Enclosure #1

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As filed with the Securities and Exchange Commission on May 8, 2008

Registration No. 333-

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM S-1

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

NOBLE ENVIRONMENTAL POWER, LLC*

(Exact name of registrant as specified in its charter)

Delaware	**4911**	**73-1717075**
(State or Other Jurisdiction of Incorporation or Organization)	(Primary Standard Industrial Classification Code Number)	(IRS Employer Identification No.)

8 Railroad Avenue, Suite 8, Second Floor
Essex, CT 06426
(860) 581-5010
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

C. Kay Mann
Senior Vice President, General Counsel and Secretary
Noble Environmental Power, LLC
8 Railroad Avenue, Suite 8, Second Floor
Essex, CT 06426
(860) 581-5010
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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Approximate date of commencement of proposed sale to the public:
As soon as practicable after this Registration Statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box. o

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the following risks and all other information contained in this prospectus, including our consolidated financial statements and the related notes, before investing in our common stock. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, also may become important factors that affect us. If any of the following risks materialize, our business, financial condition or results of operations could be materially harmed. In that case, the trading price of our common stock could decline, and you may lose some or all of your investment.

Risks Relating to Our Business and Our Industry

We have a limited operating history and should be viewed as a development stage enterprise.

We began our business in August 2004 and commenced operation of our first windparks in March 2008. We have a limited operating history from which you can evaluate our business, and our prospects must be considered in light of the risks and uncertainties encountered by development stage enterprises competing in rapidly evolving markets, such as the renewable energy market.

Some of these risks relate to our potential inability to:

- complete the refinancing of our construction and equity bridge loans;
- obtain all the land rights, turbines, transmission interconnection agreements, permits and approvals needed to construct and operate our windparks;
- obtain adequate financing to develop our windparks;
- construct our planned and future windparks within projected time and cost schedules;
- commence and manage significant operations;
- manage growth in personnel and operations;
- manage our costs as we expand our business;
- recruit and retain key personnel; and
- anticipate and mitigate the other risks described in this prospectus.

If we cannot successfully address these risks, our business, results of operations and financial condition may suffer.

We have not generated revenue and have generated net losses and negative cash flows from investing activities since our inception.

For 2006 and 2007, we did not generate revenue, we incurred net losses of approximately $20.7 million and $42.5 million, respectively, and our net cash used by investing activities was approximately $507.1 million and $617.9 million, respectively. At December 31, 2007, our accumulated deficit was approximately $72.0 million. We have spent, and expect to continue to spend, significant resources to fund the development and construction of our windparks. To date, our capital expenditures and working capital requirements have been funded by project debt, turbine financings and capital contributions from our sponsors.

We expect to incur substantial pre-tax losses over the next several years as we develop and construct new windparks, hire additional employees, expand our operations and incur the additional costs of operating as a public company. In addition, factors such as increases in labor or material costs, higher-than-anticipated financing costs for our windparks, non-performance by third-party suppliers or

Our financial performance depends on policies and regulatory frameworks that support renewable energy development.

The development and financial performance of our windparks are significantly dependent on state policies and regulatory frameworks that support windpark development. The states in which we are developing and plan to develop windparks currently provide various types of incentives that support the sale of electricity generated from wind energy. These policies include RPS requirements, which impose renewable energy purchase obligations or targets on electric utilities and other retail energy suppliers. We cannot assure you that government support for renewable energy will continue, or that the electricity produced by our future windparks will continue to qualify for support through these RPS programs. The elimination of, or reduction in, state government policies that support renewable energy could have an adverse impact on our results of operations, financial performance and our future development efforts.

Our high levels of indebtedness could adversely affect our business.

We have high levels of indebtedness. As of December 31, 2007, we had approximately $926.8 million of total consolidated indebtedness, of which approximately 70% represented non-recourse and limited recourse debt. We expect to continue to have significant debt and interest expense for the foreseeable future.

The majority of our indebtedness relates to the acquisition of wind turbines and the construction of our windparks. The project financing that we use to fund the construction and operation of our windparks is limited recourse, and payment of the interest and principal on the financing is made primarily from the revenues generated by the windpark once operations commence through the sale of energy, capacity and RECs, as well as the monetization of certain federal tax benefits available to us.

Our project and turbine financing documents contain covenants consistent with market practice that impose significant restrictions on the way we operate our business, including restrictions on our ability to:

- incur additional indebtedness or guarantee indebtedness of others;
- make certain loans or investments;
- pay distributions or dividends to our stockholders, and receive distributions from our subsidiaries;
- repurchase shares of our common stock; or
- sell our assets.

These covenants could limit our ability to finance our future operations and capital needs and our ability to pursue other business activities that may otherwise be in our interest.

Moreover, under our turbine financing agreements, most of our wind turbines and the equity interest in certain of our project subsidiaries are subject to first and second ranking security interests. As a consequence, even if we are permitted to incur additional debt under our existing financing agreements, to the extent any such financing would require security, we may have difficulty obtaining or may not be able to obtain financing because our available unsecured assets are insufficient to secure such debt. For additional information see "Description of Certain Financing Arrangements—Senior Secured Turbine Credit Facilities."

- failure to secure and maintain required regulatory, environmental and other necessary permits or approvals; and

- failure to obtain approvals from transmission system operators for the interconnection of our windparks with their facilities or the excessive costs of interconnection.

Any of these factors could lead to the termination of the development of a windpark after the incurrence of significant expense.

We may be unable to timely complete the construction of our windparks, and our construction costs could increase to levels that could make a new windpark too expensive to complete or too unprofitable to operate.

We experienced delays in the completion of the Initial New York Windparks and the total construction cost of these windparks exceeded our initial budget. We may suffer significant construction delays or construction cost increases as a result of a variety of factors, including:

- failure to receive turbines or other critical components and equipment from third parties on schedule and according to design specifications;

- failure to complete interconnection to transmission networks;

- failure to receive quality and timely performance of third-party services;

- increases in prices of goods and services;

- failure to secure and maintain required regulatory and environmental permits or approvals;

- inclement weather conditions;

- adverse environmental and geological conditions;

- unexpected environmental issues;

- work stoppages or other labor disturbances;

- shortages of labor;

- personal injury or loss of life of our employees; and

- *force majeure* or other events out of our control with respect to our windparks.

Any of these factors could give rise to construction delays and construction costs in excess of our budgets, which could prevent us from completing construction of a windpark, cause defaults under our financing and revenue arrangements and impair our business, results of operations and financial condition.

In addition, significant construction delays may also result in the loss of revenues expected to be generated by our windparks. For example, we have entered into contracts to sell certain of the RECs to be generated through the operation of our New York windparks to the New York State Energy Research and Development Authority, or NYSERDA, the entity that administers the central procurement of RECs for the state of New York. Pursuant to our contracts with NYSERDA regarding our Altona, Bellmont and Chateaugay windparks currently in development, our ability to sell the RECs generated by our operation of these windparks may expire if the windparks are not in operation by November 2008.

Delays in the commencement of operations of our windparks may increase our maintenance and operations costs.

Delays in the commencement of operations of our windparks may result in increased operations and maintenance costs relating to routine maintenance or defects in the wind turbines at a windpark.

enclosure #2

COMMENTS | PRINT | EMAIL | MOBILE VIEW

North Country wind project financing questioned by state

By PAULA TRACY
New Hampshire Union Leader Staff
Tuesday, Feb. 10, 2009

CONCORD -- Hearings set for next month on a $275 million wind project for the North Country could be halted under a request filed by the counsel for the public.

Peter G.L. Roth, a senior assistant attorney general for the state, filed the request to suspend the hearings, set to begin March 9, saying there was inadequate financial information to determine whether the Granite Reliable Power's proposed wind electric generation park will be viable.

In an objection filed yesterday before the New Hampshire Site Evaluation Committee, Granite Reliable said plenty of information would be available in a Feb. 23 anticipated filing for the committee to make that determination.

The company acknowledged the tough economic climate that has put on hold some other projects.

"There have been significant disruptions in international capital markets which have impacted the availability of debt, tax equity and equity, all of which will be sources of finance for this project," wrote Doug Patch, attorney for Granite Reliable Power.

Pointing to the stimulus package being debated before Congress, Patch noted that legislation "should positively impact the availability of capital for renewable" power projects, and the hearings should go forward as promised.

Granite Reliable Power LLC, a subsidiary of Noble Environmental Power, has proposed construction of 33 wind turbines strung along 15 miles of ridge from Odell to Dixville Peak in central Coos County. The turbines could produce up to 99 megawatts of power annually from the wind, enough to power 33,000 homes.

The state has created an expedited permit process for renewable power projects and accepted the application of Granite Power on July 15. By law, it needs to have an answer, up or down, by April 6.

Roth, in his Feb. 5 motion, asked to "suspend this proceeding until such time as the applicant, Granite Reliable Power LLC, can make an adequate showing of financial capability."

Patch said the law only allows for the suspension of a process that has not begun. He argued that Roth, who has a title in this process as counsel for the public, rebuffed multiple offers to meet with Granite's chief financial officer, and instead, chose to file the request to halt the process.

Roth said an immediate hearing is necessary to determine whether the company has the financial fortitude to go forward.

Roth said the materials in the record "do not make a prima facie case that the applicant can

meet its burden to show financial capability," and that it would be an unnecessary exercise to have hearings which brought in witnesses and took state department heads away from their work.

While North Country officials have expressed general support for the project, the New Hampshire Fish and Game Department and the Appalachian Mountain Club have indicated concerns about the siting of a number of the towers in areas, which may have a negative impact on rare alpine habitat. Of particular concern is habitat for the rare pine marten, Bicknell's thrush, Canada lynx and the three-toed woodpecker.

Noble Reliable Power owns more than 11 wind parks in New York, Texas and Vermont and is licensed to produce 282 megawatts of power.

No hearing on Roth's motion has been scheduled.

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Noble, Horizon wind projects on hold

Work on two wind parks in development in Chateaugay have been suspended for the immediate future. Both the 13-turbine Noble Chateaugay II Wind Park and Horizon Wind Energy's 53-turbine Jericho Rise project will not make any progress this year, both as a result of the unstable economy.

January 12, 2009 by Shelly Livernois in The Malone Telegram

CHATEAUGAY - Work on two wind parks in development in Chateaugay have been suspended for the immediate future.

Both the 13-turbine Noble Chateaugay II Wind Park and Horizon Wind Energy's 53-turbine Jericho Rise project will not make any progress this year, both as a result of the unstable economy.

Horizon's Dan Fitzgerald told the Chateaugay town board at its Monday evening meeting that the company took stock of its ongoing projects and decided to give precedent to windfarms in development in the Midwest, where Fitzgerald said it can get more bang for its buck.

In Clinton County, construction of the Marble River Wind Farm had been suspended until 2010. It was originally scheduled for spring 2009 construction, he said.

No timeline has been set for construction of Jericho Rise, however Fitzgerald said he is campaigning to have both Chateaugay's park and Marble River built in 2010, with the argument that this option is more cost-effective than building them successively.

Regardless, the final form of a Environmental Impact Statement (EIS), which is required under the State Environmental Quality Review Act (SEQRA), will be completed by the end of February or beginning of March, Fitzgerald said.

The park will be constructed in both the towns of Chateaugay and the town of Bellmont.

Also at their Monday meeting, the board took action on the progress of Noble Environmental Power's Chateaugay II Wind Park by passing two resolutions.

In the first, the town of Chateaugay was granted lead agency status going forward in the development of the park. The resolution was approved after a motion and second from Council Members Art McCormick and Helen Ryan. Town Supervisor Dan Bilow abstained from the vote, and Councilman William Trombly was absent from the meeting.

A 30-day comment period has also been opened, with notice on the Chateaugay II having been filed with 17 agencies for comment within 30 days, including the state Public Service Commission (PSC), state Department of Environmental Conservation (DEC), Franklin County Highway Department and Legislature, and Chateaugay Highway Department, among others.

At the board's next meeting, it will consider another resolution relating to Chateaugay II, this one starting the process for Noble to file a Draft Environmental Impact Statement (DEIS). The scoping document which usually precedes a DEIS - as per SEQRA - will not be conducted, since Chateaugay

II is the third windpark the town has undertaken. It was therefore deemed unnecessary to proceed with that step, explained the town's wind attorney C. J. Madonna.

However, beyond these preliminary actions, the Chateaugay II park will likely not make any further progress this year, confirmed Noble Project Developer Andrea Dumas.

She said the company is holding back on production in response to the unsteady financial markets. Along the same lines, development of the DEIS will be suspended as well.

In a parallel move, the Chateaugay town board adopted a second resolution barring any further action regarding the Chateaugay II windpark until Noble replenishes the town's consultant account. The fund currently contains about $9,000, but the town wants that number to be $50,000 before any further work is done.

"We can't keep operating the way we've been operating," said Bilow, referring to the town's previous experience with wind developers.

Resolution 2 of 2009 was unanimously approved with no abstentions, and a motion and second from Councilmen Fred Cook and McCormick. The resolution bard both Madonna and Conestoga Rovers and Associates (CRA) - the town's consultants - from doing any further work related to Chateaugay II beyond this Friday.

Determining lead agency status and filing notice with involved agencies will conclude both parties' work until further notice.

In more encouraging news, the 71-turbine Noble Chateaugay Windpark, which was built this summer, is now producing power, according to CRA Consultant Justin Russell.

According to Russell and Madonna, 71 certificates of occupancy have been issued for each of the turbines, as has a single Certificate of Completion for the entire park.

Dumas could not comment on whether the 14-turbine Noble Bellmont Windpark - which adjoins the Chateaugay park - would be constructed this year.

Web link: http://www.mtelegram.com/

Filed under : New York : General

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Wind-farm workers laid off

By DENISE A. RAYMO
Staff Writer

October 17, 2008 04:00 am

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BELLMONT — Noble Environmental Power has stopped work at its Bellmont and Chateaugay wind-energy projects and laid off its workers.

And it appears the bankruptcy of one of its major financial backers may have played a part.

"Due to conditions in the financial markets, Noble Environmental Power has had to scale back its development plans for 2009," Noble Chief Executive Officer Walter Howard said in a written statement.

No specifics were given as far as the number of workers let go and how long a layoff might last.

But published reports indicate the work may not restart at either wind park until next summer.

"We deeply regret this unfortunate situation," Howard said. "These decisions have been extremely difficult for me, our company founders and others in management.

"We value all of our employees, and we appreciate their hard work and dedication to Noble."

Anna Giovinetto, who had been vice president of public affairs, said Wednesday she could not comment further on the company's situation because she was one of the people laid off.

The work stoppage and layoffs could also be connected to the ongoing investigation Attorney General Andrew Cuomo launched in July against Noble and another wind-energy company, First Wind of Massachusetts.

He issued subpoenas to both firms requesting all paperwork associated with the land agreements and easements that each received from property owners and public officials.

Cuomo's office is investigating whether the officials were unduly influenced or bribed to make deals.

News of the investigation came just a few months after Noble filed paperwork with the U.S. Securities and Exchange Commission in May for permission to offer stock to the public in hopes of raising $375 million.

On Sept. 2, the company said it would be offering about 24.4 million common shares and trade under the NASDAQ ticker symbol NEPI.

According to the Massachusetts Biotech and Technology News Journal of New England Technology, the co-lead underwriters for the stock offering were Lehman Brothers, Credit Suiss Securities (USA) LLC, JP Morgan Securities Inc. and Citigroup Global Markets Inc.

But two weeks after the announcement, Lehman Brothers collapsed under the heavy debt load it was carrying and filed for bankruptcy, ending its 158-year presence in the nation's economic picture.

That loss of support apparently led to Noble's decision to lay off workers and cease further construction and development at the wind parks it is building in eastern Franklin County in the towns of Bellmont and Chateaugay.

Noble Environmental Power lost $7.8 million in 2005, $20.7 million in 2006 and $42.5 million in 2007, according to information supplied to the Securities and Exchange Commission for its initial public offering application.

Noble's operation in the Town of Altona doesn't appear to be impacted by the Franklin County layoffs.

Town Supervisor Larry Ross said he just received an update on the progress at Altona's wind farm on Monday, and nothing was mentioned to him about shutdowns or layoffs.

"I'm sure they're going to be working because they just finished up the first circuit, and they're starting up our windmills now.

"I haven't heard a thing like that, but maybe it's because we're farther along and ready to start," Ross said.

He said some parts and equipment have been brought in from other operations to help Altona get online faster "because we're so close to being done."

The Noble Altona Windpark is to be a 97.5-megawatt operation; the combined 85 turbines at the Noble Bellmont Windpark and Noble Chateaugay Windpark are to produce 127.5 megawatts of power a year; and the Noble Clinton and Noble Ellenburg projects are expected to generate 100.5 megawatts and 81 megawatts, respectively.

E-mail Denise A. Raymo at: draymo@pressrepublican.com

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Wind company shuts doors in Rutland

A company working to install a wind-power project on Grandpa's Knob in Castleton is closing its Rutland office. ...In October, the Connecticut company laid off workers in New York and stopped work at two wind farms in that state in conection with the failure of Lehman Brothers, one of its chief backers.

January 7, 2009 in Burlington Free Press

A company working to install a wind-power project on Grandpa's Knob in Castleton is closing its Rutland office.

Brad King, Noble Environmental's local project manager, says the company has not given up plans for the wind farm and will continue to gather data from meteorological towers installed on the ridge last year.

In October, the Connecticut company laid off workers in New York and stopped work at two wind farms in that state in conection with the failure of Lehman Brothers, one of its chief backers.

Noble's CEO Walter Howard released a brief statement Monday saying the poor economic outlook prevents the company from speculating on its 2009 development plans, but says it will continue to evaluate the financial markets and the Grandpa's Knob project.

Web link: http://www.burlingtonfreepress.com/article/20090107/BUSINESS/90107013"

What's in a Wind Contract?

Lots of interesting things

By EDNA McGINNETT in the Dunkirk, NY Observer

3/14/08 - Having read several different industrial wind energy landowner contracts, I really have to hand it to wind developers. In exchange for a few thousand dollars, the wind company can preempt landowners' rights to: extract sand and gravel from their property, develop mineral rights on their property, allow hunting, build additional outbuildings or plant trees, etc.

If, in the sole discretion of the wind developer, such activities would interfere with or alter the flow of wind currents over the property, or interfere in any way with the building or operation of the wind project.

The wind company has the sole discretion as to what electrical generation equipment will be placed where and when on leased property. In addition, these leases contain language which allows the wind developer to use other land owned by the landowner even if such acreage is not included in the lease agreement.

These landowner contracts subordinate the landowners' rights in favor of the wind developers. Once landowners sign an option they are under obligation to sign the lease agreement if the developer decides to exercise the option.

One of the reasons these contracts are so restrictive is explained in comments made by NYSERDA about wind energy lease agreements: "Before allowing wind turbines to be purchased and installed, project investors, financing organizations, and power purchasers will want to be sure the lease provides clear, unimpeded rights to use of the land over the expected life of the project."

"Termination clauses need to be 'reasonable' so that the risk of installing the wind turbine equipment and having the lease terminated is low and manageable. If the risk of termination is deemed too high, it will be difficult for the project developer to obtain financing for the project."

These leases typically prevent a landowner from complaining or taking action against the wind company because of noise, flicker, visual, audio, vibrations, air turbulence, electromagnetic, electric and radio frequency disturbances and other side effects caused by the operation of the project.

Yes, I really have to hand it to these wind developers, and if you have signed one of these leases, you probably already have.

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WHAT HAVE I DONE?

Now each morning when I awake, I pray and then ask myself, "What have I done?"

I am involved with the BlueSky/GreenField wind turbine project in N.E. Fond du Lac County. I am also a successful farmer who cherishes his land. My father taught me how to farm, to be a steward of my fields, and by doing so, produce far better crop production. As I view this year's crops, my eyes feast on a most bountiful supply of corn and soybeans. And then my eyes focus again on the trenches and road scars leading to the turbine foundations. **What have I done?**

In 2003, the wind energy company made their first contacts with us. A $2000 "incentive" started the process of winning us over, a few of us at a time. The city salesman would throw out their nets, like fishermen trawling for fish. Their incentive "gift" lured some of us in at first. Then the salesmen would leave and let us talk with other farmers. When the corporate salesmen returned, there would be more of us ready to sign up; farmers had heard about the money to be made. Perhaps because we were successful farmers, we were the leaders and their best salesman. **What have I done?**

Sometime in 2004 or 2005, we signed $4000.00 turbine contracts allowing them to *"lease" our land for their needs. Our leases favored the company*, but what did we know back then? Nobody knew what we were doing. Nobody realized all the changes that would occur over which we would have no control. How often my friends and I have made that statement! **What have I done?**

I watched stakes being driven in the fields and men using GPS monitors to place markers here and there. When the cats and graders started tearing 72 foot wide roads into my fields, the physical changes started to impact not only me and my family, but unfortunately, my dear friends and neighbors. Later, a 4 foot deep by 2 foot wide trench started diagonally across my field. A field already divided by their road was now being divided again by the cables running to a substation. It was how making one large field into 4 smaller, irregularly shaped plots. Other turbine hosts also complained about their fields being *subdivided* or multi cable *trenches* requiring more land. Roads were cut in using anywhere from 1000 feet to over a 1/2 mile of land to connect necessary locations. We soon realized that the company places roads and trenches where they will benefit the company most, not the land owner. One neighbor's access road is right next to some of his out buildings. Another right next to his fence line. **What have I done?**

At a wind company dinner presented for the farmers hosting the turbines, we were repeatedly told - - nicely and indirectly -- to stay away from the company work sites once they start. I watch as my friends faces showed the same concern as I had, but none of us spoke out. Months later, when I approached a crew putting in lines where they promised me they would definitely would not go, a representative told me I could not be here. He insisted that I leave. The line went in. The company had the right. I had signed the lease. **What have I done?**

Grumbling started almost immediately after we agreed to a 2% yearly increase on our 30 year lease contracts. Some felt we should have held out for 10%. What farmer would lock in the price of corn over the next 5 years, yet alone lock one in at 2% yearly for 30 years? Then rumors leaked that other farmers had received higher yearly rates, so now contracts varied. The fast talking city sales folk had successfully delivered their plan. Without regard for our land, we were allowing them to come in and spoil it. All of the rocks we labored so hard to pick in our youth were replaced in a few hours by miles of roads packed hard with 10 inches of large breaker rock. Costly tiling we installed to improve drainage has now been cut into pieces by company trenching machines. **What have I done?**

Each night, a security team rides down our roads checking the foundation sites. They are checking for vandals and thieves. Once, when I had ventured with guests to show them foundation work, security stopped us and asked me, standing on my own property, what I was doing there. **What have I done?**

Now, at social functions, we can clearly see the huge division this has created among community members. Suddenly, there are strong-sided discussions and heated words between friends and, yes, between relatives about wind turbines. Perhaps this is of greater consequence than the harm caused to my land! Life is short and my friendships precious. **What have I done?**

I tried, as did some of the other farmers, to get out of our contracts, but we had signed a binding contract and a contract is a contract. If you are considering placing wind turbines on your property, I strongly recommend that you please reconsider. Study the issues. Think of the all the harm versus benefits to your land and, in the future, to your children's land by allowing companies to lease your land for turbines.

WHAT HAVE I DONE?

PLEASE DO NOT DO WHAT I HAVE DONE!

Enclosure #5

July 15, 2008
New York, Press releases

Attorney General Cuomo launches investigation into wind power companies' conduct across upstate New York

Allegations of Improper Dealings with Public Officials and Anti-Competitive Practices

Subpoenas Served on First Wind/UPC Wind and Noble Environmental Power, LLC

ALBANY, NY (July 15, 2008) — Attorney General Andrew M. Cuomo announced today the launching of an investigation into two companies developing and operating wind farms across New York state amid allegations of improper dealings with public officials and anti-competitive practices.

Wind farms are clusters of large electricity-generating turbines powered by wind and connected to the electric grid.

Subpoenas were served on Newton, Massachusetts-based First Wind (formerly known as UPC Wind) and Essex, Connecticut-based Noble Environmental Power, LLC. They are part of an investigation into whether companies developing wind farms improperly sought or obtained land-use agreements with citizens and public officials; whether improper benefits were given to public officials to influence their actions, and whether they entered into anti-competitive agreements or practices.

In recent months, the Office of the Attorney General has received numerous complaints regarding the two companies from citizens, groups and public officials in eight counties alleging improper relations between the companies and local officials and other improper practices.

"The use of wind power, like all renewable energy sources, should be encouraged to help clean our air and end our reliance on fossil fuels," said Attorney General Cuomo. "However, public integrity remains a top priority of my office and if dirty tricks are used to facilitate even clean-energy projects, my office will put a stop to it."

The Attorney General's subpoenas seek, among other things:

* All documents concerning any benefits conferred on any individual or entity in connection with wind farm activity.

* All agreements, easements or contracts with individuals regarding placement of wind turbines.

* Agreements between wind companies that may indicate anti-competitive practices.

* All documents pertaining to any payments or benefits received from local, state or federal agencies.

First Wind has three operational wind farms and 48 others in development across the country, according to its web site. First Wind developed the Steel Winds wind farm in Erie County and has

wind farms in development in Steuben, Chautauqua, Genesee and Wyoming (GenWY Wind) counties.

Noble Environmental Power, LLC, has three active wind farms and five in development in Allegany, Chautauqua, Clinton, Franklin and Wyoming Counties.

The investigation is being led by Assistant Attorney General Andrew Heffner of the Syracuse Regional Office under the supervision of Special Deputy Attorney General Ellen Biben, who oversees the Attorney General's Public Integrity Bureau. Assisting in the case are Investigators Thomas Wolf, David Bruce and Andrea Burnham.

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The State Capitol
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July 15, 2008

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Office of the New York State Attorney General Andrew M. Cuomo [1]

15 July 2008

URLs in this post:
[1] Office of the New York State Attorney General Andrew M. Cuomo:
http://www.oag.state.ny.us/press/2008/july/july15a_08.html

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October 17, 2008
Vermont

Wind firm hit by legal, financial troubles; Noble Environmental Power proposed Grandpa's Knob farm

Noble Environmental Power is having financial and legal difficulties, but it was unclear Thursday what that will mean for the proposed wind farm at Grandpa's Knob.

New York media reported Thursday that Noble had laid off employees and stopped work at two planned wind farms there, linking the development to the bankruptcy of Lehman Brothers, one of the company's chief backers.

Meanwhile, the New York Attorney General's Office announced in July it would subpoena Noble and another company developing wind farms in upstate New York as part of an investigation into a variety of allegations against the companies, including bribery and anticompetitive practices.

Noble's office in Rutland appeared to still be operational — papers were visible on a desk through the office's Center Street window — but nobody could be found there Thursday, and project manager Brad King did not return phone calls.

Calls to Noble's corporate headquarters in Connecticut were a little more productive. A spokeswoman said she was unable to answer specific questions, but offered to send a statement provided to other media outlets and to relay questions about Grandpa's Knob up the chain of command.

As of 5 p.m., the Herald had not received any statement or phone call from anyone else in Noble.

Representatives from Noble began floating the idea of a wind farm at the Grandpa's Knob ridgeline with local officials in early 2007. In meetings with the Select Boards of Castleton, Hubbardton, West Rutland and Pittsford, the company said it believed it could build the largest wind farm in the state at the site.

The company began testing the site in January, erecting two meteorological towers to measure wind speed, wind direction and temperature. At the time, the company said data-gathering would take a minimum of six months and could take as long as five years.

Castleton Town Manager Charles Jacien said he met informally with King on Sept. 24 and got the impression the project was going forward.

"Brad laid out that various studies are being concluded and public hearings are probably starting some time next year," he said, adding that King said the company planned to propose 19 turbines along a 6-mile stretch of ridgeline. "What I understand from their proposed schedule, it's only a few months off."

District 1 Environmental Coordinator William Burke said his office has not received an Act 250 application for the project.

According to a statement released in July, the New York Attorney General's Office received numerous complaints about Noble and Massachusetts-based First Wind from residents, organizations and public officials.

Complaints included that the companies improperly sought land-use agreements, gave improper benefits to public officials to influence their actions and entered into anticompetitive agreements or practices.

Nobody involved with the investigation could be reached Thursday to comment on its status.

"You would think that clean and green energy would be of the highest ethical standard," Pittsford Town Manager John Haverstock said. "We'll try not to jump to conclusions."

Haverstock said he had an informal meeting with company representatives when he took over as town manager in June, but had not heard from Noble since. He said the project was not at the forefront of local discussion, so it was hard to gauge support for it in the community.

Jacien said he had only seen support for the proposal in Castleton.

"If you look at the back bumpers of all kinds of different vehicles, you'll see a whole lot of support," he said.

By Gordon Dritschilo
Herald Staff

Rutland Herald [1]

17 October 2008

URLs in this post:
[1] Rutland Herald: http://www.rutlandherald.com/apps/pbcs.dll/article?AID=/20081017/NEWS04/810170367

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Enclosure #6

National Wind Watch

FAQ -- Impact on Wildlife

Do birds nest on wind turbines?

Modern turbines have solid instead of latticed towers, so birds can't rest or nest on them. They can, however, still perch on the nacelle (the bus-sized generator housing at the top of the tower).

Is the lower rpm of modern wind turbines safer for birds and bats?

Modern utility-scale wind turbines turn at a much lower rpm than older models. Because the blades are so long and are moving 150 to 200 mph at the tips, depending on the model, the impact on birds and bats remains substantial.

What studies have been done on the impact of wind turbines on birds and bats?

Few studies have been done to determine the true effect of industrial wind turbines on birds and bats, and fewer studies still that have been done independently of the wind companies' control. The evidence is clear, though, that wind turbines present yet another threat to the lives of birds and bats. The risk appears to be much greater in some areas than in others.

The first-year study of the "Maple Ridge" facility on the Tug Hill plateau of New York estimated that 2,000 to 4,000 birds and bats were killed by 120 turbines during the 5-month study period in 2006 (click here for the report; click here for May 1, 2007, testimony to the U.S. House Natural Resources subcommittee on Fisheries, Wildlife and Oceans).

What does the US Fish & Wildlife Service think about wind power?

The US Fish & Wildlife Service is concerned about the danger to birds. They have issued siting guidelines which recommend that wind turbines should not be installed near wetlands, on mountain ridges, near shorelines, or in other locations known as concentration areas for wildlife or at sites subject to frequent fog or low-lying clouds during spring and fall migrations.

How do wind turbines affect birds?

Mountain ridges and coastal areas, where industrial turbines are often installed, are features of the landscape that concentrate many birds. Songbirds mostly migrate at night and low enough to collide with the blades of large wind turbines. The presence of large wind turbines may cause birds to avoid the site, thus losing a foraging resource and requiring extra energy to fly around it. The cumulative effect of multiple facilities could have a serious toll on bird populations. The activities of prairie birds, including mating and nesting, are easily disturbed -- even at a great distance -- by the construction and continuing operation of an industrial wind power facility, which can spread over hundreds, often thousands, of acres.

Are raptors threatened by industrial wind turbines?

Wind power is a unique threat to raptors (hawks, eagles, falcons, owls, and vultures) -- many of them already rare -- and other large birds, such as ducks, geese, swans, and cranes. The risk of collision not only threatens individual birds but also augments existing threats to their populations. The cumulative effect of multiple facilities may threaten the viable breeding of several species already in decline.

Do wind turbines kill more birds and bats than other human activities?

Promoters of industrial wind power often try to divert attention to the carnage wrought by office tower windows, cars, and housecats, as if two wrongs make a right. Even using the scant data inconsistently compiled by consultants hired by the wind power developers, it is clear that industrial wind turbines kill many more birds and bats per unit than these other causes, particularly raptors (such as eagles and hawks) and migrating bats and songbirds.

Is the impact to birds and bats justified?

Promoters of industrial wind power try to justify the threats to birds and bats with the claim that they are actually saving even more birds by cleaning the air and reversing global warming. They are wrong in that self-serving belief, because wind power does not replace other sources of electricity (see the "Output" FAQ).

Do wind turbines kill bats?

The threat to bats has turned out to be a problem the industry can't deny. FPL Energy ended access to its facilities after independent research documented that thousands of bats were killed in just a couple of months at one location and that this pattern of mortality was being seen at other sites as well. To divert attention from this outrage and their lack of action to remedy it, FPL Energy announced in January 2006 that it would fund some bat conservation projects. That effort will not, however, mitigate the harm they are causing, let alone justify or reduce it.

A revealing story comes from Carleton College in Northfield, Minnesota, which constructed a 1.65-megawatt wind turbine in September 2004 out in the middle of a corn field two miles from campus. In October 2005, the Winona Daily News described a tour led by project director Rob Lampa. Lampa told the group that they had seen no sign of a single bird or bat death since the turbine was switched on. But as they were leaving, one of the group from Winona pointed out something on the ground to one of the county commissioners with her. It was a dead bat. Nearby was another. As one of our correspondents commented, Lampa will have to make sure the clean-up crew does a better job before the next tour!

Do wind turbines affect other animals besides birds and bats?

As with birds and bats, there are no reliable studies of the effect of industrial wind turbine facilities on other animals. The installation of such large structures in wild areas, along with supporting roads and transmission infrastructure and the clearing of trees on mountain ridges, inevitably has a negative effect, if only because of the loss, degradation, and fragmentation of habitat, especially ecologically vital interior forest. The turbines also move (producing noise and vibration) and are lit by strobes day and night, adding to the distressing impact they likely have.

Until good studies are done, we have anecdotal evidence such as the following about the effect of a wind facility on Backbone Mountain, West Virginia: "I looked around me, to a place where months before had been prime country for deer, wild turkey, and yes, black bear, to see positively no sign of any of the animals about at all. This alarmed me, so I scouted in the woods that afternoon. All afternoon. I found no sign, sight, or peek of any animal about."

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Do wind turbines harm animals?

Modern turbines have solid instead of latticed towers, so birds can't rest or nest on them. They can, however, still perch on the nacelle (the bus-sized generator housing at the top of the tower).

Modern turbines also turn at a much lower rpm than older models. Because the blades are so long, however, they're moving 150 to 200 mph at the tips, depending on the model, so the impact on birds remains substantial.

The fact is that few studies have been done to determine the true effect of industrial wind turbines on birds, and fewer studies still that have been done independently of the wind companies' control. The evidence is clear, though, that wind turbines present a threat to the lives of birds and especially bats.

The U.S. Fish & Wildlife Service says that wind turbines should not be erected near wetlands, on mountain ridges, near shorelines, or in other known wildlife concentration areas or where fog or low clouds are common during spring and fall migrations.

Mountain ridges and coastal areas are typical migratory routes for many birds, and songbirds in particular fly low enough to be in danger of collision with the blades of large wind turbines. The clearing of forest attracts small mammals which in turn attracts hunting birds such as owls, hawks, and eagles to the vicinity of the turbines. The activities of prairie birds, including mating and nesting, are easily disturbed by the construction and continuing operation of a wind power facility, which can spread over thousands, of acres.

Promoters of industrial wind power try to justify these threats to birds and bats with the claim that they are actually saving even more birds by cleaning the air and reversing global warming. They are wrong in that belief, because wind power does not replace other sources of electricity.

They also try to divert attention by emphasizing the hazards posed by office tower windows, cars, and housecats, as if two wrongs make a right. And wind power is unique in its threat to raptors (hawks, eagles, falcons, owls, and vultures) — many of them already endangered — and other large birds such as ducks, geese, swans, and cranes.

The threat to bats has turned out to be a problem for the industry. FPL Energy ended access to its facilities after independent researches determined that thousands of bats were killed in just a couple of months at one location and that this mortality pattern was also being seen at other sites.

As with birds and bats, there are no reliable studies of the effect of industrial wind turbine facilities on other animals. The installing of such large structures in wild areas, along with supporting roads and transmission infrastructure and the clearing of trees on mountain ridges is bound to have a negative effect, if only because of the loss, degradation, and fragmentation of habitat, especially ecologically vital interior forest. The turbines also move (producing noise and vibration) and are lit by strobes day and night, adding to the distressing impact they likely have.

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Enclosure #7

Wind Energy Concerns Websites

INFO

http://www.wind-watch.org

http://www.betterplan.squarespace.com

http://www.stopillwind.org

http://www.windtruth.org

http://www.nortexwind.org

http://www.cohoctonfree.com

http://www.cohoctonfree.com/windcontracts.htm

http://www.windaction.org

YouTube

A Vestas wind system fail and crashes

http://www.youtube.com/watch?v=CqEccgR0q-o&feature=related

complaints on windfarms from nearby residents

http://www.youtube.com/watch?v=v48LiLsJSTg&feature=related

industrial wind turbine noise

http://www.youtube.com/watch?v=FA9uBdkmRtY&feature=related

Wind Turbine Noise Levels-106dbs-Yes, they do make noise.

http://www.youtube.com/watch?v=T6Q59FnkrY8&feature=related

Life Under a Windplant - Part 1

http://www.youtube.com/watch?v=SNxvkrgoPLo&feature=related

Life Under a Windplant - Part 2

http://www.youtube.com/watch?v=_utFV2ukOtU&feature=related

Life Under a Windplant - Part 3

http://www.youtube.com/watch?v=AOd5tSZF3A4&feature=related

Under the blade

http://www.youtube.com/watch?v=Yb80bEOEZBc&feature=related

wind turbine shadow flicker

http://www.youtube.com/watch?v=-_SfKwyYsIk&feature=related

Wind Turbine Ice Throw

http://www.youtube.com/watch?v=4EmYe2u6J6g&feature=related

Comments of residents near to wind farm noise

http://www.youtube.com/watch?v=ucpfqFFfG8w&feature=related

The Voices of Tug Hill, Part 1 of 3

http://www.youtube.com/watch?v=ePZO76z2iBY&feature=related

The Voices of Tug Hill, Part 2 of 3

http://www.youtube.com/watch?v=ugmxuYQvjv4&feature=related

The Voices of Tug Hill, Part 3 of 3

http://www.youtube.com/watch?v=ZgeQjtuwxuE&feature=related

Freedom Windmills Shadow Flicker

http://www.youtube.com/watch?v=_XCA0_W9Qxs&feature=related

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"I was asked to open the windfarm at Delabole. At that time nobody was talking about a gigantic programme, getting 15 or 20 per cent of the country's energy from wind turbines. It was a kind of nice green gesture. I think, now that I know as much as I do, I wouldn't have touched it with a bargepole."

—James Lovelock, the founding historical and cultural leader of environmentalism for environmentalists around the world and originator of the GAIA concept.

The Top Ten False and Misleading Claims the Windpower Industry makes for Projects in the Eastern United States

1. Industrial wind developers are interested only in providing a public service.
Their primary purpose is to take advantage of extraordinary income sheltering opportunities... More...

2. Windplants do not harm wildlife.
Despite industry insistence this won't happen, it already has... More...

3. Windplants will reduce the mining/burning of fossil fuels and lessen dependence on foreign oil.
The wind industry in the East will not put much of a dent in our reliance on fossil fuels. More...

4. Windplants are highly efficient and provide power for significant numbers of homes.
Wind technology is relatively feckless. More...

5. Locals who oppose the wind industry are NIMBYS.
One of the most persistent hypocrisies from corporate wind... More...

6. Windplants will generate significant local revenue and increase property values.
...two recently constructed windplants... have contributed virtually nothing to the local tax base. More...

7. The wind industry will create many local jobs.
This is a cruel untruth, especially in economically depressed areas... More...

8. Wind technology is noiseless and creates few disturbances.
Large wind turbines... create profound noise reverberations extending out... More...

9. Wind technology consists of "windmills" on "wind farms."
The reality is that they are mammoth industrial factories... More...

10. Those who are concerned about windpower are not true environmentalists.
The facts demonstrate otherwise. Notable environmentalists who have studied... More...

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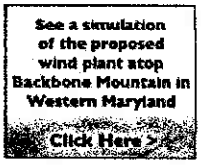

Notable Quotes

"The trouble with wind farms is that they have a huge spatial footprint for a piddling little bit of electricity... ."

—Sir Martin Holdgate, former chairman of the British Renewable Energy Advisory Group.

#1. Industrial wind developers are interested only in providing a public service.

All the false and misleading claims which this industry makes for itself work to disguise the fact that it is only a nominal producer of electricity in the eastern US. Its primary purpose is to provide extraordinary tax and income sheltering opportunities for a few wealthy investors at the expense of average taxpayers and rate payers. On a per kilowatt hour basis, wind is the most heavily subsidized source of industrialized power in the nation.

In response to persistent lobbying from the wind industry and its allies, 20 states have passed renewable portfolio standards requiring each state to purchase a percentage of its electricity from renewable power sources. This obligates utility companies doing business in the state to purchase electricity from the wind industry without any meaningful competition.

At the same time, also in response to a long term and very sophisticated political lobbying effort, Congress has re-authorized substantial subsidies to wind development, including an accelerated capital depreciation schedule and extraordinary investment and production tax credits. With laws ensuring a captive market and with tantalizing incentives for profit, investment in wind seems nearly risk free. The only remaining factor assuring success is access to land—and lots of it.

This is a major obstacle to the industry. A typical windplant is gigantic, consisting of dozens of 400 foot turbines arranged along many miles of access roads and communication/transmission line infrastructure. But the potential for profit is so great that wind investors are working hard to bulldoze opposition in order to secure the land they so desperately need.

Meanwhile, Congress has made wind initiatives so lucrative that it seems to have discouraged responsible citizenship. Consider what's at stake financially:

- Federal production tax credits remain front and center for wind developers and their investors, giving the industry tax credits worth 1.9 cents for each kilowatt hour it produces. As cited in Claim #4, a modest 40 MW windplant should produce about one hundred million KW hours annually (each 1.65 MW turbine would yield about four million KW hours a year), generating nearly $20 million in tax credits over the ten year period allowed by the production tax legislation. Since this windplant would power about 9000 homes a year, the total subsidy, underwritten by taxpayers, would be about $2,200 for each household powered! But this is just the beginning of the story. At a recent Maryland Public Service Commission heading, a spokesman for Clipper Windpower, a company proposing to erect a 100MW wind facility in Western Maryland, told the hearing examiner that his company expected $150,000,000 from production tax credits leveraged over a ten year period.
- Moreover, federal tax benefits pay as much as two-thirds of the capital cost of each $1.5 million wind turbine, with many states creating incentives to cover on average an additional ten percent of these costs.
- Windplant owners can use these tax credits to reduce their corporate tax obligations by tens of millions each year, as the Marriott Corporation did a few years ago with a similar clean energy scheme, within a year reducing its corporate tax obligations from 36 to 6 percent—at a savings of nearly $100 million, with average ratepayers and taxpayers picking up the slack to the federal treasury (See "The Great Energy Scam: How a Plan to Cut Oil Imports Turned Into a Corporate Giveaway," Time Magazine, October 13, 2003. Read an excerpt here).

State renewable portfolio standards laws make it probable that wind companies will likely charge utilities double the price paid for coal. For example, a 140MW wind facility as a consequence will likely reap 15-25 million dollars annually for the product it generates, and almost all of that energy product will be wasted in the electricity grid's spinning reserves. In addition to its lucrative production tax credits, the wind industry is a lusty cash cow.

It is for these kinds of rewards that wind developers have placed private gain over the public interest. In the process, they have transformed the wind business into yet another extraction industry, relying upon false claims and the gullibility of those seeking easy solutions to complex problems. According to the Department of Energy's Energy Information Administration, if the renewable production tax credit is extended from 2005 to 2015, there will be 42,000 1.5 MW or larger wind turbines installed in the United States by 2025, covering 3,750 square miles. These would generate 206 billion kilowatt hours of electricity per year, meeting about 3.7 percent of the United States' electricity demand in 2025. Although this projection is optimistic because it assumes a capacity factor of 37 percent, the sheer numbers of turbines invite social and environmental havoc without regulations for responsible siting.

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—James Lovelock, the founding historical and cultural leader of environmentalism for environmentalists around the world and originator of the GAIA concept.

#2. Windplants are harmless to wildlife.

Untrue. The wind industry has touted the safety of its newer technology, maintaining that "monopole towers" and slower moving blades, which rotate no faster than 20 rpms, will not harm wildlife. However, huge 350-465 feet tall continuously lit wind turbines—with propeller blades so long that, at 20 rpms, they are moving at nearly 200 miles per hour at their tips—and placed atop prominent ridges where large numbers of wildlife migrate—will kill raptors, songbirds, and bats. Despite industry insistence this won't happen, it already has. The annual body count at Altamont Pass, California has averaged nearly 5,000 birds for 20 years, prompting several current lawsuits. The wind industry response has been: "We need more time to study the problem" while the turbines continue to run full bore. Indeed, when confronted with actual bodies on the ground, the industry argument morphs into a ten wrongs make a right scenario: "Cats and communication towers kill millions of bird and bats annually, and we don't expect to kill that many." When challenged about the appropriateness of this defense, the industry shifts gears once more: "The strategic need for clean energy justifies the tactical loss of some wildlife."

When pressed hard, wind developers do admit their technology does kill. But the low bird and bat mortality ultimately acknowledged is extremely misleading if not outright disingenuous, for their "experts" often use an apples to orangutans comparison, giving statistics (only two or three birds killed per turbine) derived from western turbines averaging about 150 feet tall and located in fields not known for significant avian migration—then stating these should be comparable to 400 foot turbines located on high forested ridges in areas well known as a major avian flyway. This kind of comparison is no basis for credible prediction, which is the purpose of scientific analysis.

Recent radar studies at proposed industrial windplant locations atop the mountains of Vermont and West Virginia demonstrate that hundreds of thousands of birds and bats fly low enough to collide with huge turbines, placing them at risk—especially birds in times of fog and low clouds. The taller the turbines, the larger the threat. In 2003, a developer-sponsored mortality study conducted over a several week period at a West Virginia windplant revealed that over 2,000 birds and bats had been killed during fall migration in that span. Independent experts have doubled that mortality figure to more than 4,000, concluding that the developer's accounting methodology was insufficient.

While bird mortality has long been a concern, recent studies show that bat mortality may be an even greater problem, for reasons which are not entirely clear. But wind industry proponents press forward. To insure they receive all their tax credits, they continue to insist on post construction studies, a la Altamont Pass, vowing to work on resolving the "problem" in the future. Nonetheless, because of the documented experiences at Altamont and the recent discoveries made by radar analysis on ridgetop migratory routes, the industry has now begun to admit that windplant mortality could be very high. But not high enough to deter the building of windplants in risky areas, since, while the wildlife mortality at these sites may be significant, it is, according to the industry "not likely to threaten any species with extinction... ." Faced with the news that its wind turbines were killing thousands of bats at two windplants on Appalachian mountains ridgelines, Florida Power and Light, the owners of these windplants, reacted quickly. It barred scientists from pursuing follow-up work, pulled its $75,000 contribution from the research cooperative studying bat mortality and ended the doctoral work of a graduate student who had produced two years of data showing unusually high rates of bat death at the Pennsylvania and West Virginia sites. Although Florida Power and Light has pulled the plug on further research into avian and bat mortality on any of its properties, the company plans to construct hundreds more huge turbines in the mountainous areas.

Good public policy requires those who make claims about the safety of their product to substantiate those claims *before* introducing it into the environment, deferring to what Rachel Carson called the precautionary principle. Industry funded research should be highly suspect. Experts who work for the industry should submit their research and resulting conclusions for independent, peer-reviewed analysis. Good science insists upon conclusions which account for all the evidence, not selective pieces which fit the convenience of a developer's point of view. *Post* construction studies are extremely risky and problematic—and more than a little self-serving. As is the case at Altamont Pass, who is going to shut down a $100 million capital facility once it is running, even if studies verify it kills significant wildlife?

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"Renewable energy (hydropower, for example) can have horrendous impacts on fish and wildlife. But I can think of no proposed project more devastating to fish, wildlife, and the local economy than plunking a wind farm in the middle of Nantucket Sound."

—Ted Williams, Audubon Magazine (May 5, 2004).

#3. Windplants will reduce the mining/burning of fossil fuels and lessen dependence on foreign oil.

Foreign Oil

Wind only generates electricity. Electricity generation is only part of our energy production. Sixty percent of the nation's energy use does not involve the making of electricity. Coal and gas-fired power plants do pollute the air with *toxic hydro-carbons*. But the sheer volume of automobile exhaust combined with home heating demand are major contributors to the problem It is folly to suggest that thousands of wind turbines blanketing the mountains of the the eastern US would do anything of significance to mitigate these other energy forces evidently contributing to the warming of the planet. Allegheny Power, the major electricity provider in the region including Western Maryland, reports that oil accounted for 1% of the resources used to generate its power in 2004. Nationwide, this figure is less than 3%. Even if industrial wind generated ten percent of the nation's electricity, it would not staunch the fossil fuel emissions thought to be involved in accelerating global warming, given our nation's increasing energy consumption and given that wind can only intermittently (about 30 percent of the time) address the electricity portion of the energy production problem—the minor portion.

Given that wind only produces electricity, given that we use so little oil for electricity production, and even if large numbers of wind turbines displaced the one percent of our electricity now powered by oil, the region would still be heavily dependent on coal and gas, power sources often described as "dirty"—and we would still be mightily dependent on foreign oil, contrary to what the wind industry claims.

Fossil Fuels

Wind technology in the uplands of the eastern United States stands little chance of displacing fossil fuel extraction efforts or reducing its consumption, given our increasing rate of electricity demand. Wind machinery has problems accessing and controlling its source of power. Because of the intermittent nature of wind velocity, sometimes it is not strong enough to generate power and other times it is too strong to be commercially tapped. The industry has attempted to increase its effectiveness by making taller machines and targeting them on high ridges with excellent wind potential. Nonetheless, because of its intermittency, wind technology will require back-up from other, often "dirty" power sources for the time it does not operate or works at sub-optimal levels.

A wind turbine is designed to generate optimal electrical power relative to its size, shape, ability to withstand stresses, rotor sweep and efficiency, and location, among other conditions. The wind needs to blow eight to fourteen miles an hour before a turbine will produce electricity, and a turbine is programmed to shut down when the wind velocity exceeds 50 or 55 miles per hour to prevent harm to its gears. If the wind were to blow at a sufficiently consistent velocity all the time and the turbine never broke down, the turbine would be operating at 100 percent of its capacity potential over a year's time—its Rated Capacity. However, because the wind is intermittent and volatile, and the turbines at various times require maintenance, they actually will produce electricity only some of the time. Using a combination of considerations, such as meteorological testing, weather history, the history of turbine effectiveness, among others, energy experts assign a Capacity Factor for each turbine model, which predicts the amount of electricity a turbine will actually produce in a year. No existing windplants located in the Pennsylvania, New Jersey, Maryland (PJM) region have achieved a capacity factor of more than 30 percent. This means that 70 percent of the time they are not producing electricity. Consequently, a windplant rated at 47 MWs, for example, will generate electricity in the neighborhood of 12-15 MWs (25-30% of its rated capacity).

Other power sources, such as coal or nuclear, also don't work all of the time and must be supplemented by power sources that are working. The electricity grid has a complex monitoring system for predicting and maintaining its supply. Electricity must balance the rate of production with the rate of consumption at all times. A fundamental problem with supplying electricity is that electricity cannot be stored at industrial levels. Once generated, electricity must be delivered and consumed immediately. However, power sources like coal and nuclear are rarely volatile when producing their yield and produce electricity at about 75-80 percent of their rated capacities. The volatile, extremely unpredictable nature of wind resource makes its technology different from other power sources not only in degree but in kind.

The intermittent nature of wind energy might not pose a problem to the region's electricity grid at present levels. However, increasing the percentage of wind energy to higher levels would require significant and expensive technological modifications to the grid and to the various transmission systems out to the end user. It would also present major challenges for the grid's management.

This may not be a substantial concern until wind energy becomes a major contributor to the electricity grid, adding, say, two or three percent to the total electricity supply. A "Wind Report 2004" by E-On/Netz, one of Germany's largest electric grid operators, confirms this analysis, adding many other "price" caveats: given the intermittent and volatile nature of the wind, both the mechanics of grid operation and transmission technology would have to be retooled—at substantial cost—to back up wind generation. In fact, if wind energy increased to provide, say, just a small percentage of the power for the PJM grid, primarily fossil-fueled generating plants would have to fire up to levels of

TOTAL	0	4,838	30,337	110,797	151,991	77%	29,023

1. Source information is from a national report entitled - **Generating Solutions: How States Are Putting Renewable Energy Into Action** - A Report of the US PIRG Education Fund and the State Public Interest Research Groups. February 2002. ["This report examines 21 states and their potential for electricity generation from renewable resources using state-of-the-art technology." Estimates of amount of electricity possible for energy sources were based on studies by government (mainly National Renewable Energy Laboratory), industry and the Union of Concerned Scientists (UCS).] Amount of electricity is shown as Million kilowatt-hours.

2. Union of Concerned Scientists estimate based on a state breakout of data developed for Doherty, Julie P., "U.S. Wind Energy Potential: the Effect of the Proximity of Wind Resources to Transmission Lines," Monthly Energy Review, Energy Information Administration, February 1995. Includes class 3 and higher windy land area within 20 miles of existing transmission lines, excluding all urban and environmentally sensitive areas, 50% of forest land, 30% or agricultural land, and 10% of range land.

3. Number of modern industrial wind turbines is calculated by dividing each state's Wind Potential by the average amount of electricity annually generated by a 1.5-MW turbine. An "average" 1.5-MW turbine produces only about 30% of its rated capacity each year (i.e., Capacity Factor = .30), so its annual output would be about 4 million kilowatt-hours (1,500 kw *.30 * 8760 hrs/yr).

Unfortunately, the demand for electricity will be so great over the next thirty years that additional coal plants are likely to be built. Florida Power and Light, the nation's third largest electric utility company, now owns over one-half of the wind energy facilities in the US. Moreover, AES Corporation, which operates a coal-burning power plant at Cumberland, Maryland, has recently joined with US WindForce (which has several approved and planned projects in West Virginia and Maryland), lending its financial backing to wind energy development in the region. US WindForce is the most ambitious developer of wind energy in the Alleghenies.

Such "equity investments" between wind and coal will likely grow in number, as the former industry reaps the cachet of association with a major electricity producer while the latter gathers in the use of wind's generous tax avoidance shelters and its reputation as a green energy source. The irony of these partnerships should not be lost on the public.

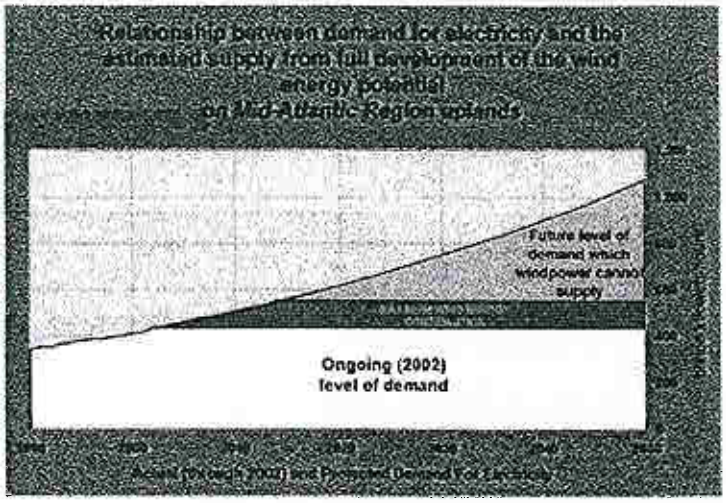
Unless we have a major change of political direction, fossil fuel combustion, and the toxins it emits into the air, will increase in the future, contributing to such dire statistics as the rate of asthma's doubling every five years. The wind industry will not itself alter this circumstance. Only when the public insists upon implementing appropriate standards and newer equipment to increase efficiency, as well as conservation measures that reduce per capita consumption demand, will air quality improve. Indeed, because of some of these measures residual to the last Administration, which mandated newer, more efficient coal-burning technology, air quality in the region has actually improved in recent years.

Altogether, the wind industry in the uplands of the eastern US is not an answer to the concerns about global warming, energy independence, air pollution, or public health.

60 percent to function as a "shadow" back up service. This report also confirms that wind utilization rates rarely achieve 30 percent, that is, they don't work more than 70 percent of the time.

Even with a generous 30 percent capacity factor, more than 2000 giant 2.5 MW turbines are needed to equal the annual production of one 1600 MW coal plant. Even if we placed huge wind machines at all the good wind sites possible in the uplands east of the Mississippi River (a region with only 5% of the wind energy potential of the continental US), this would still not reduce the mining or burning of coal, given that our demand for electricity will likely nearly double in 30 years. In fact, wind technology works least when the need is greatest—summer peak demand, when the wind is typically not very active. For example, at the newly constructed Mountaineer wind facility in West Virginia, the capacity factor during summer months averages less than 15 percent—half of the average annual capacity factor. This is also true for the mountains of western New York state, based upon anemometer projections for that region.

Consider the following graph showing the relationship between demand for electricity and the potential of windpower to meet it in the uplands of the Mid-Atlantic region.



This region comprises all or most of six states and Washington, DC. It's ridges have less than one percent of the nation's wind energy potential. Moving from left to right, the upward curve on the graph represents the demand for electricity which is expected to increase in the region at a conservative projection rate of two percent each year into the foreseeable future. Present supply comes from the PJM interconnection, the world's largest grid operator, which taps a variety of power sources—primarily fossil fuels, with negligible contributions from wind.

However, *if* (and this is a most improbable if) the wind industry could immediately exploit all the wind potential available in the region's uplands, saturating it with 30,000 huge turbines functioning at a capacity factor of 30 percent (see the table below), then it could produce enough electricity to supply about one-fourth of the present level of demand. In the graph, this hypothetical supply from wind is represented in blue atop the ongoing level of demand. But note, in about 15 years, our increased rate of demand will absorb any yield produced by windpower, necessitating additional energy sources to supply it. Unless wind turbines fill up the Chesapeake Bay and are constructed off the ocean's shore, the projected additional future power sources will not come from wind, for the industry will be tapped out on land. As the graph rather dramatically shows, wind energy development of the region's uplands—at its realistic maximum—will not result in a net reduction of greenhouse gases or cut the present rate of the burning of coal and other fossil fuels. The very best case scenario for windpower in the Mid-Atlantic region is that future wind energy development will only slightly lessen the rapidly increasing rate in the growth of demand for electricity from "dirty" power sources.

The claim wind companies make about potential wind energy production may seem impressive. However, a million hamsters churning treadmills will also produce electricity. But what's the point? In this larger scheme, industrial windpower's comparatively minuscule power production would immediately be engulfed by increasing demand. The PJM grid coordinates the delivery of more than 163,000 MW of electricity annually to the region. A 45 MW wind facility might annually contribute 14 MW of unreliably intermittent energy to the grid—.0000858 percent of the grid's current supply. The boast that this kind of power plant would be an important first step in the direction of a comprehensively effective windpower system is therefore unsupportable.

Potential Amount of Electricity That Could Be Generated Annually From Renewable Sources Within States Of The Mid-Atlantic Region

STATE	RENEWABLE ENERGY SOURCES[1] Geothermal Potential (million kwh)	Landfill Gas Potential (million kwh)	Clean Biomass Potential (million kwh)	Wind Potential[2] (on-shore) (million kwh)	TOTAL OF RENEWABLE ENERGY SOURCES (million kwh)	% TOTAL FROM WIND	NUMBER OF INDUSTRIAL WIND TURBINES TO GENERATE WIND POTENTIAL[3]
DC	0	0	0	0	0	0	0
Delaware	0	123	561	4.806	5,490	88%	1,219
Maryland	0	515	2 333	5.640	8,489	66%	1,431
New Jersey	0	1.374	482	15.327	17,182	89%	3,888
Pennsylvania	0	1.748	9 969	67.894	79,611	85%	17.223
Virginia	0	1.096	11.669	13.369	26,132	51%	3,391
West Virginia	0	0	5.323	9,764	15,087	65%	2,477

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"The trouble with wind farms is that they have a huge spatial footprint for a piddling little bit of electricity... ."

—Sir Martin Holdgate, former chairman of the British Renewable Energy Advisory Group.

#4. Windplants are highly efficient and provide power for significant numbers of homes.

The press often prints this inflated fiction as truth. Wind technology is very problematic from an energy production standpoint.

A wind turbine is designed to generate optimal electrical power relative to its size, shape, ability to withstand stresses, rotor sweep and efficiency, and location, among other conditions. The wind needs to blow eight to fourteen miles an hour before a turbine will produce electricity, and a turbine is programmed to shut down when the wind velocity exceeds 50 or 55 miles per hour to prevent harm to its gears. If the wind were to blow at a sufficiently consistent velocity all the time and the turbine never broke down, the turbine would be operating at 100 percent of its capacity potential over a year's time—its Rated Capacity. However, because the wind is intermittent and volatile, and the turbines at various times require maintenance, they actually will produce electricity only some of the time. Using a combination of considerations, such as meteorological testing, weather history, the history of turbine effectiveness, among others, energy experts assign a Capacity Factor for each turbine model, which predicts the amount of electricity a turbine will actually produce in a year.

No existing windplants located in the PJM (Pennsylvania, New Jersey, Maryland) region have achieved a capacity factor of more than 30 percent. This means that 70 percent of the time, they are not producing electricity. Consequently, a windplant rated at 40 MWs, for example, will generate electricity in the neighborhood of 11-12 MWs (25-30 % of its rated capacity).

Consider the following example.

Recently, a wind developer claimed his proposed 40 megawatt windplant would generate enough electricity to power 33,000 homes. A megawatt (MW) is one million watts or one thousand kilowatts (KW). According to the Department of Energy, the average home consumes 12,000 KW hours of electricity annually.* Using this estimate, one can rather easily obtain a reasonable annual projection for the number of homes this windplant might actually power. The following example assumes a 24 turbine windplant with 400-foot tall turbines, each rated with a potential of 1.65MW and with a generous capacity factor of 30 percent:

1.65 MW x 30% capacity factor = .50 MW (or 500 KW)

500 KW x 24 hours x 365 days = 4, 380,000 KW hours per year per turbine

4,380,000 KW x 24 turbines = 105,120,000 KW hours annual plant output

105,120,000 KW / 12,000 KW hours average household use per year* = 8760 homes powered annually.

Consequently, a 40 MW windplant would power less than 9,000 homes annually.

Even this overstates the case significantly, however. Because electricity from wind is inherently intermittent and volatile, it would really "serve" those homes where the occupants were willing to have electricity only when the wind was blowing in the right speed range—or for them to invest in an expensive battery storage system. Seen in this light, windpower would service no homes in any conventional sense of that term's use. A 40 MW windplant may produce about 14 million watts annually for the grid, but this is not the same as saying it will service any particular sector. And it is a figure which should be seen in context.

The Mid-Atlantic region requires the PJM grid to supply many millions of households with about 163,000 MWs annually, with residential usage increasing two percent each year—far more than the tiny fraction of a percent a wind facility would contribute to the supply. A windplant with a rated capacity of 40 MWs, which actually will produce electricity at only 30 percent of its rated capacity via the capacity factor, delivering about 14 MWs of energy (but not capacity) annually to the grid, with the potential to power about 9,000 households if it weren't so unreliable, would be so statistically negligible as to be meaningless in terms of cleaner air and improved health—.0000858 of one percent of the PJMs annual production.

*The wind industry often uses a decade-old low end projection of 9,000 showing only direct household use. The conservative 12,000 projection assumes that the average household requires a reasonable baseline of public, community-related infrastructure electricity to operate in society —hospitals, schools, courthouses, traffic lights, etc—in order to function.

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The Prince of Wales believes that wind farms are a "horrendous blot on the landscape" and that their spread must be halted before they irreparably ruin some of Britain's most beautiful countryside. Prince Charles, who has an abiding interest in environmental issues, has told senior aides that he does not want to have any links with events or groups that promote onshore wind farms.

—(news.telegraph, October 25, 2004).

#5. Locals who oppose the wind industry are NIMBYS.

One of the most persistent hypocrisies from corporate wind and its supporters is the accusation that locals who resist the industry are selfishly holding back progress. However, many politicians who vote to enable industrial wind do so fully aware that windplants will be built in someone else's back yard, realizing they would not survive the political backlash if one were constructed in their district. Wind investors—and the politicians who enable them—live hundreds of miles away from the results of their handiwork. While there are many areas of good wind potential available, the industry focuses on rural, often economically depressed areas which don't have much money or political influence. In Maryland, for example, the Chesapeake Bay has the best overall wind potential in the state. Yet the wind industry, aware of the probable political repercussions, avoids this region, preferring instead to target Appalachia and the mountains in the far western region of the state. It is the old story of colonialism, with distant capital exploiting the people and resources of the hinterlands to give the illusion of progress.

Nedpower, one of the most aggressive wind companies in the country, seeks to construct a huge 200 wind turbine facility along a 14 mile strip of the Alleghany Front east of Mount Storm Lake in West Virginia. Frank Maisano, a Washington, DC lobbyist and media spokesman for Nedpower, said that any allegation that a wind-powered project will be an "eyesore" is generally a claim without merit." However, when asked by a reporter, he declined to say if he would want such a project built within two miles of his home. "I'm not living next to one, so I'm not going to answer hypothetical questions for you just for the sake of answering them," he said. (Charlotte, WV Gazette, November 30, 2005.)

As has been shown, there are legitimate, unselfish reasons for locals to be concerned about how massive windplants will affect their lives.

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"I was asked to open the windfarm at Delabole. At that time nobody was talking about a gigantic programme, getting 15 or 20 per cent of the country's energy from wind turbines. It was a kind of nice green gesture. I think, now that I know as much as I do, I wouldn't have touched it with a bargepole."

—James Lovelock, the founding historical and cultural leader of environmentalism for environmentalists around the world and originator of the GAIA concept.

6. Windplants will generate significant local revenue and increase property values.

Promised "windfall" revenue is tantalizing. Rural areas often rely heavily upon tourism attracted to the region's scenic natural beauty. The lure of additional revenue without any apparent cost often blinds authorities to the problems created by development which will diminish the natural beauty at the heart of the economy.

Taxes

Most rural communities have no ordinances for taxing a windplant in ways commensurate with the capital value of a proposed windplant. Wind developer's promises about what their plants will pay in taxes are basically promotional propaganda to curry favor with local politicians, and should be closely scrutinize for legal accountability, since these claims are usually not secured by any legal document. Characteristically, nowhere is it made clear what the assessed value of each turbine will be for tax purposes. Developers often claim a 30 year turbine life, which seems meaningless in light of the federal double declining capital depreciation schedule allowed for the industry.

For the first two windplants operating in Somerset County, PA, the average per turbine tax payment in 2003 was only $528, a combined property tax payment of $7,388 (fide Somerset County Commissioner Pamela Tokar-Ickes) on machines that cost nearly $50 million to install. Moreover, another Florida Power and Light windplant in Thomas, West Virginia (Mountaineer Wind) has purportedly paid $93,000 over several years after a capital outlay of over $70 million—and this after much delay and a lot of negative press (Judy Rodd, Citizens for Responsible Windpower). These companies had originally promised to contribute many hundreds of thousands of dollars in local taxes. Usually wind facilities will not be taxed as public utilities. Indeed, it is not clear what taxes they would be obliged to pay. With knowledgeable tax accountants, a developer will undoubtedly look to protect his investors, not a local economy hundreds of miles away from its corporate offices.

No penalties seem to apply if local jurisdictions do not receive promised tax revenues. Consequently, there are no real incentives to tell the truth. Wind developers know that spin wins.

Since this project will lease private land, the county will receive little additional property tax. Wind leases are typically written to favor the developer, restricting the owner's use of the land for up to 35 years and devaluing it significantly (a major problem for those in need of emergency funds). Turbine leases also may allow abandoning all equipment to the property owner, providing little or no indemnification for any decommissioning, removal, or restoration costs. And they often include noise and other "nuisance" easements, holding the developer harmless from legal responsibility if his machines create such nuisances.

Wind Leases

Income generated from turbine lease agreements varies widely. Wind developers insist that their leases with private property owners remain secret, but they will often claim that lease income will range from $4,000-$6,000 annually per turbine, although it is not clear how this estimate is derived. An examination of several wind leases obtained from disgruntled lessors, however, reveals provision for an initial, one-time payment (from $500 to $1,000) to reserve a turbine lease, with pledges of minimum annual rental income of about $1500 per turbine against a small percentage of the power the turbines actually produce, generating at maximum about $2500 per turbine. Wind lessors should interrogate any lease proposal from a wind developer before signing anything. The supposedly "solid" promises of lease revenue are typically unsecured—and the developer can unilaterally withdraw from the lease with only a 60 day notice. The lessor will not have this luxury.

Wind leases are typically written to favor the developer, often restricting the owner's use of the land for up to 35 years. Aside from saddling lessors with an onerous obligation, the contract also may place property owners who live near the proposed wind turbines at risk. A contract typically specifies that the wind developer can make noise without hindrance on the leased property, which noise will likely spill over to adjacent properties. The contract also may stipulate that the wind developer has the right to the free flow of the wind, effectively controlling not only what can and what cannot be built on the property but also where any building can take place. It usually gives the developer veto power over hunting on the land. The grant of easement may permit the wind developer rights to use any and all the property at the developer's discretion, including provisions for unlimited ingress and egress at any time, for transmission lines, for building any structures, wires, fences, buildings at any place the developer deems necessary, for allowing access at any time to any of its employees—and "an easement for any sound waivers or noise emitted from the wind turbine generators or other equipment."

Further, these agreements may stipulate that the owner "*shall join with* [italics added] the developer in requesting all infrastructure modifications and ...any and all zoning changes or other land use permits and/or approvals necessary to the developer...". In the words of one contract lawyer who has reviewed these documents, they may well constitute an "unconscionable contract," so lop-sided in favor of the developer that it is unconstitutional.

Windplant leases diminish property values throughout the viewshed, while creating major disturbances which reduce the quality of life for nearby residents. One of the most validated real estate precepts is the idea that significant

natural views have premium value, and intrusions which restrict that view erode value. Realtors doing business near windplants in the western United States and in Europe understand that property will sell for between ten and thirty percent less than previous market value, depending upon how close it is to the windplant. The few "studies" which appear to support the claim that windplants don't devalue property are extremely flawed in fact and methodology, often surveying people and evaluating property miles away from a wind site. According to Paul Gipe, author and proponent of responsible wind development, an axiom for the wind industry is that its technology is far more popular with people who live a remote distance from wind facilities—and much more unpopular with those who live nearby. This attitude manifests itself when calculating values to properties near windplants.

Local Revenues

Wind developers nearly always overstate the general local economic benefits from a wind facility by counting the full price of goods and services, rather than value added. Generally, a large part of the price paid to a local supplier has to be paid by that supplier to another agent, in this case likely to be a party outside the local area. This price is part of the local supplier's cost of acquiring the goods (for example, the purchase of fuel, wiring, cement) the local supplier is reselling to the windplant. The only portion of the price paid by the windplant that should be tallied is the difference between the local supplier's cost and the price he charges—that is, the value added portion—which in any case would be extremely small in a rural county as most goods will be purchased elsewhere for a wind facility.

Property Values

Although looming windplants are a relatively recent phenomenon in the eastern United States, there is increasing evidence that the closer one resides to them, the lower one's property value falls. For quiet rural properties, the premiums paid for the serenity of natural views can no longer be justified if the area is surrounded by huge wind turbines. The rural areas targeted by wind developers are often filled with family farms framed by misty mountains. Those who feel that a single wind structure is beautiful should visit a wind facility like the one above Meyersdale, PA to see how the 2,750 foot mountain there seems to disappear with 375 ft. wind machines on top (one can see these 15 miles away on a clear day). Note, too, the four acres of clear-cut around each turbine.

One of the most validated real estate precepts is the idea that significant natural views have premium value, and intrusions which restrict that view erode value. Realtors doing business near windplants in the western United States and in Europe understand that property will sell for between ten and thirty percent less than previous market value, depending upon how close it is to the windplant. The few "studies" which appear to support the claim that windplants don't devalue property are extremely flawed in fact and methodology, often surveying people and evaluating property miles away from a wind site, then "averaging" these results with properties adjacent to windplants.

The wind industry has recently put forward The Renewable Energy Policy Project(REPP) (May, 2003), written by personnel associated with the national Renewable Energy Lab, to bolster its claim that not only will wind facilities not diminish nearby property value—they will actually enhance them. However, this study contains serious methodological flaws:

- The study covers just ten projects, only one of which comes close to the size and scope of many newly proposed projects—and this site (Madison County, NY—the Fenner Site), with 20 1.5 MW turbines situated on farm fields—not atop prominent ridgelines—interestingly showed significant decreases in property values.
- The time frame of the study was so short that even the study's authors were compelled to state the data was insufficient to offer compelling conclusions.
- The study did not verify whether individual properties had a direct view of the windplants, making the use of the term "viewshed" something of a misnomer in this context, since the viewshed properties were actually all properties within a five mile radius of the turbines regardless of whether they had a direct line of sight. To mitigate this problem, the researchers conducted phone interviews with tax assessors and other local authorities to get estimates on the number of properties in the defined viewshed that might have had views of the turbines. However, under scrutiny, many of these estimates proved inaccurate.
- The analysis used in this study did not incorporate distance from a wind facility as a variable or weighting factor, so that a viewshed property sale five miles away from a windplant counted the same as one a quarter mile away. It is at least plausible that if windplants do have an effect on property values, it would be strongest close to the turbines and decline with distance. Simple geometry suggests that the majority of properties in the area of a five mile circle are likely to be fairly distant from the wind development: 64% of the area of this circle is three miles or more from the center—and only 4% lies within the first mile. Though properties are not necessarily distributed evenly about the landscape, and property values conceivably can be affected by other things in the vicinity, the *REPP* study confuses substantially the proportion of properties that either have only a distant view of wind turbines or no view at all.
- The study relied on average rates of sale prices before and after the windplant construction and between viewshed properties and properties in a comparison group. Therefore, if one calculates that sale prices among viewshed properties increased $50/month faster than sale prices in the comparison group, then it makes a difference whether the statistical uncertainty in the point estimate is plus or minus $25/month or $500/month. The former leads to a conclusion that the wind development unlikely had a negative effect on property values while the latter intimates that the data are inconclusive—there could be a large negative impact, a large positive impact or no impact at all. These "smoothed" average sale prices against a very small time variable creates a regression analysis that is, for prediction purposes, almost beside the point, suggestive of nothing.

The REPP "study," although its basic methodological approach holds considerable promise, is severely flawed. To

say, as wind developers do, that the study demonstrates a proposed windplant will have no effect on property values, that it may in fact enhance them, is disingenuous. George Sterzinger, the executive director of the REPP, admitted as much in response to critics who stressed the study contained no proof that windplants were the reason for changes in property values. "We have no idea," he said, noting that the REPP did not have time or money to answer that question. (Cape Cod Times, June 20, 2003). Sterzinger further agreed that the study's findings have to be applied carefully to different situations.

There are very few windplants in the world, let alone in the eastern United States, with turbines over 400 feet tall placed on such a prominent ridgeline. Consequently, there is no comparable facility "yardstick" by which appraisers can measure the impact for predictive appraisal purposes. And without knowing about the various nuisances this kind of windplant will produce, the problems for credible prediction increase even more.

Let's examine a few other areas where wind facilities and property values have actually been correlated.

In 2001-2002, the Moratorium Committee of Kewaunee County, Lincoln Township, Wisconsin compared property sales prices to assessed values before and after the construction of two wind energy facilities, each having relatively small .65 MW turbines. An assessor reported that property sales (vs. 2001 assessed values) declined by 26% within one mile and by 18% more than one mile of the wind project. The Moratorium Committee also sent anonymous survey forms to 310 property owners, of whom 223 responded. These responses were then grouped based upon proximity to the windplants.

The survey results found that 74% of respondents would not build or buy within 1/4 mile, 61% within 1/2 mile and 59% within 2 miles of the windplants. In fact, a large percentage stated that they would not buy a home within 5 miles of the turbines. The windplant's offer to purchase neighboring homes for demolition—to create an "additional buffer for the windmills"—came immediately following the release of a noise study showing the Lincoln wind turbines increased the ambient noise level significantly, depending on wind conditions, etc.

A 1996 Danish report, *Social Assessment of Wind Power—Visual Effect and Noise from Windmills—Quantifying and Valuation*, contained a survey of 342 people living close to windplants. The accompanying survey found 13% of people in the area considered wind facilities a nuisance and would be willing to pay 982 DKK per year to have them leave. A survey of house sale prices showed a 16,200 DKK lower price near a single wind turbine and a 94,000 DKK lower price near windplants versus similar houses located in other areas.

In October, 2003, the Beacon Hill Institute, as part of a study of the proposed Cape Wind project in which hundreds of 430 foot turbines were to be located five miles off shore from Cape Cod in Nantucket Sound, contacted 45 real estate professionals operating in towns around the Sound, asking them about the anticipated effects of the wind power project on property values. Forty-nine percent of these realtors expected property values within the region to fall if the Cape Wind power plant was erected, while most of the rest said they didn't know. [Jonathan Haughton, Douglas Giuffre, and John Barrett, Blowing in the Wind: Offshore Wind and the Cape Cod Economy, Beacon Hill Institute at Suffolk University, October 2003, pp. 16-17]

The BHI study also surveyed 501 home owners in the six towns that would be most affected by the Cape Wind project . Sixty-eight percent of these said that the turbines would worsen the view over Nantucket Sound 'slightly' or 'a lot'.[BHI study, page 14] On average, they believed that Cape Wind would reduce property values by 4.0%. Those with waterfront property believed that it would lose 10.9% of its value. The study concluded that, based on the loss of property value expected by home owners, the total loss in property values resulting from the construction of Cape Wind would be $1.35 billion, a sum substantially larger than the approximately $800 million cost of the project itself.[BHI study, page 4]

As the study noted, any reduction in property values would, in turn, lead to a fall in property tax collections in the affected towns; the drop in these tax collections would be $8 million annually. If the tax rates were raised to maintain revenue, this would shift some of the property tax burden off waterfront residents (whose property values would fall the most) and on to the (less affluent) island residents.[BHI study, pages 4, 5]

In the home owner survey, in response to the statement: "It is important to protect an uninterrupted view of Nantucket Sound," 76% strongly agreed, 18% somewhat agreed, 3% were neutral, 2% somewhat disagreed, and 1% strongly disagreed.[BHI study, page 28] It's worth noting that of the home owners surveyed, 94% did not have homes with a view of the Sound; [BHI study, page 32] 76% were not members of a conservation or environmental organization.[BHI study, page 34]. Their main reasons for living in the area were the 'beauty of the region,' 'the beaches,' and 'the ocean views.'[BHI study, page 31].

In 2002, two properties outside Berlin, PA near Somerset Wind, LLC were sold to the wind developer for considerably less than fair market value. According to witnesses and deed records, Somerset Wind (incorporated in Delaware with offices in Texas—an Enron spawn), in order to discourage lawsuits brought by owners who felt that Somerset's wind turbines were disturbing the quiet enjoyment of their property, bought these properties for fair market value—one in May, 2002 for $101,049, reselling it in August to a lessor who had initially leased land to the wind company for $20,000—20 percent of the previous sale price! In May, 2002, Somerset Wind purchased the other property for $104,447, selling it in August for $65,000—62 percent of the purchase price!

The prices Somerset Wind paid for these properties were comparable to prices paid for similar properties in the area and in line with the price previous buyers had paid. Although the properties were assessed for tax purposes at around $20,000 (as of 1997), they initially had sold for fair market value at $80,000 and $74,000 respectively—in 1996 and 1997. The quotes of the prices listed in the documentary are those listed in the deeds, which are public records. And the reason the developer bought the properties in the first place was to forestall a lawsuit brought on because of the very real nuisances that the windplant created.

The new owners, moreover, signed a "memorandum of non-disturbance easement agreement," which absolves the wind company from liability for what the owners might regard as wind turbine-caused nuisances such as "noise, lights, air movement, odor, dust, vibration, traffic, obstruction of view, [and] light or air currents."

Let's be clear about the difference between the assessed value for tax purposes of these properties and the fair market value involved in the purchase. It is virtually a universal verity that tax assessments for property lag well behind the current market value. The price Somerset Wind paid for both properties was well within the average range of comparable market prices. Clearly, Somerset Wind was willing to pay this price to head off a nuisance suit. And the price it sold the properties for should be instructive as to the company's assessment of their worth, given such proximity to the windplant and the exculpatory non-disturbance easement agreements in the new deed.

Russell Bounds, one of Garrett County's (Maryland) leading realtors in large property transactions, has already lost sales in the area of proposed windplants. He has stated that huge industrial windplants "would be devastating not only to the real estate values in the Pleasant Valley viewshed, especially to neighboring properties, but would also negatively affect the entire county economy, since so much of that economy is tied up with tourism drawn by the county's natural views." Mr. Bounds has recently testified at a Maryland Public Service Commission wind hearing that, over the last several years, he has had at least 25 people who expressed interest in buying land in the area targeted by wind developers. However, when he advised them about the plans for the wind facilities, not one of those people expressed any further interest.

In the face of these transactions, it is ridiculous to believe the spurious claims the wind industry makes about how their facilities will enhance neighboring properties.

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"I was asked to open the windfarm at Delabole. At that time nobody was talking about a gigantic programme, getting 15 or 20 per cent of the country's energy from wind turbines. It was a kind of nice green gesture. I think, now that I know as much as I do, I wouldn't have touched it with a bargepole."

—James Lovelock, the founding historical and cultural leader of environmentalism for environmentalists around the world and originator of the GAIA concept.

7. The wind industry will create many local jobs.

This is a cruel untruth, especially in economically depressed areas. Very few permanent jobs will likely be created —perhaps a couple of low wage maintenance employees. According to a report by the National Renewable Energy Lab on windplant jobs, the national average is one maintenance employee for every 12-15 turbines. A 20 turbine windplant in Meyersdale, Pennsylvania now employs only two maintenance employees. Forty miles south, the Mountaineer wind facility in West Virginia, with over 45 turbines, employs three to four workers. For two windplants proposed for Western Maryland (Clipper Windpower and Synergics Wind Energy, both LLCs), the developers have pledged to pay each of their maintenance employees little more than $18,000 annually, less than a living wage for a family of four in this country. The collective capital value of their facilities, however, is projected to be in the neighborhood of $140 million....

During windplant construction, a few security guards and some local earth moving crews will be hired for a few months, while the bulk of construction is typically completed by primarily foreign labor, since the turbines are often manufactured in Europe with warranties serviced by the manufacturer. A recent study by the Iowa Department of Natural Resources on the "Top of Iowa" windplant showed that, of the 200 total construction jobs, only 20 were local—and all disappeared within six months.

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"I am delighted to learn of the Prince of Wales's views. His Royal Highness's support on this matter would be invaluable. He understands there is nothing incompatible with being green and being opposed to wind turbines. We oppose the huge, dominant use of wind farms onshore because they won't do the job. I am sure the Prince is concerned by the aesthetics of wind farms. The great thing about the Prince is that he doesn't just shoot from the hip. He studies the facts and makes carefully formed judgments."

—Campbell Dunford, chief executive of the British Renewable Energy Foundation, 2004.

8. Wind technology is noiseless and creates few disturbances.

Tall wind turbines in concert with each other, especially those sited on prominent ridgetops, create profound noise reverberations extending out for more than a mile, sounding like "a boot tumbling in a dryer" or the revving of jet engines on a runway. It is very difficult to predict noise levels in the mountains compared to flat land. Noise levels will be amplified in some areas and diminished in others depending on the shape of the terrain, the wind direction, the changes in wind velocity, and so on. The impact on people also depends on whether wind turbines operate in synchronization and whether the noise "beats" or throbs. This also depends on wind direction and velocity. Who will get bombed? Who knows? That is likely very hard to predict. The travel of sound waves and their behavior is similar to the way water waves travel. Most of us have seen how water behaves when waves enter into a gap or a split or channel of rocks in the ocean. The waves travel inward and pile up-and-up as they become restricted by the channel. The more the channel narrows, the greater the piling of the wave. Sound behaves in the same way. The more it piles up, the louder it gets.

A letter from Meyersdale, PA resident Bob Laravee, who lives 3,000 feet from the windplant, documents how he measured the noise over a 48 hour period. The results "showed an average reading of about 75 decibels during that period." "According to the EPA, noise levels above 45dB(A) disturb sleep and most people cannot sleep above noise levels of 70 dB(A)." Turbine noise is so irritating and disconcerting that it often causes people to seek medical attention, as Rodger Hutzell in Meyersdale had to do. Wind leases typically contain "noise easements" to protect the company from liability.

Noise from European windplants is a notorious and well-documented nuisance there. The wind industry is very aware of this problem but often tries to "hide" it by taking visitors during the day directly under the turbines where there is typically little noise or by conducting tours from May-September when wind speeds are typically lower.

A leading acoustical researcher of the noise problem, G.P. van den Berg of the University of Groningen in the Netherlands, believes loud aerodynamic sounds are generated when the moving propeller blade passes the turbine tower mast, creating sound pressure fluctuations. Such fluctuations may not be great from an individual turbine, but when several turbines operate "nearly synchronously, the pulses... may occur in phase," significantly magnifying the sound. Van den Berg also notes a "distinct audible difference between the night and daytime wind turbine sound at some distance [more than one mile] from the turbine"—a finding consistent with the experiences of Meyersdale residents. (Both quotes were taken from G.P. van den Berg, Effects of the Wind Profile at Night on Wind Turbine Sound: Journal of Sound and Vibration (November 2004) 277:955-970.)

The problem is so acute and well-documented that the First International Conference on Wind Turbine Noise was held in Berlin, Germany on October 17 and 18, 2005. Organized by INCE/Europe in collaboration with the European Acoustics Association, the conference addressed "Wind Turbine Noise: Perspectives for Control"

Regulatory agencies and county zoning ordinances should insist upon acoustical field research to assess this noise phenomenon, requiring independent measurements and interviewing nearby residents. They should pay particular attention to noise measurement averages. Averages would not mean much if they were applied, say, to residents living next door to an outdoor pavilion during a rock concert. And it will not mean much to the residents of a rural community, either—who are used to the enjoyment of a quiet landscape.

An exemplary noise testing protocol for windplants was recently approved as part of the Shawano County, WI wind ordinance. Other polities should strongly consider adopting this standard to protect citizens from windplant noise. This county had been targeted for industrial wind development and the citizens there, aware of problems with wind technology, vowed to protect the public by establishing regulations and testing protocols that the wind industry and enabling agencies now must follow.

Other nuisances industrial windplants may cause are:

- **Shadow Flicker and Strobe Lighting.**
  When turning with the sun behind them, turbine blades cast moving shadows across the landscape and into houses in ways that may affect surrounding properties at a considerable distance; these are commonly described as a strobe effect within houses that can be difficult to block out. "Some people lose their balance or become nauseated from seeing the movement. As with car or sea sickness, this is because the three organs of position perception (the inner ear, eyes, and stretch receptors in muscles and joints) are not agreeing with each other: the eyes say there is movement, while the ears and stretch receptors do not. People with a personal or family history of migraine, or migraine-associated phenomena such as car sickness or vertigo, are more susceptible to these effects. The strobe effect can also provoke seizures in people with epilepsy." (Nina Pierpoint, PhD, MD in a personal conversation. Dr. Pierpoint was formerly a clinical professor of pediatrics at Columbia, University and is now in private practice in Malone, New York).

- **Lightning and power surges.**
  Wind turbines themselves may cause irregularities in the power supply as wind speed changes. Within the power grid, supply and demand must always be balanced; there is no storage of electricity on this scale.

When the wind dies, there is less power (brown-out) until a plant using a more reliable resource powers up to increase production. When the wind gusts, there may be power surges. Residents living near the installation in Meyersdale, which came on-line in December 2003, have had to replace stove elements and small appliances due to power surges which started at that time. Residents of Lincoln Township, Wisconsin, near a wind installation noticed an increase in power surges associated with lightning strikes in their area after the turbines went on-line in June 1999. [Two computers protected by surge protectors and a TV set, all in different houses, were simultaneously "fried" one evening when lightning struck a nearby wind turbine tower.]

- Shoddy site construction practices can also cause serious erosion problems, especially if built along steep slopes. There is much documentation about how turbine blades throw bolder-sized ice that has accumulated on the blade surface during winter. There are documented—and very dangerous—fires caused by malfunctioning turbine equipment.

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—Rep. Alan Mollahan, West Virginia, in a January 21, 2004 letter to the West Virginia Public Service Commission.

#9. Wind technology consists of "wind mills" on "wind farms."

As if 400 foot tall differentially moving turbines were bucolic Dutch windmills, and their arrangement—eight to a mile on tall ridgetops, each with a four acre clear-cut when sited in the forest, and spread out in rows over many miles of upland habitat—was akin to a family farm.

The reality is that the technology consists of mammoth industrial factories often targeted for areas which pride themselves on their natural beauty. This inherent incompatibility makes for a hard sell. Consequently, the wind industry has commandeered the terms "windmill" and "wind farm" to make its outsized machinery more attractive to rural areas. But when a windplant is built, the rift between promise and reality becomes stark. Contemporary industrial wind turbines are taller than most urban skyscrapers, rivaling the size of the Statue of Liberty. Pittsburgh has but one building near 400 feet, while Cleveland has none.

Wind developers sometimes misrepresent their turbines' size in the press to make the machines appear even more hospitable. Press releases describing "wind farms" occasionally state the turbines' size in meters, causing some readers to think that a 125 meter turbine is really only 125 feet—and not over 400 feet. More often, they will only refer to the height of the turbine tower, not mentioning the size of the enormous propeller blades. However, a turbine tower which is 265 feet tall with a propeller blade that is 135 foot long is 400 feet tall. Even when they concede the actual size, they maintain wind facilities won't be intrusive because the turbines will be hidden in the trees, as if trees over 400 feet tall exist on forested ridges.

Watch for this classic bait-and-switch technique. Wind developers will often initially propose a facility consisting of a number of "smaller" turbines, typically 1.5 MW-340-400 foot machines. When the public begins to realize the threat to its basic qualities of life, and rushes to oppose the project, the wind developer will appear to offer appeasement—in the form of lesser numbers of turbines but 10-15 percent larger (430-465 foot—2.5 MW) with a much greater rotor sweep (the propeller blade will be more than 310 feet long). The developer will claim this is possible because of "newer technology." It is more likely, however, that this is a cynical ploy to make the industry seem more congenial to the communities it seeks to exploit, always "ready to compromise." In fact, however, this is a tactical move that will actually increase industry profits while playing havoc with the community.

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"The trouble with wind farms is that they have a huge spatial footprint for a piddling little bit of electricity... ."

—Sir Martin Holdgate, former chairman of the British Renewable Energy Advisory Group.

10. Those who are concerned about windpower are not true environmentalists.

The facts demonstrate otherwise. Notable environmentalists such as Robert Kennedy, Jr. and Chandler S. Robbins have studied the issue and urge that wind technology be carefully evaluated before implementation decisions are made. Many are mindful that the claims for windpower mirror those made one hundred years ago for hydroelectric dams, another clean, renewable power source now known to be environmentally devastating. One should note especially that John Muir founded the Sierra Club in part to protest the destruction of the Hetch-Hetchy valley viewshed by a hydroelectric dam.

An environmental group, The Center for Biological Diversity, is presently suing twelve windplant companies to stop the slaughter of eagles, hawks, and owls at Altamont Pass in California. Moreover, because of the many thousands of bats and birds killed at a recently constructed windplant atop an Appalachian ridge, Congressmen Alan Mollohan and Nick Rahall of West Virginia are calling for a windplant moratorium in their state, while the governor of New Jersey has mandated a moratorium on windpower along the Jersey shore to prevent unintentional harm to wildlife and the viewshed. Other environmentalists urge construction of smaller scaled, locally distributed wind projects which pose significantly less risk to wildlife, habitat, viewsheds and property values. This should not excuse, however, wind prospectors who seek to place a few 400 foot tall wind turbines on their property merely to obtain tax credits. Such prospecting is at best unneighborly and insights civil discord. Many environmentalists also point out the similarities between factory farms and contemporary industrial windplants, and note how the size and scale of each corrupts the economy, diminishes the ecosystem, and blights the landscape.

What all these environmentalists have in common is a concern that deployment of massive, irresponsibly sited windplants poses unacceptable risks to much they hold dear, with correspondingly little benefits. See Notable Quotes.

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—Rep. Alan Mollahan, West Virginia, in a January 21, 2004 letter to the *West Virginia Public Service* Commission.

Notable Quotes on the Siting of Industrial Windplants

"Renewable energy (hydropower, for example) can have horrendous impacts on fish and wildlife. But I can think of no proposed project more devastating to fish, wildlife, and the local economy than plunking a wind farm in the middle of Nantucket Sound."
—Ted Williams, Audubon Magazine (May 5, 2004).

"I'm a strong advocate of wind farms on the high seas. But there are appropriate places for everything. We wouldn't put one of these in Yosemite, and I think environmentalists are falling into a trap if they think the only wilderness areas worth preserving are in the West. The most important are the ones close to our cities, where the public has access to them. And Nantucket Sound is a wilderness, which people need to experience. I always get nervous when people talk about privatizing the commons. In this case, the benefits of the power extracted from Nantucket Sound are far outweighed by the other values our communities derive from it."
—Robert Kennedy Jr., E Magazine (November/December 2003).

"It would take thousands of these clean-energy, landscape-marring machines [wind turbines] to generate only a slice of the region's [Maryland's] power needs." "Consider a recent Department of Energy Study. It shows that nationwide, moving to 10 percent renewable energy would still see coal burning increase substantially—because of rapidly growing electrical demand."
—Tom Horton, staff environmental writer of the weekly column, On the Bay, The Baltimore Sun: "Wind farms a problem, too," February 27, 2004.

"I favor renewable energy sources, including wind turbines, if they can be located in situations away from major migration pathways, and if scientific, peer-reviewed on-site studies of degree of hazard to migratory birds are conducted prior to construction." If a facility does go up, Robbins added that "a fine system should be in place for each bird killed or wounded by the turbines."
—Chandler S. Robbins, Maryland's preeminent expert on migratory birds (Maryland Public Service Commission testimony, 2002).

"You asked if the Service is studying the possible cumulative effects of the expanding domestic wind industry on migratory birds and other wildlife. In our letter... dated July 13, 2004, we indicated that the Service is not currently conducting independent studies related to wind energy impacts on migratory birds or bats in the Northeast. Instead, we have been requesting information from project proponents on the temporal and spatial use by migratory birds and bats of commercial grade wind energy sites in the Northeast. However, the wind industry has been generally reluctant to conduct studies and provide such information. Without such pertinent information, and adequately trained field staff, project impacts on migratory birds and bats are difficult to adequately assess, and we are not able to perform our regulatory and advisory roles in licensing domestic wind energy projects on land in the Northeast."
—USFWS Regional Director Marvin Moriarty.

"Fragmentation of forests via wind turbine erection can impact interior nesting birds in a[n] adverse manner. The size and number of wind power developments in the future are also of concern with respect to habitat loss and fragmentation. This may become the primary ecological consideration in future wind power developments in these habitats."

"A question that remains open is risk to birds that migrate at night at very low altitudes. Virtually no studies have been conducted, in any area, of night migration at altitudes below 200-250 feet. Hence, the potential for risk to nocturnal migrants flying at these altitudes is not known. Most previous studies using radar and ceilometer strongly suggest that only a small percentage of nocturnal migrants fly below 250 feet above ground, but those techniques usually have limited abilities to detect low-flying birds and to discriminate birds at different altitudes. Until technology allows researchers to quantify the low-altitude migration, risk cannot be assessed."
—Paul Kerlinger, avian consultant for industrial windpower, 2002, 2000.

The Prince of Wales believes that wind farms are a "horrendous blot on the landscape" and that their spread must be halted before they irreparably ruin some of Britain's most beautiful countryside. Prince Charles, who has an abiding *interest in* environmental issues, *has told senior* aides that he does not want to have any links with events or groups that promote onshore wind farms.
—(news.telegraph, October 25, 2004).

"I am delighted to learn of the Prince of Wales's views. His Royal Highness's support on this matter would be invaluable. He understands there is nothing incompatible with being green and being opposed to wind turbines. We oppose the huge, dominant use of wind farms onshore because they won't do the job. I am sure the Prince is concerned by the aesthetics of wind farms. The great thing about the Prince is that he doesn't just shoot from the hip. He studies the facts and makes carefully formed judgments."
—Campbell Dunford, chief executive of the British Renewable Energy Foundation, 2004.

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—Sir Martin Holdgate, former chairman of the British Renewable Energy Advisory Group.

Wind turbine power generation is variable

A 1.5-MW turbine produces at the rate of 1.5 MW only above a certain wind speed, e.g., 27 mph for one of GE's models. As the wind speed slows, so does the turbine's power output. At the GE model's cut-in wind speed of 9 mph, the blades are turning but no electricity is generated. In a wind speed of 18 mph, the GE 1.5-MW turbine will generate power at a rate of only 0.5 MW.

Wind power is unreliable

Wind speed is unpredictable except in general terms. Even on a windy day it varies, and therefore so does the output from wind turbines. On the electric supply grid, wind turbines behave less like a supplier and more like a user, in that they are outside of the control of the grid dispatchers who must continuously balance electricity supply and demand.

Widely distributed multiple wind turbine facilities mitigate this variability somewhat, but the level of steady supply is extremely low for the amount of investment and extent of development (which is typically in previously unindustrialized rural and wilderness areas). The U.K. boasts of the highest winds in Europe, but a 2003 memorandum by the Royal Academy of Engineers to the House of Lords projected that the most common output of 7,300 MW of industrial wind power installed across the U.K., along with the expanded transmission infrastructure to handle the maximum capacity, would be only 200 MW.

Wind power is able to replace very little, if any, conventional generating capacity

Wind turbines cannot replace base load generation and only affect peak load balancing (unfortunately the wind is stronger in most places during off-peak times, e.g., at night). And because wind turbine generation is nondispatchable other generators must be kept active to balance their variability. In its "Wind Report 2005," German grid manager Eon Netz echoed two previous German studies to project that 48,000 MW of wind power on the grid (with a hugely expanded transmission infrastructure "overbuilt" to handle the maximum capacity) would replace only 2,000 MW of traditional power production capacity.

Wind power is unable to significantly reduce the use of other fuels in electricity generation

No promoter of wind power has been able to document reduced fossil or nuclear fuel use anywhere due to wind power on the grid.

Wind power is not green

It is a uniquely intrusive industrialization of rural and wild areas and requires extensive expansion of the transmission infrastructure. It adds noise and light and visual pollution. It degrades and fragments wildlife habitat. It is a threat to bats and birds. And it does not reduce the use of other fuels, therefore does not reduce greenhouse gas or other emissions, to any degree that could justify, let alone necessitate, these negative effects.

National Wind Watch™

Presenting the facts about industrial wind power

www.wind-watch.org

How big is a wind turbine?

An industrial-scale wind turbine is a lot bigger than one you might see in a schoolyard or behind someone's house.

The widely used GE 1.5-megawatt model, for example, consists of 116-ft blades atop a 212-ft tower for a total height of 328 feet. The blades sweep a vertical airspace of just under an acre.

The 1.8-megawatt Vestas V90 from Denmark is also common. Its 148-ft blades (sweeping more than 1.5 acres) are on a 262-ft tower, totaling 410 feet.

Another model being seen more in the U.S. is the 2-megawatt Gamesa G87 from Spain, which sports 143-ft blades (just under 1.5 acres) on a 256-ft tower, totaling 399 feet.

Many existing models and new ones being introduced reach well over 400 feet high, the higher towers and extra-long blades being necessary to turn the generator in sites with lower average wind speeds.

Transport of such large items and the cranes needed to assemble them often presents problems in the remote areas where they are typically built. Roads must be widened, curves straightened, and in wild areas new roads built altogether.

The steel tower is anchored in a platform of more than a thousand tons of cement and steel rebar, 30 to 50 feet across and anywhere from 6 to 30 feet deep. Shafts are sometimes driven down farther to help anchor it, and mountain tops have to be blasted for it. The platform has to stabilize the immense weight of the turbine assembly.

The gearbox — which transforms the slow turning rate of the blades to a faster rotor speed — *and the generator* are massive pieces of machinery housed in a bus-sized container, called the nacelle, at the top of the tower. The blades are attached to the rotor hub at one end of the nacelle. Some nacelles include a helicopter landing pad.

On the GE 1.5-megawatt model, the nacelle alone weighs more than 56 tons, the blade assembly weighs more than 36 tons, and the tower itself weighs about 71 tons — a total weight of 164 tons. The corresponding weights for the Vestas V90 are 75, 40, and 152, total 267 tons; and for the Gamesa G87 72, 42, and 220, total 334 tons.

Besides the *noise and vibrations* such huge moving machines unavoidably generate, they must be topped with *flashing lights day and night* to increase their visibility.

Finally, *the huge turbines require a correspondingly large area around them* clear of trees and other turbines to maximize the effect of the wind and avoid interference. For best results, they should have at least 10 rotor diameters of clearance in the direction of the wind and 3 rotor diameters in every other direction. In a line of several turbines perpendicular to the wind (as on a mountain ridge), the GE 1.5-MW model would need at least 32 acres and the Vestas V90 78 acres for each tower. In an array that can take advantage of the wind from any direction, the GE needs 82 acres and the Vestas V90 111 acres per tower.

In practice, the area used varies, averaging about 50 acres per megawatt of capacity. On mountain ridges, the turbines are generally squeezed in about eight per mile.

Bigger does not mean more efficient. It just means bigger. Output depends on wind speed and the combination of blade diameter and generator size. Bigger blades on a taller tower can capture more wind to run a bigger generator, but they don't do so more efficiently than smaller models.

Do wind turbines harm animals?

Modern turbines have solid instead of latticed towers, so birds can't rest or nest on them. They can, however, still perch on the nacelle (the bus-sized generator housing at the top of the tower).

Modern turbines also turn at a much lower rpm than older models. Because the blades are so long, however, they're moving 150 to 200 mph at the tips, depending on the model, so the impact on birds remains substantial.

The fact is that few studies have been done to determine the true effect of industrial wind turbines on birds, and fewer studies still that have been done independently of the wind companies' control. The evidence is clear, though, that wind turbines present a threat to the lives of birds and especially bats.

The U.S. Fish & Wildlife Service says that wind turbines should not be erected near wetlands, on mountain ridges, near shorelines, or in other known wildlife concentration areas or where fog or low clouds are common during spring and fall migrations.

Mountain ridges and coastal areas are typical migratory routes for many birds, and songbirds in particular fly low enough to be in danger of collision with the blades of large wind turbines. The clearing of forest attracts small mammals which in turn attracts hunting birds such as owls, hawks, and eagles to the vicinity of the turbines. The activities of prairie birds, including mating and nesting, are easily disturbed by the construction and continuing operation of a wind power facility, which can spread over thousands, of acres.

Promoters of industrial wind power try to justify these threats to birds and bats with the claim that they are actually saving even more birds by cleaning the air and reversing global warming. They are wrong in that belief, because wind power does not replace other sources of electricity.

They also try to divert attention by emphasizing the hazards posed by office tower windows, cars, and housecats, as if two wrongs make a right. And wind power is unique in its threat to raptors (hawks, eagles, falcons, owls, and vultures) — many of them already endangered — and other large birds such as ducks, geese, swans, and cranes.

The threat to bats has turned out to be a problem for the industry. FPL Energy ended access to its facilities after independent researches determined that thousands of bats were killed in just a couple of months at one location and that this mortality pattern was also being seen at other sites.

As with birds and bats, there are no reliable studies of the effect of industrial wind turbine facilities on other animals. The installing of such large structures in wild areas, along with supporting roads and transmission infrastructure and the clearing of trees on mountain ridges is bound to have a negative effect, if only because of the loss, degradation, and fragmentation of habitat, especially ecologically vital interior forest. The turbines also move (producing noise and vibration) and are lit by strobes day and night, adding to the distressing impact they likely have.

Until good studies are done, we have anecdotal evidence such as the following about the effect of a wind facility on Backbone Mountain, West Virginia: "I looked around me, to a place where months before had been prime country for deer, wild turkey, and black bear, to see positively no sign of any of the animals about at all. This alarmed me, so I scouted in the woods that afternoon. All afternoon, I found no sign, sight, or peek of any animal about."

Low Benefit—Huge Negative Impact

Industrial wind promoters claim their machines produce on average 30–40% of their rated capacity. For example, a 400-ft-high 2-megawatt (2,000-kilowatt) turbine assembly would produce an average of 600–800 kilowatts over a year.

The actual experience of industrial wind power in the U.S., however, as reported to the federal Energy Information Agency, is that it produces only about 25% of its capacity, or 500 kilowatts.

It will produce at or above that average rate only a third of the time. It will generate nothing at all (yet draw power from the grid) another third of the time.

Because the output is highly variable and rarely correlates with demand, other sources of energy cannot be taken off line. With the extra burden of balancing the wind energy, those sources may even use more fuel (just as cars use more gas in stop-and-go city driving than in more steady highway driving).

The industry is unable to show any evidence that wind power on the grid reduces the use of other fuels.

Denmark, despite claims that wind turbines produce 20% of its electricity, has not reduced its use of other fuels because of them.

Large-scale wind power does not reduce our dependence on other fuels, does not stabilize prices, does not reduce emissions or pollution, and does not mitigate global warming.

Instead, each turbine assembly requires dozens of acres of clearance and dominates the typically rural or wild landscape where it is sited. Its extreme height, turning rotor blades, unavoidable noise and vibration, and strobe lighting night and day ensure an intrusiveness far out of proportion to its elusive contribution.

Each facility requires new transmission infrastructure and new or upgraded (strengthened, widened, and straightened) roads, further degrading the environment and fragmenting habitats.

Why do utilities support them?

Given a choice, most utilities choose to avoid such an unreliable nondispatchable source. In many states, they are required to get a certain percentage of their energy from renewable sources. In other states, they anticipate being required to do so in the near future. These requirements do not require utilities to show any benefit (e.g., in terms of emissions) from using renewables—they just need to have them on line.

In Japan, many utilities limit the amount of wind power that they will accept. In Germany, the grid managers frequently shut down the wind turbines to keep the system stable. In Denmark, most of the energy from wind turbines has to be shunted to pumped hydro facilities in Norway and Sweden.

Yet wind energy is profitable. Taxpayers cover two-thirds to three-fourths of the cost of erecting giant wind turbines. Governments require utilities to buy the energy, even though it does not effectively displace other sources.

In addition, wind companies can sell "renewable energy credits," or "green tags," an invention of Enron. They are thus able to sell the same energy twice.

The companies generally cut the local utilities in on some of the easy profits.

Why do communities support them?

Developers typically target poor communities and make deals with individual landowners and the town boards (which are very often the same people) long before anything is made public.

With the prospect of adding substantially to the tax rolls and/or hundreds of thousands of dollars in payoffs each year, it is understandable that a lot of people are reluctant to consider the negative impacts. They are willing to ignore the effects of such large machines on themselves and their neighbors. Excited by the financial promises of the wind companies, they forget that their giant machines will destroy precisely what makes their community livable.

As people find out more, support for the harmful boondoggle evaporates.

National Wind Watch™

Presenting the facts about industrial wind power

www.wind-watch.org

Common Misconceptions About Commercial Wind Power

Wind power is good for the environment, right?

On a small, residential scale, yes. However, on an industrial level, wind-generated electricity cannot be stored, creating factors that negate most of the environmental benefits. Environmentalists everywhere are now recognizing that commercial wind development is often more harmful than it is beneficial.

But what about global warming?

Because commercial wind turbines need a constant back-up source of power (which most often are the fossil fuel–burning units now in service), they're duplicating rather than replacing electricity. Pollution and CO_2 levels aren't reduced, because conventional plants must stay on line, essentially going into a less efficient mode every time the wind blows. In Denmark where almost 20% of their electricity production is wind generated, they *consume* only a small portion of it and CO_2 levels there have recently *risen*—in spite of thousands of operating turbines.

But it will reduce our dependence on foreign oil!

Less than 3% of our electricity is produced using oil. Commercial wind power will have no effect on our need for or consumption of foreign oil.

But it's important to diversify, isn't it?

Yes, but wind power has no value when it comes to diversifying because it's not dispatchable, that is, it cannot be dependably called upon when needed since the electricity produced is intermittent and varies with the wind.

But electricity will be cheaper, right?

For every wind farm that gets built, our electricity costs will generally go up to cover the increased balancing and transmission costs and the subsidies given to developers, which for the most part are derived through extra fees and charges on our electric bills.

But jobs will be created and the tax base will increase!

Only a few permanent positions are created with each wind farm, and local tax bases will likely decrease rather than increase. In NY, wind turbines are tax exempt for 15 years (§487, NYS Real Property Tax Law). It's also been documented that local *property values decrease* in wind farm areas. In some cases homes have even been demolished due to noise pollution and other impacts, further reducing the tax base.

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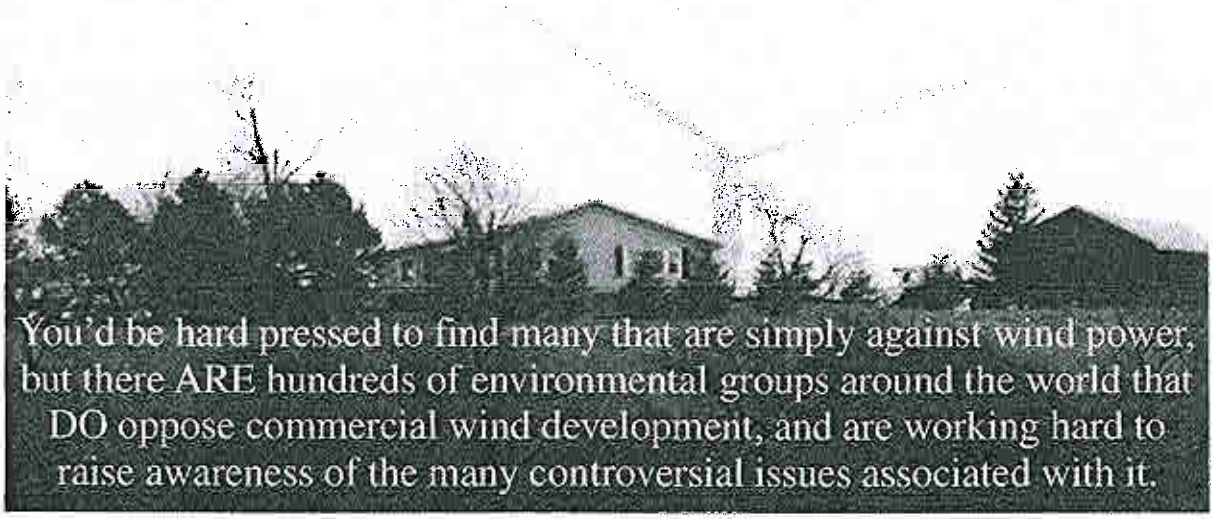
"How can anyone be against wind power?"



Commercial wind is not cheap and it's not green. The industry's giant utility-scale wind turbines create enormous impacts on our natural and wild places and on communities where people live. Though convincing propaganda would have you believe otherwise, the benefit of even a thousand turbines is minuscule and in reality does little to address today's energy or air quality problems. And for every wind plant that gets built, our electricity bills go up!

Today's commercial wind amounts to mere green tokenism, yet its impact is actually creating a new kind of pollution. It's an environmental and economic folly that's squandering precious time and resources, and is steering us away from finding true, meaningful solutions to our energy and global warming dilemmas.

For more information, contact National Wind Watch.

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The wind industry routinely overstates benefits and trivializes negative impacts, which can include:

Communication interruption ► television and wireless phone signals are often affected by nearby rotating turbine blades.

Risk to quantity and quality of well water ► construction of huge foundations can affect local water tables.

Safety issues ► including: deteriorating road conditions, insufficient security, increased stray voltage, fire hazards, increased occurrence of lightning strikes.

Loss of wildlife habitat ► due to service roads, mechanical structures, and human activity. Industry-commissioned studies are often flawed and inadequate.

Increased traffic ► increased chance of auto, pedestrian and bicycle accidents.

Noise ► mechanical and low frequency—caused most often by the aerodynamic slicing motion of the massive turbine blades, generating a near-constant unnatural pulse. NOISE—#1 complaint of nearby residents.

Strobe/flicker effects ► which can flood onto properties and into homes when the blades eclipse the rising and/or setting sun—varies with season.

Visual dominance ► close proximity to residences causes huge machines to be the most dominant element in the local experienced living environment; blades cast large rotating shadows; nighttime and daytime strobe lights at top.

Blade tips reaching speeds of up to 200 mph ► increasing the danger of ice throw and blade fragmentation; gearbox problems are common.

Loss of natural amenities and visual, quiet enjoyment ► the outdoors no longer offers respite, loss of recreation.

Property devaluation ► homes up to two miles away of commercial wind development have suffered significant losses documented to 30% and more and fail to appreciate as they normally would without wind development nearby.

Rethinking Wind Power

Is this what we really want?

Hundreds of thousands of acres spanning 34 states in the US have already been impacted by industrial wind power development. At this moment, thousands of giant turbines churn away, and *together* they'll take the next *25 years* to produce electricity that will be consumed in *under 19 days.* (The DOE predicts a 1.8% annual increase in electricity demand, and a 1.4% annual increase in renewable energy over the next 30 years.)

Wind power is pure folly, and causes our expenses to go *up,* not down. Subsidies, complex grid balancing, and higher transmission costs are all funded through extra fees in our monthly electric bills.

Because of incredible tax advantages, huge corporations have invested heavily in wind power. In 2002 and 2003, Florida Power and Light realized **$2.2 billion in profits but paid *NO* federal income taxes** for either year. Additionally, they add to their earnings by selling 'wind *green tags*' that allow polluters who purchase them to **exceed emission limits** they otherwise would have to adhere to or face fines.

Because of the presumption of 'greenness,' wind developers are often excused from conducting thorough environmental studies essential to the avoidance of harmful impacts. Bats are dying in unprecedented numbers, yet wind plant owners *refuse to cooperate* with researchers trying to determine the reasons why, and birds of prey continue to die by the thousands because measures have not been implemented to reduce the problem in spite of numerous lawsuits brought by environmental groups.

Human beings will increasingly be impacted, as locations *within rural communities* continue to be inappropriately targeted for dozens and dozens of grand-scale industrial machines, wildlife of all kinds will be displaced as ***hundreds of thousands*** of acres of woodlands and forests will be disturbed and fragmented, and hundreds of *natural* landscapes will become **unnatural and inhospitable.**

Contrary to claims made in wind propaganda, turbine technology has **not** advanced much. The main change is the increase in turbine size, bringing with it new risks and dangers. Malfunction and accident events are on the rise, and *safety standards advocated by developers are ridiculously inadequate*.

Proponents regularly claim that hundreds of jobs are created by wind development, but statistics show 1–2 positions result per 20 MW of capacity.

Commercial wind information is extremely misleading. Problems are mounting worldwide, but the industry does **not** acknowledge them and labels those who oppose them as NIMBYs ('not in my backyard'). Issues brought to the table are thereby routinely trivialized and dismissed.

The *Renewable Portfolio Standard* was designed to counter consumer reluctance to voluntarily purchasing *green* power. Mandates are now the result of intense industry lobbying, creating a **false market** that benefits wind developers, owners, and investors, but adversely impacts ordinary citizens.

Big business wins, small business appears *green*, and **a well meaning but misguided** populace believes they are responsibly addressing critical issues. However, much of the wind power produced **is not even consumed**, as it is often generated when demand is low, forcing the entire grid system to compensate and operate less efficiently. The DOE predicts that wind's overall contribution will *decrease even further* during the next 30 years *in spite of* the explosion of industrial wind development expected, ruining countless natural environments as its destructive path marches across our nation's rural countryside and over and through our pristine wildernesses.