



Speaking Truth to “Wind” Power

By

Michael J. Trebilcock

Professor of Law and Economics, University of Toronto, Faculty of Law

I N D E P E N D E N T • R E A S O N E D • R E L E V A N T

I. Introduction

The Green Energy Act (Bill 150), now before the Legislative Assembly of Ontario, is designed to expedite the process of promoting subsidized industrial wind power in the province by taking planning responsibilities away from local municipalities, while remitting most key decisions to subsequent Ministerial regulations.¹ I have five major objections to the legislation.

II. The Case Against Industrial Wind Turbines

1) Industrial Wind Turbines Have Minimal Impact on Carbon Emissions

There is no evidence that industrial wind power is likely to have a significant impact on carbon emissions. The European experience is instructive. Denmark, the world’s most wind-intensive nation with more than 6,000 turbines generating 19 percent of its electricity, has yet to close a single fossil fuel plant. It requires 50 percent more coal-generated electricity to cover wind power’s unpredictability, pollution and carbon dioxide emissions have risen (by 36 percent in 2006 alone).² The German experience is no different. Germany’s carbon dioxide (CO2) emissions have not been reduced and additional coal and gas-fired plants have been constructed to ensure reliable delivery, especially at times of peak demand.³

Indeed, recent academic research shows that wind power may actually increase greenhouse gas emissions in some cases, depending on the carbon-intensity of back-up generation required because of its intermittent character.⁴ In an Ontario context, wind power cannot be relied on to provide peak-load capacity, and is not

Michael Trebilcock, Professor of Law and Economics, University of Toronto, Faculty of Law, is a Research Fellow at the C.D. Howe Institute. This text draws on his remarks before Ontario’s legislative committee on Bill 150, April 8, 2009.

- 1 I, my wife, and other residents of Grey Highlands, and similar rural municipalities in Ontario, are personally affected by this legislation and acknowledge this conflict. The following comments reflect a professional career studying economic regulation and writing on electricity system design, including a year as Research Director of the Ontario Government’s Electricity Market Design Committee (1998).
- 2 David J. White, "Danish Wind: Too Good to be True?" *The Utilities Journal*, July 2004. See also article by Angela Kelly, written for the magazine *Green Places* and available at <http://www.countryguardian.net/Green percent20Places.htm>
- 3 Anselm Waldermann, "Wind Turbines in Europe Do Nothing for Emissions-Reductions Goals," *Der Spiegel*, February 19, 2009. Available (in German) at www.spiegel.de/international/business/0.1518.606763.00.html.
- 4 Arthur Campbell, "Hot Air? When Government Support for Intermittent Technologies Can Increase Emissions," MIT Department of Economics, November 21, 2008. Available at <http://econ-www.mit.edu/files/3563>.

needed for base-load where hydro and nuclear generation provide lower cost, low-carbon electricity. On the negative side of the environmental ledger are adverse impacts of industrial wind turbines on birdlife and other forms of wildlife, farm animals, wetlands, and viewsheds.

2) Industrial Wind Turbines Are Uneconomic

Industrial wind power is not a viable economic alternative to other energy conservation options. Again, the Danish experience is instructive. Its electricity generation costs are the highest in Europe (15 cents/kwh compared to Ontario's current rate of about 6 cents).⁵ The Chair of Energy Policy in the Danish Parliament calls it "a terribly expensive disaster."⁶ The U.S. Energy Information Administration reported in 2008, on a dollar per MWh basis, the U.S. government subsidizes wind at \$23.34 – compared to reliable energy sources: natural gas at 25 cents; coal at 44 cents; hydro at 67 cents; and nuclear at \$1.59, a significant industrial subsidy.

Wind generation is a good example of what can go wrong when governments pick winners.⁷ Each tonne of emissions avoided due to subsidies to renewable energy such as wind power would cost somewhere between \$69 and \$137, whereas under a cap-and-trade scheme the initial price would be less than \$15.⁸ Carbon taxes and cap-and-trade systems create incentives for consumers and producers on a myriad of margins to reduce energy use and emissions and, as these numbers show, overwhelm subsidies to renewables in terms of cost effectiveness.

Under its current standing offer program, the Ontario Power Authority will pay wind producers 13.5 cents/kwh (more than twice what consumers currently pay for electricity), even without accounting for the additional costs of interconnection, transmission and back-up generation. As the European experience confirms, this will lead to a dramatic increase in electricity costs with consequent detrimental effects on business and employment (an anti-stimulus policy at a time of serious economic recession in the province).⁹ From this perspective, the government's promise of 55,000 new jobs from renewable energy is a delusion. A recent detailed Spanish study finds that for every job created by state-funded support of renewables, particularly wind energy, 2.2 jobs are lost.¹⁰ Each wind industry job created cost almost \$2 million in subsidies (to destroy 2.2 other jobs). Why would the Ontario experience be different?

3) Industrial Wind Turbines Cause Insufficiently Researched Health Effects

A growing body of scientific and medical evidence suggests that the health effects on those subjected to long and frequent periods of pulsating, low-frequency noise associated with wind turbines include sleep disturbances leading to depression, chronic stress, migraines, nausea and dizziness, exhaustion and anger, memory loss and cognitive difficulties, cardiac arrhythmias, increased heart rate and blood pressure. A prominent academic study lists no fewer than 13 studies that show noise from wind turbines at night can disturb residents more than 2 km away.¹¹ Those living close to the source of noise can develop what has been termed "Vibroacoustic Disease (VAD). Noise from wind turbines exhibit the characteristics of noise

5 See John Dyson, "Tilting Against Windmills," Reader's Digest, August 2003; also in the United Kingdom Parliament House of Lords-Science and Technology-Written Evidence, October 2003. Available at <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmwelaf/876/876we14.htm>; and the Response to the 2006 Energy Review, April 2005. Available at <http://www.berr.gov.uk/files/file31065.pdf>

6 See The United Kingdom Parliament House of Lords-Science and Technology-Written Evidence, October 2003. Available at <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmwelaf/876/876we14.htm>; see also the Response to the 2006 Energy Review, April 2005. Available at <http://www.berr.gov.uk/files/file31065.pdf>

7 William Tucker, Wall Street Journal, December 29, 2008; see also Patrick Sawyer, "Promoters overstated the environmental benefits of wind farms," Telegraph.co.uk., December 21, 2008. Available at <http://www.telegraph.co.uk/earth/energy/windpower/3867232/Promoters-overstated-the-environmental-benefit-of-wind-farms.html>.

8 "Wasting Money on Climate Change (Cap and Binge)," *Economist*, March 14, 2009.

9 Max Schulz, *op. cit.*

10 Study of the Effects on Employment of Public Aid to Renewable Energy Services, Universidad Rey Juan Carlos, March 2009; see also *Seven Myths About Green Jobs*, University of Illinois, March 16, 2009 and available at <http://news.prnewswire.com/ViewContent.aspx?ACCT=109&STORY=/www/story/03-16-2009/0004989090&EDATE=>.

11 "Simple guidelines for siting wind turbines to prevent health risks," George W. Kamperman and Richard R. JamesDearborn, NOISE-CON 2008, Michigan, July 28-31, 2008.

experienced in various occupations (aircrews, aircraft maintenance workers, ship workers and an islander population exposed to environmental infra and low frequency noise) and has been shown to lead to VAD. Complaints from people living near wind turbines are the same as those from persons who have developed VAD.¹² Also, flicker from turbines at a minimum are disruptive and annoying. Flicker poses a potential risk of photosensitive seizures.¹³

The refusal of the provincial government to order full independent environmental assessments, including assessments of health effects, of any wind turbine project to date, undermines the credibility of claims that there will be no such negative effects.

4) Industrial Wind Turbines Have Adverse Effects on Adjacent Property Values

A three-year study of 600 property sales near the Melancton wind turbine developments north of Shelburne, Ontario found that property values decreased by 20 percent to 25 percent (an average of \$48,000), were on the market more than twice as long as properties in adjacent areas, and a large number (four times those that did sell) could not be sold at any price.¹⁴ While wind developers deny that industrial wind turbines have any effect on property values of neighbouring residents, common sense suggests otherwise: how many people familiar with this development would be prepared to buy recreational or retirement homes in this area, even at sharply discounted prices? In recreational areas that promote their scenic attractions these effects on property values are likely to be even more pronounced. Refusal by either wind developers or the provincial government to provide legally enforceable guarantees of compensation for property value losses warrants further skepticism over the claim that there will be no such losses.

5) The Decision-making Process is Undemocratic and Will Undermine Efficient Regulation

When Premier McGuinty first ran for public office in 2003, his platform included a prominent commitment to “democratic renewal” in Ontario. In a June 1, 2004 press release, he and his Minister of Democratic Renewal (Michael Bryant) declared that they were embarked upon “the most ambitious democratic renewal process in Ontario’s history.”

The *Green Energy Act* will gut locally-elected governments of major planning responsibilities, remit most key decisions to subsequent Ministerial regulations that no one will see until after their promulgation, and will centralize most important powers over the electricity sector in the Minister’s office. Furthermore, the politicization of major supply and pricing decisions will seriously compromise the goals of independent, efficient regulation of the electricity sector and hence the effectiveness of the Ontario Energy Board and the Independent Electricity System Operator.¹⁵ For these reasons, the *Green Energy Act* represents a poor example of “democratic renewal.”

III. Minimizing the Damage

Even if one thought (contrary to my views), that wind turbines were a good idea environmentally and economically, there would be a simple solution to the impact on rural residents, who face being conscripted to bear most of the burden of solving a problem they mostly did not create. The solution is to ensure that set-backs from residences conform to

12 "Vibroacoustic disease: Biological effects of infrasound and low-frequency noise explained by mechanotransduction cellular signaling." Mariana Alves-Pereira and Nuno A.A. Castelo Branco, *Progress in Biophysics and Molecular Biology*, (2007) 93: 256-279; see also, "On the Impact of Infrasound and Low Frequency Noise on Public Health - Two Cases of Residential Exposure," Mariana Alves-Pereira and Nuno A.A. Castelo Branco, *Rev. Lusofona de Ciencias e Tecnologias da Saude*, (2007) 2 (4): 186-200.

13 "Wind turbines, flicker, and photosensitive epilepsy: Characterizing the flashing that may precipitate seizures and optimizing guidelines to prevent them," Graham Harding, Pamela Harding and Arnold Wilkins, *Epilepsia* (2008) 49 (6): 1095-1098.

14 "Living With the Impact of Windmills," Chris Luxemburger, Director Brampton Real Estate Board, Chairperson of Real Estate By-laws Committee, paper 2008 (available at <http://ruralgrubby.files.wordpress.com/2008/chris-luxemburger-presentation1.pdf>); see also a recent Texas study that reaches similar findings: http://www.bobvila.com/HowTo_Library/Green_Backlash_The_Wind_Turbine_Controversy-Green_Building-A3923-4.html.

15 See George Vegh, "Green Energy Unbounded," February 24, 2009. <http://utorontolaw.typepad.com/files/green-energy-unbounded.doc>.

international standards as endorsed by renowned medical and scientific bodies that have closely examined the health and environmental risks. The French Academy of Medicine in a 2006 study recommends 1.5 km, pending further research on health effects of persistent exposure to low-intensity noise.

Alternatively, the government could concentrate wind farms in more remote or sparsely populated areas, as has been done in Quebec and much of Europe. These measures would also minimize negative impacts on property values. But these are modest palliatives to the fundamental policy flaws in Bill 150 and do not address industrial wind power's two key "inconvenient truths": failure to reduce significantly carbon emissions, and exorbitant cost to taxpayers and consumers.

IV. Good Politics, Bad Policy

In debates over climate change, and in particular subsidies to renewable energy, there are two kinds of green. First there are some environmental greens who view the problem as so urgent that all measures that may have some impact on greenhouse gas emissions should be undertaken immediately, whatever their cost or their impact on the economy and employment.¹⁶ Then there are the fiscal greens, who being cool to carbon taxes and cap-and-trade systems that make polluters pay, favour massive public subsidies to themselves for renewable energy projects, whatever their relative impact on greenhouse gas emissions. These two groups are motivated by different kinds of green. The only point of convergence between them is their support for massive subsidies to renewable energy (such as wind turbines).

This unholy alliance of these two kinds of greens (doomsdayers and rent seekers) – a classic Baptist-Bootlegger coalition, harking back to the Prohibition era – makes for very effective, if opportunistic, politics (as reflected in the Ontario government's *Green Energy Act*), just as it makes for lousy public policy: politicians attempt to pick winners at our expense in a rapidly-moving technological landscape, instead of creating a socially efficient set of incentives to which we can all respond.

16 See Bill McKibben, "The Fierce Urgency of Now," *Toronto Star*, 25th March, 2009: "We have to do everything we can imagine, all at once." For a critique of this view, see Robert MacIntosh, "The Approaching Global Energy Crunch: And How Canada Should Meet It," C.D.Howe Institute Commentary 203.