, Florida 33556

2659

Adams, Karen K NAE

From: kmg@sevenps.com
Sent: Friday, January 14, 2005 10:10 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Sincerely,

Kelly Gabler
597 E. Red Rock Trail
Queen Creek, Arizona 85242

266D

Adams, Karen K NAE

From: walto19@yahoo.com
Sent: Friday, January 14, 2005 10:50 AM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

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Also, I wonder just which wealty Republican suppotrers are going to make a large amout of money on this horribly flawed project?

Sincerely,

Walt. Turner
732 Oak Rd
Raleigh, North Carolina 27603

2661

Liz Argo
7 Arena Dr.
PO Box 916
Orleans, MA 02653
508-255-8870

1/10/05

REF FILE # NAE-2004-338-1

Dear Army Corps,

As a board member of Clean Power Now I would like to thank the Corps for the meticulous and painstaking work inherent in the DEIS. Our qualified board of engineers and professionals spent more than a week pouring over the findings due to our own concern for the report's quality. We're critically aware of how important it is that the report be thorough and honest as it must stand up against the well-funded, self interests of a litigiously oriented opposition. I wish more Cape citizens would take advantage of the work Clean Power Now does on their behalf in providing a clearinghouse for the facts and the facts only. And I sincerely wish our elected representatives would spend some time acquainting themselves with the facts and less time using the issue to pose with for their campaign funders' benefits.

I would like to join others and go on record to express my dismay at allowing our officials to use up the time allotted for citizens at the hearings. The "show" that went on at the hearing in Yarmouth was an embarrassing reflection of how our politicians reduce America to vacuous pontificating around the issues without actually taking care of the business. They should not be allowed to use up the public opportunity repeating what they've already stated many times before, just so the press can be caught up in reporting their appearance yet again, while missing the more important messages of the night.

I am the director/producer of the video "Prevailing Winds in Denmark", a production made possible by Clean Power Now. I documented firsthand what the wind farm in Blavand, Denmark looks like from the beaches and conducted extensive interviews in Blavand last year. The enthusiasm I encountered in the citizens and tourists combined with the very lack of visual impact sealed my decision on America's first wind farm.

That said, I will address my reason for feeling so moved by the Cape Cod wind farm issue that I would take up more of the Corps' important attention and time. My testimony is a desperate plea that our health on Cape Cod and the Islands is given its rightful place in the balance of real issues remaining in the debate around the wind farm.

In 1990 I returned with my two young children to the home I grew up in. I couldn't understand why we suddenly became susceptible to asthma attacks upon our return to Cape Cod. They were not a part of our lives when we lived on the outskirts of New York City. Wasn't I moving my small children away from pollution and traffic to the fresh, pristine air of the seashore? Now, of course, the realities of Cape Cod's air quality are being called into question and my confusion is answered. Cape Cod's air is 50% dirtier than that of downtown Boston. And Cape Cod National

Seashore boasts the third worse air of any National park (including the two winners in California.)

I remember our first asthma attack. My four year old, John, woke me from a deep sleep in the middle of the night. He stood by my bedside, pale and trembling, struggling to pull in his next breath. He couldn't even cry. All he could do was fight to breathe and look at me, terrified.

That was our first ambulance ride and our first cold and scary night spent in Cape Cod Hospital's emergency room, helping John get accustomed to breathing through the noisy and nauseating nebulizer. Since that trip, there have been three others. Upon one occasion John was admitted and we spent two days breathing through a nebulizer at Cape Cod Hospital.

Cape Cod's polluted air didn't just affect my son either. One day I was called at work by the school to alert me that my 12 year old daughter was on her way to Cape Cod Hospital's emergency room via ambulance. After running in a track meet Lacy found herself unable to stop coughing. She began to hyperventilate and the ambulance was quickly sent for. In the ER Lacy was diagnosed with cough errant asthma. Lacy, too, fell victim to Cape Cod's polluted air.

I, myself often depend on an inhaler now that I live back on Cape Cod to get through the night uninterrupted by wheezing and coughing. My brother's family with two children has had similar experiences with hospitalization for asthma attacks and our families pass a home nebulizer back and forth for attacks.

Any opportunity to eliminate or reduce the awful air pollution that is causing 1 out of 9 children in Massachusetts to suffer from asthma and bronchial difficulties must be seized. The preventable statistics of 5,000 asthma attacks and 12 – 15 premature deaths per year with the Nantucket Sound Wind Farm in place are more than statistics to me and my family. We are those asthma attacks. We could be those premature deaths.

Can it really be that we will hold up even a partial solution to Cape Cod's health issues because of an objection to a view of tiny masts sticking up out on the horizon? It is unconscionable. The fact that Nantucket Sound is the right place due to current restrictive technology for deeper water placement and the developer's need to make the numbers work for the investors is irrefutable. Jim Gordon has done his homework. He does not seek to battle with our wealthy waterfront-owning legislators and campaign funders.

Let's move forward with the Cape Wind solution to so many problems, not just my family's health problems, as quickly as we can. Although it is important that standards and safeguards be set for the development of our oceans, we can not afford the health deprecation while we wait for the restrictions and guards to be created by committee. The Cape Wind effort and the committee work need to be driven forward simultaneously if we are ever to make real strides in solving global warming and preventing further health deterioration.

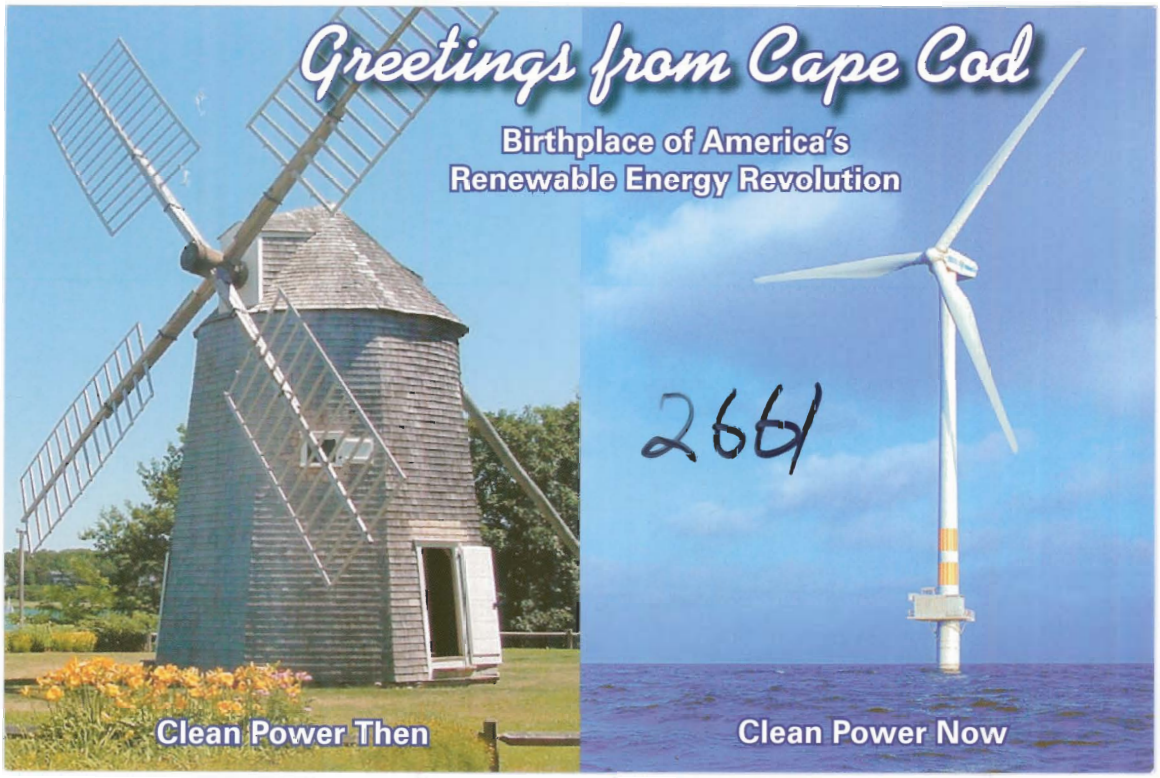
I would add that my daughter has spent the last year traveling – England, Costa Rica, Egypt, Uganda, Kenya. She reports that she is embarrassed when it is revealed that she is an American. That's harsh. The reason, as she reports it, is that the rest of the world feels America has become

a symbol of greed, waste, and privilege. While much of the rest of the world considers the global community and real concerns about global warming and pollution, America appears only to be self-serving. I'm afraid the Clean Power Now slogan "It's not the View, it's the Vision" rings true to what the global community is concluding about America's motives and spirit.

Thank you for your good work in assessing the first real effort towards utility scale, renewable and pollution-free energy in America. My family praises your efforts from a very real, life quality and life-threatened point of view... not from the point of view of unfounded concerns over masts barely visible out on the horizon.

Sincerely,

Liz Argo


Greetings from Cape Cod
Birthplace of America's
Renewable Energy Revolution
Clean Power Then
Clean Power Now

2662

JAMES H. CUMMINGS
60 MILL HILL ROAD
S. CHATHAM, MA 02659

January 7, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
Army Corps of Eingeneers
696 Virginia Road
Concord, MA
01742 - 2751

Dear Ms Kirk - Adams

The need for the wind energy project is so important to our future that I am compelled to respond.

After attending two meetings on Cape Cod I was very distressed to hear so many objections which were based on fear or assumptions - none of which could be supported by factual information. This includes the governor's statement on tourist trade. Several intelligent speakers reported their experience visiting wind farms in Europe where they dramatically increased the tourist trade.

Objectors seem to think that towers will be right on their beach but five miles out they will hardly be visible on a clear day. When the blades are turning they are invisible.

Nimbys are a serious threat to our future. Don't let it happen here.

Sincerely yours,

J.H. Cummings

2663

Mary Shepard
Urban design writing/consulting and photography
10 Porter Road Middletown, Rhode Island 02842
Phone and fax: 401-849-1837
E-mail: MshepardRI@aol.com

January 10, 2005

Ms. Karen Kirk-Adams
Cape Wind Energy EIS Project
US Army Corps of Engineers,
Concord, Mass.

Dear Ms. Kirk-Adams:

Please vote or otherwise enable the wind energy project on the Cape, as soon as possible.

I'm an artist, photographer, and planning activist, graduate of an Ivy League college, who grew up summers sailing in Nantucket Sound, out of Bass River, **and I'm in favor of having the windmills in the Sound**. I've also seen them in Denmark, in the bay visible on the way to the airport – and in Hull, Mass. They are beautiful, elegant objects that people will get used to. They will help keep the air pure and people's lungs healthy and hopefully there will be less air pollution so they will stay white! And lessen our dependency on foreign oil! I hope we will get them here in the undeveloped areas of Aquidneck Island.

Sincerely,

Mary Shepard

2664

85 Pine Tree Drive
Centerville MA 02632-3178
U. S. A.

11 January 2005

Ms. Karen Adams
New England District
U. S. Army Corps Of Engineers
696 Virginia Road
Concord MA 01742

Re: Hurricane Force Winds

Dear Karen Adams:

During the past year, a number of observers have questioned whether a wind farm on Horseshoe Shoal would be able to withstand a hurricane. On this past weekend, during the night of January 8 - 9, western Denmark experienced a hurricane. Peak winds of 94 m.p.h. were recorded. On the wind farm at Horns Rev, 7 miles offshore from Blåvand, all 80 wind turbines are still in operation. None of the monopoles were damaged, and none of the propellor blades were damaged. As they were programmed to do, all of the blades were feathered into the wind when the wind reached 56 m.p.h. There was some minor damage to some of the lights, and to one of the boarding platforms. Repairs on these items will be made once the weather improves. The experience at Horns Rev demonstrates fairly conclusively that an offshore wind farm can be built to withstand hurricane force winds.

Sincerely,

William E. Griswold

William E. Griswold

Neighborhood Network
90 Pennsylvania Avenue, Massapequa, NY 11758
Tel: (516) 541-4321 ◆ Fax: (516) 541-4401

2665

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

January 7, 2004

Dear Ms. Adams,

The Neighborhood Network is a Long Island-based environmental and public advocacy organization that advocates for clean energy. The Neighborhood Network would like to express its support for the building of a wind farm in Nantucket Sound. The draft EIS on the currently proposed project prepared by the Army Corps of Engineers shows only a few negative impacts compared to a lengthy list of benefits that offshore wind would provide to the region. The project, or a modified version of such a project, would set a precedent for the nation as a whole. It would stand out as one of the first offshore wind projects in North America along with the proposed offshore wind farm off Long Island, which we are also actively supporting given full environmental review.

Non-polluting, renewable energy is our future, and offshore wind power has proven to be very successful in Europe. Clean air and reducing the serious environmental and economic impacts of global warming are two solid reasons to support wind energy, and freedom from foreign sources of oil is another which stands alone. Such wind farms set the standard for others like it and must lead the way towards a better future.

We urge the Army Corps, Massachusetts elected officials, and all the state and federal agencies party to the decision, to allow wind power in Nantucket Sound.

Sincerely,

Beth Fiteni

Beth Fiteni
Energy Program Director

2666

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: Charles F. Doe JR.

Address: 52 Ships Eagle Lane
Osterville, MASS 02655

Phone Number (Please include area code): 508-420-0931

Email Address:

Please state your questions/comments in the space below:

We MUST Conserve the habitat for All the MARINE life IN Nantucket Sound. The Future for The Cape Region AND Islands ARE dependant on A clean, Alive AND growing MARINE SANCTUARY.

Why CAN we Not Review AND Understand Alternative Sites that would be Supported by both SIDES AND solve the MANY outstanding Issues At Hand?

What will the Cape AND Islands be when the tourists stop COMING AND the future OF OUR Nantucket Sound is Developed With such disregard to its NATURAL beauty?

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2667

Comment Sheet
On Draft Environmental Impact Statement (EIS)
For the proposal for an Offshore Wind Project
In Nantucket Sound

Name: Ruth and Burtt Holmes

Address: 9 Holicks Hollow Rd
P.O. Box 830
Siasconset, MA 02564

Phone Number (Please include area code): (508) 257-4222
(239) 594-2020

Email Address:

Please state your questions/comments in the space below:

We are strongly opposed to this project. For many reasons.
It is merely a money maker for a monopoly.
It will have a detrimental effect on
1) the environment
2) Aesthetic values of the sound
3) A danger to island ferries
4) A danger to recreational boating
5) A danger to commercial fishing boats
6)
It will ruin the sound to enrich a few money grabbers.
A terrible idea

Please fold this questionnaire in half, affix two stickers or pieces of tape, and mail it to the address listed on the other side.

2668

Susan Farist Butler, RN, MSN, CS, PhD
14 Clinton Street
Cambridge, MA 02139
Phone/Facs: 617-492-0014

January 9, 2005

Ms. Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Regulatory Division
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Adams:

I write in support of the Nantucket Sound Wind Farm. I am a sailor and I have sailed since before I was born. All my life I have sailed in Buzzards Bay, Vineyard Sound, Nantucket Sound, Mass Bay, and down Maine. My family has sailed for many generations. My parents and siblings have sailed across the Atlantic twice. My grandfather sailed out of Marblehead harbor usually to the Cape, or down Maine. My great, great, great grandfather and his family were shipbuilders in Port Jefferson, New York, and he, Captain William Laurence Hunt, was a captain of a clipper ship. My grandfather has always alleged that his great-grandfather was eaten by cannibals. Never proven, just "lost on one of his trips to the Orient." Sailing has been an important part of my family for many, many generations.

Presently, I sail out of both Marion and Padanarum. My destinations often include Buzzards Bay, Vineyard Sound and Nantucket Sound. I am retired fleet Captain of the H-12 class in Marion, and past President of the H-12 Class Association overall. At a number of our meetings I brought up the topic of the wind farm, and many of the members supported the project. No official poll was ever taken.

I strongly support the wind farm project for Nantucket Sound. To harness the magnificent force of the wind is a spectacular skill and a feat worthy of great admiration, by whatever means it is attained. To turn away from an opportunity to protect our planet while generating significant electricity is simply a vanity.

I urge you to support the construction of the wind farm,

Sincerely yours,