



Eco Awareness Society Newsletter

“I shall conquer untruth by truth.”

Gandhi

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Ice Bells, Bailey's Brook, Nova Scotia

Toward a Better Understanding of Industrial Wind Technology – Part 2

This is part two of a four part conversation between environmentalist and author Jon Boone and Michael Morgan, Editor for Allegheny Treasures.

Allegheny Treasures: I've heard that, even though the input from wind energy is variable, the electricity generated by these projects can still be added to the grid and somehow controlled. If so, doesn't it really contribute overall?

Jon Boone: Adding wind instability to a grid may be someone's idea of job security. But for rate and taxpayers, and a better environment, it's criminal. For the grid is then forced to extend itself, since variable energy at industrial scale cannot be stored...As the wind bounces randomly around the system, operators must continuously balance it to match supply precisely with demand, compensating for the ebb and flow much in the way flippers keep the steel ball in play during a game of pinball.

I coined the term “Windball” to describe this concept. Windball expends a lot of energy and takes a lot of coins. In real life on most American grids, more than 70% of any wind project's rated capacity must come from the flippers of reliable, highly flexible, fossil-fired generation (typically natural gas) constantly turned up and back inefficiently to compensate for wind fluctuations. **These inefficiencies will result in substantial carbon emissions and increased consumer costs.** Wind volatility cannot be loosed on the grid by itself: it requires companion generation to make it whole. And the higher the wind penetration is on the grid, the more wind cuts into the grid's marginal reserves, the greater the odds that the grid will TILT, ending the windball game – until compensating reliable generation is brought on board to secure it.

AT: Can't the grid engineers somehow compensate for the variance? And why is it so important to balance supply and demand so precisely?

Boone: Given what is known of demand cycles, grid operators, using computerized automatic generation controls, bring supply to match demand on a less than second-by-second basis within plus/minus one percent. And this includes balancing on-going demand fluctuations. After more than a hundred years of experience, grid engineers can predict demand very accurately, which is possible because aggregate demand is not fundamentally random, unlike wind volatility. If there's too little supply, widespread brown-outs and black-outs will occur; if there's too much supply relative to demand, the surge can fry both transmission lines and appliances. Even brief dips, like surges, can harm sensitive electronics that many of our lives depend on. Excess supply is also sometimes dumped, which is a financial loss to all tax and ratepayers. Dumping excess wind energy and/or shutting down the turbines, is a common situation in Germany, Spain, and Texas, made necessary when large spikes of wind threaten the grid's security.

Yes, engineers can make-work by adding wind flux to the system, which further destabilizes the match between supply and demand. **By its nature, wind will require repeated flipping – lots of whips and whistles, even at small levels of penetration – in ways that will negate the very reason for its being – which is reducing CO2 emissions and backing down coal...**Retrofitting modern technology to meet the needs of ancient wind flutter is monumentally “backasswards”. It's also a sure sign that pundits and politicians, not scientists, are now in charge.

Factual Evidence Stops Windfarm

A plan to build 13 wind turbines near the village of Nantglyn [Wales] has been rejected by a planning inspector. Tegni Cyf [the wind developer] had appealed against Denbighshire County Council's decision not to grant the application for a site at Gorsedd Bran.

The development sparked a wave of protests by locals... Councillor Hugh Evans, said: “This is a victory for democracy. Both the planning committee and full council refused this application and at the appeal the council case was supported by well informed, factual evidence from residents.”

Councilors Paul Marfleet and Jane Yorke said: “The faith and determination of a small group of very decent people has brought this victory about.”

Clwyd West AM Darren Millar said: “This...just goes to show that these battles can be won when people pull together.”

(Excerpt from “Denbighshire Residents Win Fight Against Windfarm”)

By Dan Beavan, Daily Post UK, November 20, 2009

Spain's Green Jobs Myth

A Spanish study by Gabriel Calzada Alvarez, PhD has found that for each job created in Spain's renewable industry, 2.2 jobs are lost elsewhere in the economy, **"or about 9 jobs lost for every 4 created."** The report was based on data from the Spanish government and the European Union. Other findings from the study include:

- "The high cost of electricity due to the green job policy tends to drive the most energy-intensive companies and industries away, seeking areas where costs are lower."
- "Renewables consume enormous taxpayer resources."
- "The study calculates that since 2000 Spain spent \$571,138 Euros to create each "green job", including subsidies of more than \$1 million Euros per wind industry job."
- "These costs do not appear to be unique to Spain's approach but instead are largely inherent in schemes to promote renewable energy sources."

(Quotes from "Study of the Effects on Employment of Public Aid to Renewable Energy Sources")

By Gabriel Calzada Alvarez PhD., Universidad Rey Juan Carlos, March 2009

Yellow Light on Green Jobs

A report by the US Senate Subcommittee on Green Jobs writes: "some see green jobs as a cure-all for the Nation's ills, transforming the environment and the economy, even heralding a new era of prosperity for underemployed urban and poor communities. However, State and local governments are spending tens of millions of dollars to attract in some cases only a few hundred new green jobs. Green jobs subsidies are costing over \$100,000 per job in many cases. Created green jobs often offer sub-par wages insufficient to support a family.

Studies by green jobs advocates, labor unions and environmental groups confirm that many green jobs:

- require expensive taxpayer subsidies to create
- pay low wages
- kill existing jobs to pay for creating new green jobs

To pay for expensive green jobs programs and subsidies, green jobs advocates propose government spending of hundreds of billions of dollars...[and the] passage of climate change legislation as a way to generate revenue to pay for green jobs. However, imposing climate change legislation would cost families and communities trillions of dollars in higher energy costs and kill millions of jobs in manufacturing and energy-intensive sectors."

(Quote from "Yellow Light on Green Jobs: A Report by the U.S. Senate Subcommittee on Green Jobs and the New Economy")

By Ranking member Senator Kit Bond, Spring 2009

Export Dollars: The Real Plan Behind Wind

While Nova Scotians have been told that the development of wind power will make Nova Scotia a greener place to live, the real motivation behind the province's push for wind is to cash in on the lucrative United States renewable energy market. In fact, we believe that if the provincial government has its way, they will litter thousands of acres of Nova Scotia landscape with industrial wind turbines while continuing to burn coal and barely denting Nova Scotia's CO2 emissions.

This plan has been around for some time. In the May 4, 2008 Chronicle Herald, Judy Myrden reported, "last Wednesday Emera, along with partners National Grid and Spectra Energy, presented a proposal to American regulators to build a \$2-billion underground power line from a spot outside Bangor to Boston. ...That project would link Nova Scotia to New England, giving Emera substantial control of electricity transmission throughout the region. Emera hopes it can make a buck by sending green-generated electricity from tidal or wind power to the U.S. ..." March 30, 2009, the News reported on Peter MacKay's announcement of a \$4,000,000 federal grant to develop renewable energy in Atlantic Canada. "MacKay ... said the cash will help 'our region tap into a major market opportunity by selling our surplus to the energy-hungry United States.'"

So how much wind power are they considering exporting? In an August 16, 2009 Chronicle Herald article, Judy Myrden reported on a study by Power Advisory LLC of Massachusetts. She wrote, "New Brunswick, Nova Scotia and Prince Edward Island could develop more wind energy than the region could use — between 5,500 and 7,500 megawatts, the study stated." An April 30, 2008 presentation by Bangor Hydro (a sister company to NSPI) illustrated on their Northeast Energy Link project that 2,200 megawatts of this power could come from Nova Scotia wind. This approaches Nova Scotia's current total generating capacity of 2,293 megawatts. Try to picture 35 Glen Dhu projects covering over 55,000 acres of Nova Scotia.

However, Nova Scotia can use very little of this power. Alison Scott, the Deputy Energy Minister admitted in an April 8th, 2009 Chronicle Herald article that in Nova Scotia "We are constrained technically by the amount of renewable energy that we can safely integrate into the existing system..." Without modifications to power system operations and infrastructure, the NSPI grid can only manage a few hundred megawatts of wind, which, in displacing hydro and natural gas and *not* displacing coal, will barely dent our CO2 emissions. **The rest must be exported.** There is actually nothing to stop NSPI from even selling the little wind we could use locally at a higher price to the US. And those wind companies that have signed up for the EcoEnergy program, will derive roughly 10% of their first 10 years of income from Canadian tax dollars that would ultimately subsidize the sale of renewable power to the United States. For Glen Dhu, Phase I, this could exceed \$15,000,000.

Windfarm Developer's 'Astounding' Admission

The developer behind a four-turbine windfarm near Wigton [U.K.] has admitted it could have "major, long-term impact" on the local area.

As part of the application, [BT, the developer]...carried out an assessment of the impact the turbines would have on the local landscape, and made the admissions within that assessment.

"The character of the landscape would be completely changed by the proposed turbines as they would become the dominant feature in what is currently a rural village location without modern influences," the document claims.

"The magnitude of change on the character of the landscape...is considered to be severe due to the developments radically changing the character of the landscape through over dominance. The significance of the landscape effects is therefore a major, direct, long-term, adverse impact."

A list of locations in the area also shows that some sensitive areas...would suffer from the high, substantial and adverse impact of the 410-ft high turbines, despite being 10 kilometres away.

Steve Swallow, a member of the Threapland Turbine Action Group (TTAG) said: "For BT to admit this is astounding. It just goes to show how bad this scheme would be for the lives of countless families living literally under the shadow of these things."

(Excerpt from "Windfarm Developer's 'Astounding' Admission for Cumbria")

By Thom Kennedy, UK News & Star, November 27, 2009

The Beaver

American Indians called the beaver the "sacred center" of the land because this species creates rich habitats for other mammals, fish, turtles, frogs, birds and ducks. Since beavers prefer to dam streams in shallow valleys, much of the flooded area becomes wetlands. Such wetlands are cradles of life with biodiversity that can rival tropical rain forests. Almost half of endangered and threatened species in North America rely upon wetlands.

Beavers reliably and economically maintain wetlands that can sponge up floodwaters, prevent erosion, raise the water table and act as the "earth's kidneys" to purify water. The latter occurs because several feet of silt collect upstream of older beaver dams, and toxics, such as pesticides, are broken down in the wetlands that beavers create. Thus, water downstream of dams is cleaner and requires less treatment.

Beavers build a home (lodge) made of mud and branches. The inside of the beaver's home consists of one or more underwater passages, a feeding area and a dry area for the nest. There is a fresh air hole at the top (roof) of the lodge. Mud is plastered on the outside of the lodge to make it

strong. The mud also helps keep the inside warm during the winter.

These large rodents move with an ungainly waddle on land but are graceful in the water, where they use their large, webbed rear feet like swimming fins, and their paddle-shaped tails like rudders. These attributes allow beavers to swim at speeds of up to five miles (eight kilometers) an hour. They can remain underwater for 15 minutes without surfacing and have a set of transparent eyelids that function much like goggles. Their fur is naturally oily and waterproof. If an enemy is near, the beaver slaps its tail on the water to warn other beavers. A beaver's lifespan in the wild is up to 24 years.



Wildlife rehabilitators find beavers to be gentle, reasoning beings who enjoy playing practical jokes. An Indian word for "beaver-like" also means "affable". Once weaned, their favorite foods include water lily tubers, clover, apples and the leaves and green bark (cambium) from aspen and other fast-growing trees. Tree cutting is part of nature's cycle, and beaver pruning stimulates willows, cottonwood and aspen to regrow bushier than ever next spring.

When conflicts arise, working with the beaver is most often the best solution. If beavers are removed from good habitat, others will normally move into the empty habitat. Allowing the beavers to remain while addressing the specific problem (for example, flooded roads or tree cutting), also preserves the many beaver benefits. By installing flow devices, often most of the beaver wetlands can be saved, while ending the unwanted flooding. Problems with objectionable tree cutting can often be solved with fencing.

Trivia: The first North American coat of arms to depict a beaver was created by Sir William Alexander, who was granted title in 1621 to the area now known as Nova Scotia.

Duke of Northumberland Delivers Blast on the Wind Debate

The Duke of Northumberland has stoked up the fierce debate over wind energy development in the North East [of England] by launching a withering attack on the impact of massive turbines on the region's unspoiled countryside.

In a personal intervention... the Duke... reveals he has rejected approaches to put turbines on land owned by his own Northumberland Estates business wing – and says the structures are divisive, unreliable and potentially damaging to the vital tourism industry.

The Duke... made his comments after being accused in The Journal's letters pages of being silent on the issue of wind farms. He has gone public via The Journal amid fears that local moorlands and hills could be carpeted by up to 250 wind turbines if plans by green energy developers win approval in the next few years... He says he has privately stated his opposition to wind farm developments, and personally written to councilors to make his position clear.

"There are no wind farms on my family estate and I have repelled all requests to apply for them. **I have studied the debate, arguments and statistics and come to the personal conclusion that wind farms divide communities, ruin landscapes, affect tourism, make a minimal contribution to our energy needs and a negligible contribution towards reducing carbon dioxide emissions. The landowner and developer are enriched, while the consumer is impoverished by higher energy costs.** Turbines are ugly, noisy and completely out of place in our beautiful, historic landscape."

(Excerpt from "'Ugly, noisy, out of place' – Duke of Northumberland Delivers Blast on the Wind Debate")

By Tony Henderson, The Journal UK, November 30, 2009

Federal Judge Rules Wind Project Will Kill Bats

Federal district court Judge Roger Titus of the U.S. District Court for the District of Maryland [Washington, D.C.] has issued a comprehensive ruling that an industrial wind energy facility in Greenbrier County, West Virginia will kill and injure endangered Indiana bats, in violation of the Endangered Species Act (ESA). This is the first federal court ruling in the country finding a wind power project in violation of federal environmental law...

In finding a violation of the ESA, the court held... "that, like death and taxes, there is a virtual certainty that Indiana bats will be harmed, wounded, or killed imminently by the Beech Ridge Project in violation of... the ESA..."

In holding that the project is "certain to imminently harm, kill, or wound Indiana bats," the court relied heavily on testimony by leading bat biologists Dr. Thomas Kunz of Boston University, Dr. Michael Gannon of Penn State, and Dr. Lynn Robbins of Missouri State University. Dr. Kunz –

whom the court has described as the "leading expert in the field of bat ecology in the United States" – testified that the project will not only kill endangered Indiana bats, but may kill more than a quarter of a million bats overall, including species already being decimated by threats such as the devastating disease known as white-nose syndrome.

"...it is critical that such projects be undertaken consistent with federal law to ensure that our rush to develop a green energy future doesn't jeopardize imperiled species," said D.J. Schubert, a wildlife biologist... "In this decision, the court sends an unequivocal message that the 'green energy' label does not exempt wind power from compliance with federal laws protecting wildlife and the environment", added William Eubanks, an attorney with Meyer, Glitzenstein & Crystal which represented plaintiffs in this case.

(Excerpt from "Court Rules Massive Wind Energy Project in Violation of Endangered Species Act)

Animal Welfare Institute, December 9, 2009

Editor's Note

Shear Wind's bat study was conducted 8 kilometres south of the Glen Dhu project site with Anabat II detectors deployed at ground level. Two detectors were deployed for one week, with one detector vandalized the day it was deployed. A recent paper published in the Journal of Mammalogy states: "Bats of certain species are dying at wind turbines in unprecedented numbers. The species consistently affected, in terms of both overall numbers and geographic distribution are those that rely heavily on trees as natural roosts throughout the year." These are the same bats identified in Shear Winds Bat Study which states: "We only used ground based echolocation sampling which may have affected our ability to detect calls by high-flying species..." No real mortality predictions could be made for this project from this study yet Nova Scotia Environment never required a new bat study.

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EAS newsletter is published monthly by the Eco Awareness Society and distributed free of charge. All work is done on a volunteer basis. Membership is \$10. yearly. If you would like to become a member or for more information on EAS, please contact any of the following members:

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The Eco Awareness Society is a non-profit organization whose mission is to uphold these principles: that "a subset of society should not be forced to bear the cost of a benefit for the larger society", that a landowner's right to full use and enjoyment of their property be upheld and not taken or hindered for public or private use or development, without just compensation, and that any policy or development with regard to the environment and landscape of Nova Scotia be shown to be effective and based on the principals of environmental sustainability and stewardship of our precious resources.*

*Based on the *Canadian Charter of Rights* and the *Fifth Amendment, U.S. Constitution*