



# The Vision

A Publication of Clean Power Now

## EARTH DAY

*Earth Day began  
April 22, 1970.*

*20 million people  
participated.*

*New York City's Fifth  
Avenue was closed to  
traffic and more than  
100,000 people  
attended an ecology  
fair in Central Park.*

*Congress adjourned  
for the day and more  
than 500 of its  
members attended  
"teach-ins".*

*Would you like to  
re-energize Earth Day  
on Cape Cod?*

**Let us know....**

### Inside this issue:

Director's Notes	2
Wind Jam Report	2
Members in the Press	3
Can We Drill Our Way Out?	4
Spotlight	5
MMS Update	5
A Perspective on Cape Wind's More Efficient Tur- bines	6
Update Us!	6
Volunteer Opportunities	6
Speakers Available	6

## PAVE PAWS and Windmills

By Chris Stimpson

The recent DoD report on the effect of wind turbines on military radar performance raises some issues that could apply to the proposed Cape Wind project. The DoD report cites examples in the UK and the US in which radar interference has been documented. It goes on to say, however, that the magnitude and significance of the interference depend on the number and location of the turbines with respect to the position of the radar installation. Thus there is no conflict, in a generalized sense, between windfarms and air defense radar; each case must be evaluated according to its own criteria.

The key criterion is whether or not the turbines are in the line of sight of the radar head—i.e., whether they will cause a 'return' from the transmitted signal that will degrade the radar facility's intended performance. Line of sight is determined by five factors: transmitter height, turbine height, the distance between turbines, intervening terrain, and atmospheric refraction ("bending") of the beam. In the case of PAVE PAWS, the DoD report clearly states that, at a range of 15 miles (distance to the nearest turbine location) the lower extent of the main beam is some 2,000 feet above sea level, even allowing for refraction. As Cape Wind's proposed turbines will not exceed 450 feet above sea level, they will not be in the primary beam's line of sight.

However, that is not the whole story. It is an unintended feature of radar design that the transmitter generates one or more 'side lobes' around the main beam. These lobes are faint beams surrounding the main beam and transmitted in approximately the same direction. You can picture them as empty ice cream cones with their points at the radar head, widening out as they travel away from it. The main beam, where the designers want all the energy of the system concentrated, is in the middle of those cones. The side lobes can pick up and reflect targets outside of the narrow cone of the main beam—above, below, and to the sides—to the detriment of system performance. However, the amount of energy present in the first side lobe, according to the DoD report, is one-hundredth of that in the main beam, and one-thousandth in the second side lobe. Although both lobes strike the ground below the path of the main beam, the low power levels present may make this inconsequential; the 2002-2004 Air Force investigations concerning public health impacts of this

radiation did not establish a link between the two.

The DoD report did not consider a windfarm in Nantucket Sound as a threat to national security. The strongest language in the report's conclusion was that "a more comprehensive analysis needs to be performed for these radars." Such an analysis should also include consideration of whether range gating or other possible approaches can be employed to mitigate impacts.

The DoD report did not consider a windfarm in Nantucket Sound as a threat to national security.

In other words, new or existing software in the radar system may provide the answer. In a system like PAVE PAWS, which is optimized for detecting moving objects like ballistic missiles, not stationary objects such as buildings or trees, objects known to be in the path of the radar can be eliminated from further processing, because they will always appear in the same position on the operator's display. Such will be the case for the turbines in Nantucket Sound. Should the moving blades create non-zero returns on the display, then range gating may be the solution. A system originally designed to detect Soviet missiles being fired from half-way across the world is unlikely to be rendered inoperative by an object moving at the same

As Cape Wind's proposed turbines will not exceed 450 feet above sea level, they will not be in the primary beam's line of sight.

Continued on page 3...

## Director's Notes

Dear Neighbors -

The past four months have been a busy, productive and exciting time at Clean Power Now. It has been an honor to have had the opportunity to meet many of you and listen to your concerns about how the Cape Wind project is moving through the regulatory process as well as your interest in participating as informed and engaged citizens around that project as well as the larger issues of environmental justice and sustainability.

We have had our booth at a large number of festivals and fairs, held successful fund raising house parties on the Cape and Nantucket, overwhelmed a gubernatorial candidate's "stop Cape Wind" press conference, danced the night away at Wind Jam 06, increased our membership to over 6000 and participated in a number of speaking engagements. We also, had numerous letters, my views and articles published in the local and national press, produced various shows for local community access stations, provided MMS with scoping comments, and responded to many requests for information.

You have heard us say on numerous occasions and for numerous reasons that the Cape Wind project is precedent setting. Precedent is defined by Webster as, "prior in time." That certainly fits the bill being the first offshore wind farm proposed in the United States. Barney Frank called it, "a project of transcendent importance". The first definition of transcendent is, "exceeding usual limits." Well that's obvious in that it will, when built, be the largest offshore wind farm in the world. The word that comes to mind for me however is beauty. I see the Cape Wind project and all offshore wind energy projects as a beautiful design marrying technology with nature. I was fortunate to have made the trip to Denmark in May 2005 and without hesitation can say that I was moved, as were many others, to tears at the profound beauty in capturing the wind for energy by these marvelous machines.

"Could a windmill's ability to 'derive maximum benefit out of the site-specific gift nature is providing - wind and open space,' in the words of aesthetician Yuriko Saito, help Americans bridge the divide between pristine landscapes and sustainable ones? Could windmills help Americans subscribe to the 'higher order of beauty' that environmental educator David Orr defines as something that 'causes no ugliness somewhere else or at some later time'? **Could acceptance of wind farms**

*Orion Maga-*

**be our generation's way of avowing our love for the next?" Charles Komonoff,**  
*zine, 9.12.2006*

*Barbara J. Hill*



**Barbara J. Hill**

## Wind Jam 2006

Clean Power Now wound up the summer with a gala affair on September 23rd at the Sons of Italy Hall in Cotuit. Wind Jam featured great live music, renewable energy exhibits, a raffle, the ever amusing Noah's Ark Awards, and a silent auction on many wonderful items such as custom-designed jewelry, unique works of art and even a day sail on Nantucket Sound on a brigantine from the Sea Education Association.

The evening began early with Johnny Hoy and the Bluefish putting the crowd in a dancing mood. While taking a break from dancing, participants checked out the renewable energy



Jane Dolan with daughters Norway and Sinead, CPN member Carl Freeman and event coordinator Liz Argo dancing to the music of Johnny Hoy and the Bluefish

exhibits provided by Self Reliance, Cotuit Solar, A&E Architects, and Solarwrights of Rhode Island. Outside, Clean Energy Design's renewable energy trailer, complete with solar panels and a wind turbine, was on display while children young and old were attempting to fly kites in the gusty winds (it would have been a great day for a wind farm!).

Before the Rock It Ups, performed, Board Members Bill Eddy and Liz Argo took the stage to announce this year's Noah's Ark Awards, Clean Power Now's tongue-in-cheek recognition of those individuals and organizations who have done most to advance or inhibit renew-

Thank you to our event committee for a great time!

Liz Argo

Diana Duffley

Mark Farber

Erich Mettler

Chris Stimpson

Continued on page 5...

## Our members in the press: Carl Borchert/ Merton Ingham/ Jim Liedell

### *A beautiful vista is a relative thing*

In response to a gentleman who wrote recently regarding the wind farm and vistas: I am offended by the canal power station as seen from the Sagamore Bridge. I am offended by the Brayton Point station in Somerset as seen from the Braga Bridge.

Why? Because they are belching poisonous gas and heavy metals into our air. And the canal station gets all its oil delivered in single-hulled barges. The wind farm transformer platform would have triple-hull-contained mineral oil and be marked on all navigational charts. Remember a recent accident where 100,000 gallons of fuel oil spilled in Buzzards Bay on its way to the canal station?

The turbines would have strobe lights aimed upward at 260 feet above the water on top of the nacelles, not at 417 feet at the blade tips. When I walk on the north shore of Nantucket I will see the wind farm. But I would like to support a project that would contribute to a safer, cleaner world for everyone. I am willing to sacrifice some of my beautiful vista for that achievement and important first step to the future of energy production.

**Carl Borchert**, Nantucket

Letter to the editor, *Cape Cod Times*  
July 1, 2006



### *Time to get serious about reducing CO2*

What if the scenario for sea level rise predicted by Al Gore in his film "An Inconvenient Truth" is correct? What if it happens by 2050? What would a rise of 20 feet do to Cape Cod?

I asked these questions of the engineering office in my town. After examining a U.S. Geological Survey quadrangle map that included the town of Dennis, we could see that most of the property south of Route 28 on the Nantucket Sound side and much of the property north of Route 6A on the bay side would be under water. Both highways would be flooded at points, as would much of the low-lying property along the shores of the Bass River estuary.

I haven't looked at the topographical maps for other towns on the Cape, but imagine that much of Woods Hole, Hyannisport and Provincetown would also be flooded, as would low-lying parts of the other bayside towns.

Think of the property losses that would result – in the billions of dollars – and the thousands of people displaced. It's time for us all to recognize what's at stake in the process of global warming and to take action, individually and collectively, to reduce the carbon dioxide emissions driving the process.

**Merton Ingham**, South Dennis

Letter to the editor, *Cape Cod Times*  
July 23, 2006

### *Wind is the way to clear the air*

Timothy Gainey's Sept. 17 letter raised five excellent questions about harmful effects from using fossil and nuclear fuels to generate electricity, in comparison with the Cape Wind project. I answer one of these in detail, and comment on his others in summary.

Yearly, Mirant's Canal Generating Plant emits 5 million tons of carbon dioxide, 30,000 tons of sulfur dioxide, 8,000 tons of nitrogen oxides and 1,200 tons of particulate matter. Cape Wind will produce 25 percent of Mirant's electrical output, and thus in effect eliminate one-quarter of Mirant's harmful emissions. Harvard research indicates 13 premature human deaths and 3,500 asthma attacks annually, as well as 25,000 daily incidents of respiratory problems, would be eliminated by wind power replacing oil. This benefit is more than \$50 million yearly.

In summary, the harmful emissions from fossil fuels and the risk and cost of storing nuclear waste cause large negative impacts of our health, security and wallet. My conclusion to Mr. Gainey's other questions is that wind power does not have any harmful emissions: thus air, water and land would not be degraded. No other electricity-generating source is economically available to us now in such an efficient natural form, providing major benefits to marine, avian, and land life.

**Jim Liedell**, Yarmouthport

Letter to the editor, *Cape Cod Times*  
September 30, 2006

## Radar Continued from page 1...

speed as a light airplane fifteen miles away.

It remains to be seen what the further DoD analysis will reveal about this particular case. At present, the reaction of some extremists to the DoD report seems to echo the panicky action of the FAA in issuing a stop-work order on all wind-farms in the country, based on misinterpretation of a British study and a directive by Senator Warner.

As cooler heads prevailed, work resumed on the Midwest windfarms this month, to the satisfaction of Midwesterners who are impatient to reap the benefits of the world's cleanest energy source. It is difficult to imagine that a country that deployed the advanced technology of PAVE PAWS cannot find a solution that will allow these two vital installations – one dealing with missile defense and national security, the other with our urgent energy needs – to coexist.

# Can We Drill Our Way Out?

## By Chuck Kleekamp, Vice President, CPN

Good news from Washington. The U.S. Senate just passed a narrowly focused bill that will open 8.3 million acres for new energy development in the Gulf of Mexico. A hundred miles off the coast of Florida, encroaching on a moratoria region, it is called Sale 181 Area, and may contain as much as 1.2 billion barrels of oil. The House has its own version that is even more ambitious. It would expand the drilling to most of the continental shelf off the Atlantic and Pacific coasts. And yes, this means off New England.

Senate Majority Leader Bill Frist rammed this bill through the Senate during the remaining time for legislation this year without any amendments. Hyped to "Enhance the energy independence and security of the United States," the hurried plunge will be sold to the public as an answer to our problems. And some people will believe it.

It seems this administration's attitude is to convince the American people that we can appease our oil gluttony if we just focus on drilling in the last reservoirs of oil under our control. This blind charge doomed any discussion in the Senate of sensible provisions to address our addiction to oil, only a misguided attempt to feed it.

As dictated by Frist, there were no amendments offered for stringent fuel efficiency standards for cars that could drastically reduce imports. Try 40 miles per gallon average rather than the current 21. That would save the import of some 4 million barrels a day from you know whom.

Unfortunately there was no discussion of repealing the total royalty relief programs for energy companies that are currently taking our oil for free. Traditionally, this royalty is one-sixth or 16 percent based on the selling price of oil. That relief was intended to encourage expensive deep drilling in our dwindling Gulf reserves. In truth it is a government giveaway of \$7 billion over the next five years to energy developers of royalties that belong to you

and me. And who's making record profits? In this last quarter alone the windfall goes to: Exxon Mobil, \$10 billion; ConocoPhillips, \$5 billion; and BP, \$7 billion. We pay for it at the gas pump. That's simply outrageous.

And far beyond the imagination of most senators, much less for discussion, is the development of renewable energy for long-term sustainability. They could have at least extended the modest production tax credit for wind energy that ends next year. But no. Not in this bill. Better to drill for the dwindling reserves, feed the profits, and get elected again.

A billion barrels sounds like a lot of oil. But consider the reality in relation to our import of 11 million barrels a day. Just suppose this new Gulf area could magically be brought online at a rate equal to these foreign imports. The production would last just about 110 days! We certainly are addicted to oil. Or more plausibly, if pumped at a rate of just one million barrels a day it would last about 3 1/2 years. So what's next? I'm concerned about an inconvenient conclusion.

Remember Denmark? In 1973 they generated 90 percent of their electricity from imported oil. Never again. Now not only are they energy self-sufficient, but they export 50 percent of their oil, 30 percent of their natural gas and 19 percent of their electrical energy.

And remember wind energy? The wind is free and plentiful and not subject to cutoff. Denmark is the world's leader in the generation of wind energy and also in the manufacturing and technology of wind turbines. By the way, where do you think the five big wind turbines in Massachusetts were made? You guessed it. Denmark.

So here we sit under the shadow of unhealthy emissions from the Canal power plant that consumes about 8 million barrels of oil a year. That's almost two days production from all the oil wells in the continental United

States. And our Sen. Kennedy and Rep. Delahunt are doing all they can to kill the country's first offshore wind farm on Nantucket Sound that could potentially replace 2 million barrels of that imported oil to generate pollution-free electricity with GE wind turbines and no global warming impact.

Unfortunately many members of Congress feel compelled to drain the last of Mother Earth's oil in a fleeting gluttonous feast of fun in big cars and energy company record profits to ensure their election for another term. With little view of the future and the impact of global warming they will quickly burn through our remaining resources that should be saved and stringently parceled out by future generations. It remains to be seen what the compromise bill will look like after the summer recess is over. But the oil companies will undoubtedly be delighted.

So, do you still think we can drill our way out? Think again. I just ordered my Prius.

**This article appeared in many newspapers across the country and around the world this past August.**



Matt Palmer/ CPN Member

Tom Wineman, CPN Board Member, sailing amidst the turbines at the Nystead Wind farm in Denmark May 2005.

[www.cleanpowernow.org](http://www.cleanpowernow.org)

# Spotlight

## Our Summer Intern, Ann Cook



Ann Cook

Jonny Sheets/Enterprise

Ann Cook is currently a student in the Environmental Technology Program at the Cape Cod Community College focusing on energy efficiency and renewable energy. Her strong commitment to renewable energy developed through her coursework as well as attendance at many Cape & Islands Renewable Energy Collaborative (CIREC) events.

During her time with us she focused most of her attention on preparing for festivals and fund raising events. She was involved with all facets from volunteer staffing, organizing materials, and follow up data entry. Her flexibility, humor and willingness to get the job done were instrumental in the highly visible and successful Barnstable County Fair. She also provided us with her expert editing skills in the preparation of our summer newsletter.

"Simply, we could not have accomplished our goals for the summer without Ann. Her attention to detail, follow through and sense of humor added tremendously to the work of Clean Power Now," said Executive Director, Barbara Hill.

Watch for the *Spotlight* column in upcoming issues. The next spotlight could be on you!



MMS Update

With the passage of the Energy Policy Act of 2005, the Minerals Management Service (MMS) was given jurisdiction over offshore renewable energy projects. Under this new authority, MMS became the lead Federal agency for regulatory oversight of the Cape Wind project.

Early next year, MMS will issue the Cape Wind Draft Environmental Impact Statement (DEIS) followed by a public comment period. The new DEIS will build upon the data previously collected by the Army Corps of Engineers. A final record of decision is expected sometime in early 2008.

We support MMS in their efforts to review this precedent setting project in the most transparent, thorough and expeditious way possible.



# Wind Jam Report continued from page 2...

- We would like to thank our event sponsors for their generosity:
- ✦ Clean Energy Design
  - ✦ Hyannis Country Garden
  - ✦ Lambert's Fruit Company
  - ✦ IBEW Local 103
  - ✦ Birdwatcher's General Store
  - ✦ Chatham Health and Swim Club
  - ✦ Ed and Jean Mangiafico
  - ✦ The Earth House, Orleans
  - ✦ Land Ho Restaurant
  - ✦ KOA Media
  - ✦ Local 56 Pile Drivers Union
  - ✦ Randy Hunt, CPA
  - ✦ Snows Home & Garden
  - ✦ A&E Architects

- able energy projects in this country. Among these were:
- ✦ The "Lungfish Award", given to the Toyota and Honda automakers for emulating the lungfish's leading role in evolution, by producing the first hybrid cars and thus leading evolution away from fossil fuel transportation
  - ✦ The "Snail Award", given to the US wind farm permitting process, now in its 6<sup>th</sup> year, compared to the 3 years it took the Danes to permit and build the world's first wind farm
  - ✦ The "Leader of the Pack" award, given to John and Diana Duffley for their work in proposing and planning the Cape's first industrial wind turbine at Hyannis Country Garden

Clean Power Now would like to thank all the sponsors and volunteers for making this such a successful event! We would also like to thank all of you who danced, ate, partied and contributed. To all who couldn't make it... there's always next year!





NON-PROFIT  
 US POSTAGE  
 PAID  
 HYANNIS, MA  
 PERMIT NO. 17

Clean Power Now  
 297 North St., Suite 322A  
 Hyannis, MA 02601

Phone: 508-775-7796  
 Fax: 508-775-7782  
 E-mail: windfarm@cleanpowernow.org

*Helping Launch  
 America's Renewable  
 Energy Revolution !*

**A Perspective on Cape Wind's More Efficient Turbines**  
 By Chuck Kleekamp, Vice President, CPN

General Electric's latest version of their more efficient 3.6 megawatt turbine will boost Cape Wind's electricity production by 7% while adding only 23 feet to the height. The shore view impression from this change will be truly incidental. The important aspect is that the project will now generate 79% of the average power consumed on the Cape and Islands up from 74%. This is a big step for our self sufficiency and sustainability.

The effect on the viewer is best explained by considering the simple elegance of an age-old artist method of measuring the perspective of a house, a mountain, or a wind turbine in the background. Using the tip of a brush held at arm's length (about 3 feet) with thumbnail marking the height of the object in view, the dimension is transferred to the drawing. This traditional technique is called a picture plane representation. The view generated is as if a glass window were placed 3 feet in front of the observer's eye, an accurate technique used by architects before the age of computers.

Using the simple geometry of right triangles, one can calculate the visual height of a turbine that is 440 feet high at a distance of 6 miles. The calculation shows that the height of the turbine to blade tip is exactly a half-inch above the horizon as measured with a ruler held at arm's length (3 feet from the viewer's eye). That's about the size of your thumb nail.

The previous GE turbine at a height of 417 feet would have appeared slightly lower at 0.47 inches, a mere one thirty-second of an inch shorter. This is certainly a negligible change to the casual observer but an important step to greater energy independence for the Cape and Islands.

**UPDATE US!**

If you are planning a move or have a new email address don't forget to let us know so you don't miss out on the latest information on how you can help protect our renewable energy future.

To update your information contact our Membership Coordinator, Chelsea Harnish at [Chelsea@cleanpowernow.org](mailto:Chelsea@cleanpowernow.org) or by calling the office at 508-775-7796.

**Volunteer Opportunities**

Have some free time?

Want to do more to support renewable energy?

Volunteering at the CPN office is the answer! We are always looking for new volunteers to help with:

- Filing and organizing
- Fundraising
- Preparing informational materials
- Serving on committees (fundraising, events, etc)

If you are interested please contact our Membership Coordinator, Chelsea Harnish at 508-775-7796 or via email at [Chelsea@cleanpowernow.org](mailto:Chelsea@cleanpowernow.org).

**Speakers Available:**

Are you a member of a church group, club or organization? Consider having CPN speak at your next meeting about the benefits of renewable energy on the Cape and Islands. Contact the office for more details at 508-775-7796.