

INDUSTRIAL WIND: A BILL OF GOODS

Roger Tory Peterson, Chautauqua County's favorite son and, for much of the last century, the nation's most prominent naturalist, knew this. When a bird on territory sees someone approaching the nest, its first instinct is often to attack in defense. But when it sees the size of the intruder, the next instinct is to flee. Caught between two equally powerful conflicting emotions, what does the bird do? It pecks its foot. Knowing it should do something, the bird performs a grooming displacement behavior at odds with the situation.

Our culture is awash in displacement behavior. It is noticeable in the widespread virtual realities of super heroes and wonkish wizards. We are also pleurably distracted by ritual spectacle in our movies, our sports, and our celebrities. Formulaic news stories told in high melodrama permeate our media. Weather reporting is now the Severe Weather Forecast. Adults join with children to play in fantasy baseball and football leagues. University faculty "reconstruct" new historical realities, convinced these are as viable as those imposed by reason and experience. Is it any wonder that our children know so little of the natural world, or even recent history? Or that the spin of corporate lobbyists now dominates the political process?

There's a lot of footpecking going on. Why else would anyone unquestioningly accept the claims of wind salesmen, unless their good intentions were whipsawed between the desire to do something about climate change, as if they could, while clinging to the comforts of a life fossil fuels make possible. Since wind developers promote their technology as both environmentally benign and effective, support for wind technology allows people to footpeckingly sooth their consciences without affecting their high-energy lifestyles.

As an environmentalist who believes we should minimize our footprint on the earth while conserving the land, I too was seduced some years ago by the lure of wind technology, hoping it would provide, as a reporter recently wrote, "abundant power without pollution or carbon emissions"—and, as claimed, replace dirty burning coal plants, eliminate the destructive practice of mountaintop removal coal mining, clean the air, improve public health, reduce dependence on foreign oil, and mitigate the forces evidently causing the warming of the earth. However, I knew that if something seems too good to be true, it almost always is. I could have continued to peck my foot on this issue, or I could look beyond my prejudices, as I ask you to do tonight.

Start, as I did, by a more considered evaluation of the potential for "renewable energy," and I think you'll find it's not all that it's cracked up to be. A few hundred years ago, timber seemed inexhaustible, but our demand made short work of the supply. Coal, too, is renewable, but again, our demand will at some time overrun supply—and our meager lifespan won't extend the tens of millions of years necessary to replenish it. A few generations ago, hydroelectric dams symbolized clean, sustainable, renewable energy. Because it generates bulk levels of reliable, highly responsive power, hydroelectricity became the symbol for renewable energy during much of the twentieth century; it still

provides New York with 20% of its electricity production. But it is now clear hydro is so environmentally treacherous, responsible for degrading millions of acres of invaluable watersheds, that no one outside China and some third world countries is building new hydro plants; many are being dismantled across the continent, at taxpayer expense. Although all power generators have downsides, none are as destructive to as much land as hydro. Simply because a power source is renewable and produces cleanly without burning carbon does not mean it is green.

Now there is a swell of support for wind. I became an intervenor in several Maryland Public Service Commission wind hearings, where I heard the technology rarely killed migrating birds, makes only the slightest noise, like the sound of “leaves rustling in the breeze,” enhances nearby property, and is virtually invisible atop mountain ridges. Wind developers gushed about how neighbors loved their “wind farms” and “wind parks.” Given my knowledge about birds, I challenged claims of safety made about them, knowing them to be false, for I was concerned that a cascade of many hundred industrial wind plants sited throughout the Appalachians, with thousands of skyscraper-sized turbines, each with rotors longer than a football field, would create “a gauntlet of risk” jeopardizing millions. My footpecking on wind was over.

I began to investigate other claims made for the technology, frustrated with the inadequate and self-serving punditry from experts who had testified on behalf of the industry, watching them tailor their comments to suit the needs of their clients. The industry also employed “communication” specialists to pitch disinformation, inventing repetitious “he said/she said” sophistry to confuse the public, much like the melodies of commercial jingles that subconsciously infect the mind. And so I sought the truth. Armed with a good camera and sound recorder, I went to Meyersdale, Pennsylvania, asking the residents near the wind plant located there to tell their story in their own words while capturing on film images of the wind turbines around the town, recording the sounds they made. At the same time, I found devalued properties and the real story about the taxes, jobs and local revenues wind developers actually delivered, in contrast to what they had promised. The result is what you have seen in *Life Under a Windplant*, which I submitted as part of my PSC testimony.

From there, I moved on to evaluate the industry’s bedrock claim: that it would reduce significant carbon emissions in the production of electricity while backing down the coal industry. To do this, I talked with many energy experts and read dozens of arcane journal articles, working to understand the process of modern electricity production. The result is my recent paper, *Less for More*. A few months ago, at the behest of Congress, the National Academy of Science, through its Research Council, published a thorough analysis of the *Environmental Effects of Wind Energy* by examining trade-offs between the technology’s performance benefits and its limitations and liabilities. A little later, Jesse Ausubel, Chairman of Rockefeller University’s Program for the Human Environment and notable climate researcher, published a terse essay, *Renewable and Nuclear Heresies*. Both of these efforts reinforced and amplified what I had discovered.

The people who founded this nation believed democracy could survive only if citizens worked hard to stay informed. How can busy people untangle knowledge, if not wisdom, from the streaming strings of data dangled before them, particularly people caught up in a commercial culture where every message seems to be a sales pitch? I think you start with a vibrant skepticism tied to an old fashioned BS detector that rings an alarm when something seems too good to be true. You should ask good questions and demand solid proof, not relying on unsecured promises—and realize that the responsibility for substantiation must come from those making the claim. You should be especially vigilant about those who reside elsewhere and who have a financial or ideological stake in the outcome of a proposition. Environmental history is the chronicle of how adverse consequences flowed from the uninformed decisions of the well intentioned.

FRAMING A HOUSE OF LIES

For five years, I've studied the claims of wind industry developers, their trade organization, the American Wind Energy Association, and the National Renewable Energy Lab, an agency of the US Department of Energy, with staff whose jobs are dependent upon the success of renewable technologies. I've concluded that industrial wind energy in the eastern United States exemplifies American business at its worst, promising to save the environment while wreaking havoc on it. Spawned, then supported, by government welfare measures at considerable public expense, it produces no meaningful product or service yet provides enormous profit to a few wealthy investors, primarily multinational energy companies in search of increased bottom lines. It's an environmental plunderer, with its hirelings and parasites using a few truths, many half-truths, and the politics of wishful thinking to frame a house of lies. It's all a bill of goods. Not a single claim made for industrial wind energy is true.

I'll thumbnail the evidence exposing some of the more blatant deceptions about wildlife and basic nuisances, and then later detail why wind technology is so problematic.

The noise you heard in the Meyersdale documentary is what people around the world hear as they experience life near wind facilities. At times it will exceed the legal limit. It is made more problematic in rural settings, where people are not used to the continuous sound of industrial machinery. Some people encounter the low frequency vibrations that Rodger Hutzell feels. Because of concerns about adverse health effects from noise that large wind turbines create, The National Academy of Medicine in France recently passed a resolution calling for a moratorium on all turbine construction within one mile of people's homes. Here in New York, Nina Pierpont, a physician living in Malone, is currently studying what she has called *Wind Turbine Noise Syndrome* and recommends even further residential setbacks because of the adverse health effects she has witnessed in some people, particularly children. Over the last several years, a Dutch researcher has confirmed that the physical cause of the noise is sound pressure fluctuations as the moving rotor blade passes a turbine's tower mast. He continues to work, unsuccessfully, to mitigate the situation. The wind industry denies there is a noise problem and resists any regulation of it.

Property devaluations near wind installations are well documented throughout the world. The two specific instances mentioned in *Life Under a Windplant* occurred under the radar after threats of lawsuits, since the wind companies bought and sold the properties without advertising them, simply absorbing the losses as the cost of doing business. The realtor featured in the documentary, Russell Bounds, has testified before the MDPSC that, over the last several years, he has had more than 25 people who expressed interest in buying land in the area targeted for wind projects, but when he advised them about those plans, not one expressed further interest. Wind developers and their enablers from the National Renewable Energy Lab routinely promote studies that not only insist their projects don't reduce nearby property values; they also claim they may boost them. This is patent nonsense, for one of the most validated real estate principles is that prominent natural views and historic scenery have premium value, and intrusions restricting those views erode value.

For those eager to believe that massively tall and lighted wind turbines won't kill migrating birds of prey, song birds, and bats, I urge you to read Bridget Stutchbury's newly published book, *Silence of the Songbirds*, in which she details her concerns about this issue, relating, among other instances, the infamous wind facility in California at Altamont Pass that kills thousands of birds annually. In recent testimony before Congress, Dr. Michael Fry of the American Bird Conservancy concluded that by the year 2030 as many as 1.8 million birds annually could be killed by wind turbines. Chandler Robbins, the dean of American Ornithologists and a former colleague of Roger Tory Peterson, joined me as intervenor in a MDPSC wind hearing because he was concerned that building a network of large turbines in Western Maryland, where millions of birds migrate twice annually, would result in the slaughter of thousands of birds, some species of which have dangerously low population levels. He was so concerned that, in his mid-eighties, he drove 200 miles in a blizzard to give testimony at the public hearing.

Two years ago, Ed Arnett, a biologist with Bat Conservation International, released his study of two Florida Power and Light wind plants in Pennsylvania and West Virginia. His research reaffirmed earlier studies showing major bat mortality. Faced with the news that its wind turbines were killing thousands of bats, Florida Power and Light reacted quickly. It barred scientists from pursuing follow-up work, removed 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 two sites. Although Florida Power and Light has pulled the plug on further research into avian and bat mortality on its properties, the company plans to construct hundreds more turbines in the mountainous areas of the region.

Wind developers repeatedly say their newer models won't kill wildlife. Given where they wish to place them in the Eastern United States, this is highly unlikely, since tall structures kill migrating birds; millions of them die annually after collisions at night under low cloud conditions. For reasons not well understood, bats seem unusually attracted to wind turbine rotors. Where independent studies have been permitted, the bat

mortality indicates large-scale wind deployment might have catastrophic consequences.

Only highly trained imported crews, likely from Europe, build technically specialized industrial wind facilities; few local workers and no union employees found work. Because of the unique nature of the equipment, these projects provided little or no value added revenues to local economies. There are many tax loopholes wind developers can, and do, use, at both the state and federal levels; it's extremely unlikely, as happened in Meyersdale, that promised tax revenues will accrue to local jurisdictions, despite ardent but unsecured promises to the contrary.

What are the penalties for lying? If the amount of local taxes promised your community failed to materialize because of arcane legal tax offsets known only to skilled accountants, what could Chautauqua County officials do? Contemplate a lawsuit? Since their companies are limited liability operations, wind developers anticipate and budget for the possibility of lawsuits from local government, as well as suits brought by private citizens aggrieved by the range of nuisances and health concerns wind projects produce. They know the costs of legal actions are difficult for private citizens and rural municipalities to maintain over the many years it often takes to resolve them. Confidential wind leases actually exculpate wind developers from legal liability from the very nuisances they assert they don't create. Moreover, if there's illegal noise, who's going to shut a wind plant down, once it's constructed? If, as is the case at California's Altamont Pass, a wind facility slaughters thousands of wildlife species, the courts will likely refuse to intervene, arguing that those concerned about wildlife have no legal standing. When I asked a wind developer in the MSPSC hearing whether he would vouch for the \$750,000 in first year taxes his company had pledged to a Maryland county in its written application, he stated only that he would "do what the law requires."

We have arrived at a point in our legal culture where no negative consequences seem to exist for making false or misleading claims to sell energy. There is a range of wind plant-generated nuisances verified across three continents. The failure of many local governments to provide appropriate leadership on this issue is appalling. After-the-fact lawsuits brought because of predictable nuisances are difficult, expensive, and time consuming. These massive wind plants precipitate incivility, pitting neighbor against neighbor. A major duty of government is to anticipate, then eliminate or mitigate this kind of incivility. Those who endorse or profit from placing such industrial complexes near the homes of others evidently don't have a clue about how to foster civil society.

What if your neighbor claimed to have a fire-breathing dragon in his garage? When you look but don't see it, he responds by saying his dragon is invisible. Ah, you might say, let's cover the garage floor with flour in order to see the footprints. But he says the dragon always floats in the air. Well, you say, let's zap the dragon with a heat sensor to measure its breathy flame. Your neighbor then retorts that this is a special fire giving off no heat. After several more such exchanges, you may be forced to ask, with the scientist, Carl Sagan, "what's the difference between [your neighbor's dragon] and no dragon at

all?”

A bedrock premise of science is that all scientific claims must be falsifiable. That is, those who make assertions about the natural world must provide testable evidence subject to disproof. A claim’s successful predictions provide evidence in support of its truth; however, only one unsuccessful prediction is necessary to cast doubt. Or one inaccurate claim. Take special note of the many wind industry boasts that cannot be tested because their proof, if it exists, is enshrouded in confidentiality—such as the industry’s leases, wind potential studies, capacity factors, and performance indicators.

When confronted with overwhelming evidence of their technology’s failings, a few wind developers have admitted problems. But then they play their ace: Some must sacrifice if our society is to achieve clean, green energy from the wind (although evidently not those living in Annapolis or Albany). They say their projects will eliminate millions of tons of climate changing carbon dioxide emissions now produced by coal plants. But is this claim—the one at the root of the industry’s reason for being—true? Concerns about various nuisances, wildlife mortality and civil society, although genuine, often distract from asking whether wind technology works effectively. In fact, wind developers are more than content to dwell on those distractions in order to deflect an examination of their technology’s effectiveness. Let’s examine the evidence for it.

THE WAYWARD WIND

Demand for electricity, a cornerstone of modern society, accounts for about 39 % of all energy use, even though electricity accounts for 30% of the energy used for heating. We doubled our demand for electricity from 1970-2000 and are on pace to add another 20% by 2009. We expect electricity to be highly reliable, affordable, and secure, made more difficult because it must be used immediately at industrial levels; unlike the water supply, it can’t be stored. An electricity grid is a complex regional network organized to supply demand and transmission for a variety of residential, commercial, industrial, and public sector customers. Collectively, conventional generators—coal, nuclear, natural gas, and hydro—provide over 95% of the nation’s electricity power. All of them must pass stringent tests for reliable performance before they are deployed. Together, they provide the most important quality for consumers and grid operators: *capacity*, a steady stream of dependable power when it’s needed to meet any peak or valley of demand.

Slow, inflexible but highly productive nuclear and large coal plants, along with certain hydro facilities, are best at providing a base level of supply upon which others can be built. Smaller conventional generators like natural gas, certain hydro, and small coal units, are highly responsive to commands and can be dispatched to meet changes in levels of demand, as well as balance continuous demand fluctuations every second. With over a century of experience, grid operators can predict demand cycles very precisely, which allows them to plan for and assemble the most appropriate, cost effective, combination of power plants to get the job done.

Nationally, we use oil to generate less than 3% of our electric power, which means that wind technology will do nothing to reduce our dependence upon it for transportation and heating, our main energy uses. Coal-fired plants are responsible for half of our electricity production and about 30% of the CO₂ emissions our technology releases into the atmosphere; this is what the wind industry promises to reduce. Efficiently run natural gas units typically burn about 60% cleaner than coal, while nuclear and hydro plants emit no carbon gasses. Concerns about safe storage of nuclear waste, among others, have halted construction of new nuclear plants; none has been built in the US since 1979. Hydro, although an effective energy producer, destroys entire watersheds. All power-generating systems have their downsides. Including wind energy.

The whole point of the modern grid is that one can count upon capacity, that is, power precisely when it's needed, which is why adequate supply must always precisely match demand. Throw a switch and the lights come on or off. At the moment a hundred people blip their television sets, grid operators remove the power that supplied them. When a thousand people engage their air conditioners, power sufficient to make them work is brought on board in that instant.

Wind technology is inimical to the process of providing capacity. It is usually unpredictable, always intermittent, and relentlessly fluctuating, reflecting as it does the random nature of its power source. Wind doesn't correlate with demand cycles, producing most during the night at times of minimum demand—and least during the day at critical peak demand times. Last year, for example, California's more than 13,000 wind turbines contributed 2% of their rated, or maximum designed capacity, during the peak periods of that state's prolonged heat wave. The 24MW Bear Creek wind facility in Pennsylvania produced only 2.6% of its rated capacity during last August's peak demand period. Industrial wind projects have a capacity value approaching zero: the Reliability Councils of both California and Texas calculate that, even with thousands of turbines, the wind industry can reliably provide only 5% of its rated capacity at any peak time. On the other hand, conventional power units have capacity values approaching 100%.

Wind turbines don't begin generating electricity until wind speeds hit around 5 mph and they shut off at wind speeds exceeding 55 mph to avoid damage. They achieve their rated capacity typically at wind speeds of 29-37 mph. Because of its intermittent variability, along with downtime for maintenance, no wind projects located in the eastern United States have achieved a capacity factor of more than 30%; the national average is around 25% (a capacity factor is the percentage of its rated capacity a power plant will actually contribute to the grid over time, typically measured annually). A recent analysis of over 7000 German wind turbines showed that, more than half the time, they generated less than 11% of their rated capacity. Low capacity factors for conventional power units are the result of operator choice, not an intrinsic function of the limitations of their power source.

Since it's not dependable, wind cannot supply base demand or contribute to the regulatory reserves. One can never generalize about a wind turbine, for its performance in

one year, or month, or day, or minute, is unlikely to be the same at any other time or place. Capacity value projections for even 8% of a wind project's installed capacity are more than problematic, for these are produced from averages. A wind facility's performance is unique: What it generated over the last two years, or two months, or two days, or two hours has little bearing on what it may produce over the next 15 minutes. In this practical sense, no one can count on wind energy for firm capacity at any specific time.

The challenge for the grid is how to reconcile the square peg of firm reliability with the round hole of wind's fluttering caprice. As it skitters unbidden on and off the grid, like sandpipers at the beach, wind is indistinguishable from demand fluctuations: when it appears, it's equivalent to people turning off their appliances; when it departs, it's like people turning the lights back on. Its perturbations increase the grid's instability, for the additional wind flux is even greater than demand flux--and much less predictable. A 100MW wind facility may produce 60MW in one hour, a few minutes later, only 20MW, and, 15 minutes later, it may produce nothing. *Integrating this kind of instability with existing conventional generators and transmission systems is possible up to a maximum of about 20% of a grid's generating capacity—but not without increased costs, both in dollars and carbon emissions.*

Wind is a fuel supplement that requires a lot of supplementation. At small levels of wind penetration, grid operators deploy existing flexible generators designed expressly for balancing demand fluctuations—the spinning reserves-- to also balance the *additional* flux of wind energy, for desultory wind can't be loosed on the grid by itself; it's only a minor ingredient in a fuel mix. The accompanying conventional balancing generation that enables wind technology actually provides most of a wind project's output. It is not marginal, narrowly seasonal, and relegated to reserve or "backup" status. Rather than function in a reactive capacity, the conventional power must be proactive and substantial. And more of this conventional generation must be available at peak demand times, including the summer.

The larger the wind penetration, the greater need for the accompanying generation as the wind output bounces around both slowly and quickly. If the total wind energy approaches, say, 5-10% of the grid's actual production, this would near the upper limit of the reserve supply and threaten the grid's security. To avoid this, *additional conventional generation* must be built into the system at 90% of the wind generation's installed capacity, along with new transmission and interconnection systems for frequency control—a reality now confronting wind technology in Germany. Last year, volatile fluctuations from the Judith Gap wind plant in Montana were causing major headaches for the grid, even though the amount of wind energy was relatively minute. The state utility was forced to buy more short-term power than expected from other conventional energy sources to balance the grid's supply, driving costs upward.

Many factors affect the volume of carbon emissions wind energy might save in the production of electricity, factors such as what generators wind actually displaces and

what generators are used to balance it, among others—including calculating what is needed to offset the CO₂ emitted in the making of each huge concrete anchor pad. Because it's so capricious, wind energy will almost surely not displace inflexible, slow ramping basic demand generators like nuclear and large coal facilities, as many believe. More than likely wind will substitute for flexible, rapid start generators such as hydro and natural gas. If the former, there would be no carbon emissions savings; if the latter, only minimal direct carbon savings accrue, since natural gas burns much cleaner than coal. But either hydro or natural gas—or both—will also be the units used to balance wind's fluctuations, as well as smaller coal and oil plants, since they are also used to balance demand fluctuations, operating inefficiently to do so. Studies in Europe have demonstrated that a 2% increase in inefficiency for fossil-fueled units can result in a 16% increase in carbon emissions throughout a grid system, much like the increased emissions from an automobile in stalled traffic.

Should you believe General Electric's claim that all of its worldwide wind turbines by themselves could together produce enough power for 2.4 million US homes? Such a boast omits mentioning the accompanying resources necessary for wind to work. Mathematically, more than 2,000 2.0 MW wind towers spread over 400 miles are necessary to equal the average annual output of one 1600 MW coal farm, although, operationally, it would take many more than this. If wind were merely intermittent but produced steady generation, the grid could rather easily integrate it. Instead, since wind technology does not produce at a steady rate, its relentless fidgeting must be continuously compensated for, either with reliable conventional generators or by large numbers of widely scattered wind plants, assuming that somewhere the wind might be blowing at the appropriate level—not to mention the need for additional transmission lines and interconnection hubs. This is the worm at the core of wind's apple—one that all the distractions, such as whether wind installations devalue property, allow wind developers to avoid. I don't know any forecasting analysis that shows how many wind turbines, distributed over a wide area, could provide, by themselves, capacity values approaching even 90% of their installed capacity.

No unpredictably intermittent, highly variable power source can alone, provide capacity for anyone, given modern expectations of reliability and performance—despite all the media puffery implying it can. A 100MW wind plant in Chautauqua County might contribute, on a hit-or-miss basis, an annual average of 25MW to the state's grid. Since we increase demand for electricity nearly 2% a year (and New York is presently doing so at more than 3%), this would be swallowed up within the first two weeks of the new demand year. And this is if everything works the way the wind industry claims it will. If this amount of power were generated by coal or nuclear, with capacity factors beyond 90% and with a dependable, constant stream of energy, 25MW would service about 65,000 homes. However, because of the intermittent variable nature of wind, no homes would be powered by this source alone. How will such unreliable energy stabilize natural gas prices or serve to “diversify” the mix of power sources, as wind developers and state agencies claim?

An electricity grid generally accepts wind energy not because it works well, but because

it has to, the result of political decisions to legislate Renewable Portfolio Standards that now exist in 23 states, including New York, requiring utilities to purchase a certain percentage of renewable energy. No one is building new hydro and all the other renewables, such as wind, solar, biomass and geothermal, have enormous drawbacks. Wind and solar provide no capacity while biomass and geothermal pose challenging environmental threats. Given increasing demand for electricity, there will be no choice but to increase the number of reliable generators. Since no one is building new nuclear plants, and natural gas is so costly, the remaining reliable is the old standby—coal. According to energy expert, Tom Hewson, “Jamestown’s proposed cleaner-burning coal plant would provide 43MW of *capacity* towards Jamestown’s BPU’s reserve margin requirements for the power pool. Purchasing wind off the grid would supply *zero* MW of capacity. Moreover, if Jamestown did build new wind projects to meet its reserve capacity requirement, this would result in roughly 400MW of wind projects costing \$1.2 billion.” Even if we install thousands of wind plants, we’re likely to build more capacity-providing coal plants, despite all the public relations rhetoric suggesting otherwise.

Crucial for the case against wind, no independent, transparent measurement has demonstrated system-wide CO₂ emissions savings due to wind technology anywhere in the world. Currently, the United States has over 17,500 wind turbines in 26 states, more than two-thirds built in the first five years of this decade. Altogether, these machines produce less than one-fourth of 1% of the nation’s electricity supply. California’s vast armada contributes about 1% of that state’s power capacity; last year, California’s carbon emissions increased 2% over those in 2005. Europe’s wind poster child, Denmark, has built nearly 6,000 turbines that, on paper, provide 20% of that tiny country’s actual generation. But, for grid security reasons, 84% of Denmark’s wind production is shunted to other countries, replacing hydro—with no savings of carbon emissions. According to a prominent Danish energy official, “Increased development of wind turbines does not reduce Danish carbon dioxide emissions.” Germany, now the world’s wind leader with nearly 20,000 turbines producing about 5% of its annual generation, must add additional conventional generating capacity to integrate its fidgety wind energy, at great extra cost. But it achieves no real CO₂ savings; last year Germany increased them by .6%. *There are reasons public subsidies for wind technology are not indexed to reductions in carbon emissions.*

According to the recent National Academy of Science wind impact report, the complexity of grid mechanics, combined with problems related to the confidentiality of proprietary wind performance information, makes transparent measurements of actual carbon dioxide abatement due to wind all but impossible. The Department of Energy relies upon statistical averaging projections that may have nothing to do with reality, based as they are upon what may be highly erroneous assumptions, such as implying wind energy must displace the dirtiest coal plant while being balanced by hydro units. The claim wind will save substantial carbon emissions is evidently not falsifiable because it’s not testable. The wind industry encourages this idea, although it’s wrong, for there are ways to test any carbon savings from wind, as long as the data is available for testing. To foster the transparent measurement necessary to substantiate its claim about CO₂ savings, the wind

industry must remove the cloak of confidentiality now concealing information about the performance of its technology.

WIND AS A TAX SHELTER GENERATOR

Wind is not David to coal's Goliath. It's a foster sibling to coal, related because the same corporations that own most of the nation's wind plants also own and control the majority of the nation's coal operations. Contrary to public perception, wind technology has been around since the Bronze Age, and over the last 25 years has received more than \$1 billion of public financing, making it, on a per kilowatt hour basis, the country's most heavily subsidized form of industrial electrical generation. Enron owned the country's largest stock of wind facilities before selling them to General Electric. Today, G.E., along with the nation's third largest utility, Florida Power and Light, BP, and AES, own most of the nation's wind projects—as well as most of the country's dirtiest burning coal facilities. They use wind's unearned environmental cachet for public relations while cashing in on the wind's lucrative subsidies. What is particularly galling is their practice of using wind's cap-and-trade and renewable energy credits—provided by the most cynical or gullible of politicians—to avoid the cost of cleaning up their coal plants. These politicians give the appearance of challenging Big Coal when in reality they're reinforcing it, especially since more wind facilities very likely will result in more coal farms. Although conventional power is also heavily subsidized, these subsidies result in reliable service. The subsidies for industrial wind, which can provide virtually no capacity to the system while delivering energy in fits and starts, will be used to make ineffective and uneconomical technology falsely appear to be effective and economical.

Publicly funded tax avoidance schemes reimburse wind developers as much as two-thirds of the capital cost of each \$3 million turbine, with many states creating incentives to cover on average an additional 10% of these costs. A recent Beacon Hill Institute study showed that such incentive programs would allow the Cape Wind project proposed for Nantucket Sound to be reimbursed up to 78% of its capital costs over the life of the facility. Wind plant owners can use these tax shelters themselves, or sell them, or enter into "equity partnerships" with other companies—all 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%—generating tax credits worth \$159 million and a return of 246% on its investment in just one year.

The Florida Power and Light Group, the parent of FPL Energy, paid no federal income tax in 2002 and 2003, according to Citizens for Tax Justice, despite having revenues of \$2.2 billion during those years. It made large investments in wind energy during that time and now claims to be one of the nation's leading wind energy producers. It is also the parent company of Meyersdale Wind in Pennsylvania and Mountaineer Wind in West Virginia, both of which have delivered only a fraction of promised local taxes to date. FPL Energy boasted a 2006 profit of \$610 million, triple its earnings in 2005. That followed an earnings increase of 200% between 1998 and 2002, then significant profit

growth each year thereafter, mostly fueled by wind projects. These profits are the unpaid taxes due the federal treasury that all the rest of us must now pay.

OVERBLOWN

My opposition to this technology is a considered response to the fact it doesn't work very well, even as an occasional fuel substitute, certainly not commensurate with the damage it causes and the monies it drains from rate and taxpayers. Like many celebrities born of spin, it's famous for being famous, not for its actual performance. Chautauqua County could absorb 500 wind turbines, each more than 400 feet tall and spread over 100 miles, with blades spinning 175 mph at their tips. Together, these might annually provide about 250MW of highly sporadic energy to the state's 37,000MW power grid, unable, however, to replace any conventional power, including coal, since they will have virtually no capacity value, and with no hard evidence they would save any carbon emissions throughout the grid system. Their massive footprint will transform the landscape, changing its appearance from scenes of nature into one dominated by industrial machinery. *How green is this?* In the process, nearby property values will plummet while a number of residents will experience relentless noise, at times exceeding the legal limit. The county will likely receive only a fraction of promised revenues and taxes (officials should carefully scrutinize promised PILOT payments), and it's extremely unlikely the wind facilities will employ more than a handful of county residents or union workers. And like all tall structures that are lit at night, they will kill thousands of migrating birds and especially bats. All of these problems have been well documented—many of them admitted in “confidential” property leases that exculpate wind companies for creating them. This is dystopia, a nightmare, and not effective energy policy.

How could this happen? Recall the song *Razzle Dazzle* from the movie, *Chicago*. Were you given a “splendiferous” show, blinded by sequins of blandishment, dazed and dizzied by the “Big Bambooz-a-ler?” This is such beautiful county, historically tended with pride by people who enjoy rural community and are bonded by a love of natural beauty. That you would allow corporate hucksters to foul your nest, exploiting your desire to improve the environment while seeking your approval to wreck it, should not be a casual thing to do. You should not confuse the trappings of science—the engineering grandeur of a huge wind turbine, for example—with the real work of science, which would skeptically insist upon verifying the machine's performance.

The politicalization of electricity production, which is what is happening here, corrupts any reasonable sense of enlightened public policy, driven as it is by propagandized sloganeering and a press that much of the time couldn't hit water with an accurate story if it fell out of a boat. New York State's Energy Research and Development Authority (NYSERDA), the politically correct renewable energy oversight group within the state's PSC, has become one of those grotesque bureaucracies that exist to justify its existence, generating gratuitous inaccuracies about the potential for wind energy in much the same way Cinderella's step sisters connived to make that damned slipper fit their outsized feet. NYSERDA's levy of a renewable energy surcharge is nothing more than a legalized bunko scheme for defrauding consumers.

Chautauqua County represents low hanging fruit for distant wind capital seeking to exploit the people and resources of rural America, made even more shameless by the Orwellian charge that those who oppose its intrusions are NIMBYs when the corporate shills themselves live hundreds of miles away. If industrial wind succeeds here, it will be because the gullible are led by the pretentious, a process made easier because of a lack of accountability, no penalty for lying, and the pervasive vacuity of our political culture. Roger Tory Peterson would be irate about the pretentious environmental footpecking enabling this scam technology. The bill of goods for industrial wind, presented by the forces of ignorance and greed, resembles nothing as much as that fire-breathing dragon in your neighbor's garage.

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