

Part 1: Negative Health Effects from the noise of wind turbines

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Introduction

I have been studying the effects of turbines on people and wildlife for four years, in reports in newspaper articles and online. Recently I have spoken a number of times to people that have been driven off their land by turbines in Waubra, and listened to their stories at council meetings. I have spoken with a family at Waubra who had to leave their property, and did so two months ago. They now have to live in Ballarat, and their symptoms have disappeared.

But already in 2007 I was coming across reports of people from overseas, devastated by what turbines nearby were doing to their health. Since then, especially in Australia in Waubra and at Toora, the spotlight has increasingly highlighted the plight of people driven from their homes in the country by the noise from turbines.

One of the first reports I read was from an English paper: ‘...My home nestles on the north-western slope of Mynach Bach, Ceredigion, below the 20 turbine farm owned by National Windpower. We live 350 metres from the nearest turbine and about 750 metres from six or seven others. The ‘thwump’ of the blades and the grinding gears is driving us to distraction. My kitchen chimney amplifies these noises sickeningly. Since commissioning [of the turbines] in July the house has frequently vibrated with sickening sound waves. At night, these disrupt sleep even when all the windows are closed...’¹

That article was written in 1993. Many wind companies say that the more modern turbines are not so noisy. That has not been found to be the case at all, as a lot of the damage is being done by inaudible sound that can affect people severely, and is not measured by wind companies.

Wind companies do not warn country people of the noise problem. Governments and wind companies have consistently ignored and played down this effect on people, and this has added to the despair in rural communities.

Misleading assurances from wind companies

The information sent by ‘Windcluster’ to householders in South Cumbria, UK, stated: **“The design and control systems will ensure that there will be no noise nuisance.”** (March 1995).

By 1999, the local paper *The Westmoreland Gazette* was reporting about this wind farm: “Environmental Health officers agree turbines contravene noise nuisance laws.”²

The above assurance from wind companies of: ‘no problem,’ emerges time and again in complaints from people living close to turbines - that they were told they’d hardly hear the blades turning.

Wind companies have for years denied health problems from turbine noise. They also do

1 The Daily Telegraph, 21.10.93

2 <http://www.countryguardian.net/case.htm#ktourismetc> accessed 24.03.07

not measure for one of the emissions from turbines – sub-audible noise. They consistently underestimate the loudness of the audible noise as well, as will be shown later.

The nature of the noise

In her article: ‘Health, hazard, and quality of life near wind power installations – How close is too close?’ Nina Pierpont, MD, PhD (who has since written a peer-reviewed research paper on her studies of what she calls ‘Wind turbine Syndrome’ on the effects of turbine noise on people) wrote:

‘Noise levels sufficient to prevent or interrupt sleep, even with the windows closed, are reported in dwellings close to wind power installations in all surveys. Low frequency sound, defined as 10-200 Hz, travels farther and comes through walls and around obstacles because of its long wavelength; sounds in the range of 25-150 Hz have wavelengths similar to room dimensions, and can reverberate in rooms. Low frequency sound is especially bothersome, according to the World Health Organization: [5]

“Low frequency noise, for example from ventilation systems, can disturb rest and sleep even at low sound levels.”³

This is the sound that wind companies do not usually measure for.

The World Health Organization article goes on to say: “When prominent low frequency components are present, noise measures based on A-weighting are inappropriate.” [An “A” filter, which filters out low frequency sounds, is standard in loudness measurement.]...Since A-weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health effects would be to use C-weighting.” [A “C” filter filters out less of the low-frequency sound.]

“It should be noted that a large proportion of low frequency components in a noise increase considerably the adverse effects on health.”⁴

‘Dr Amanda Harry, a British physician, found (near a 16-turbine installation in 2003) that 13 out of 14 people surveyed reported an increase in headaches, and 10 reported sleep problems and anxiety. Other symptoms included migraine, nausea, dizziness, palpitations, stress, and depression...Dizziness (specifically, vertigo) and anxiety are neurologically linked phenomena. [7] Hence the anxiety and depression seen in association with other symptoms near wind installations are not a neurotic response to symptoms, but rather a neurologically linked response to the balance disturbances people experience from shadow-flicker [from turbine blades – my addition]. Sleep deprivation, by the way, also causes anxiety and depression.’⁵

3 http://www.aandc.org/research/wind_noise_pierpont.html accessed 16.12.2007 [the 5 reference in Dr Pierpont’s article refers to: Berglund, B, et al, 2000. Guidelines for Community Noise, World Health Organization.]

4 http://www.aandc.org/research/wind_noise_pierpont.html accessed 16.12.2007 [the 5 reference in Dr Pierpont’s article refers to: Berglund, B, et al, 2000. Guidelines for Community Noise, World Health Organization.]p.2

5 *ibid.*, p.3 [the 7 in Dr Pierpont’s article refers to: Balaban, CD, and Thayer, JF. 2001. Neurological bases for balance-anxiety links. *Journal of Anxiety Disorders* 15:53-79]

These are the problems consistently denied by wind companies, despite a wealth of accruing evidence from people living close to turbines. I believe that they have to deny this. If they ever acknowledged that there are serious health effects such as heart palpitations, and they had knowingly denied this fact, they would be accused of fraud.

On October 29-31, 2010, a symposium was held in Picton, Ontario, into the ‘Adverse Health Effects of Industrial Wind Turbines.’ It was attended by concerned physicians, acousticians, and solicitors, worried by the disenfranchisement suffered by people complaining about health problems experienced near wind turbines. A South Australian doctor, Dr Sarah Laurie, who has been researching this problem, attended that symposium, and has disseminated some of the findings of that seminar. She has travelled widely to interview at first hand those at Toora and Waubra, and elsewhere. She has talked to doctors and hospitals to advise them on the seriousness of the problems, like the heart palpitations.

Alec Salt, PhD, Department of Otolaryngology, Washington University School of Medicine, St.Louis, Missouri, USA, presented one of the talks at the Ontario symposium.

Some of the highlights from his talk include:

“A-weighted spectra totally misrepresent the effects of wind turbine noise (that includes infrasound components) on the ear.”

‘Wind turbines generate infrasound...Wind turbine infrasound is at levels that cannot be heard.

His Conclusions and Recommendations

For years, people have been told that infrasound you cannot hear cannot affect you. This is completely wrong...Because the inner ear does respond to infrasound at levels that are not heard, people living near wind turbines are being put at risk by infrasound effects on the body that no one presently understands...Until a scientific understanding of this issue is established we should not be dismissing these effects, but need to be erring on the side of caution...

Wind turbine noise is *not* comparable to the rustling of leaves.⁶

I have gone into some detail about the origins of some of the noise problems caused by wind turbines – there is a lot that I could add – but what are some of the practical results both on councils and rural residents?

⁶ Excerpted from *Wind turbines, infrasound, and health effects* <Wind Turbine Syndrome News, <http://www.windturbinesyndrome.com/news/2010/wind-turbines-infrasound-and-health-effects/> Oct 2010

Repercussions from the noise problems with turbines: a very small sample

A) 'Charges against wind companies upheld'

[March 27, 2009 – by Phil Ray] 'Hollidaysburg – A Blair County judge has upheld all but two civil charges brought against two wind companies by a Juniata Township couple, who have complained that 40 wind turbine companies on Blue Knob Mountain are noisy and cause light to flicker in their home.

According to the lawsuit, Gamesa and Allegheny Ridge **made assurances for the wind farm that the turbines would not be noisy** and that a 2,000-foot setback requirement would be enough to protect home owners against intrusion.

The Stulls say the resulting noise, vibrations and flicker have caused them to lose sleep and to suffer anxiety and emotional distress.⁷

B) Wisconsin:

The following are excerpts from Allen Haas, in Malone, Wisconsin, who has turbines on his land. They are from an affidavit to the Public Service Commission of Wisconsin, filed Aug 24, 2010.

'I have three wind turbines on my property and get \$4,000 for each one. It's been 2 years now with the turbines and everyone in the community is irritable and short, they just snap back...The closest one to my house is 3, 000 feet away, way too close. You don't get sleep at night because they roar like at an airport. I get shadow flicker in my house, but down in the village of Johnsburg where those are about another 1,500 feet away from the

turbines, oh probably 4,500 feet total those blades are throwing shadows right over all the house roof tops in entire village, that's really bad...I go to the doctor and now I'm on a lot of different medications. I've been to the hospital a couple of times in the past two years with chest pains. And they just can't figure out what it is, but now we're all being diagnosed with wind turbine syndrome...My dad is a totally different person since these things went up. He stays in bed all day now. Even if he does get up to eat, he just goes back to bed. There is no will anymore. I ask the doctor, how are they doing this to us? He just says he doesn't know...

I got turbines and the money doesn't pay off in the end. I've gotta spend more on cutting around these things and all them cables. It has destroyed my farmland...

They should be paying everyone around who is affected, that way everyone who wants to move could get out and move. So many want to move and leave, but they can't sell their property. The developers deny devaluation, but it's real, the ones without contracts lost half the value of their property and can't move because they have no money, still trying to pay off their homes...⁸

7 <http://www.altoonamirror.com/page/content.detail/id/517439.html?nav=742>

8 <http://windconcernsontario.files.wordpress.com/2010/08/fs-357.jpg>>by Haas, Allen

C) Waubra:

You don't have to go to Wisconsin to find despair from turbine noise. *The Australian* (August 22, 2009) interviewed Noel and Janine Dean, who lived at Waubra, but had to move away due to the health effects from turbines.

At Waubra, where Acciona, a Spanish Company, built 128 turbines, they suffered the illnesses that are being experienced all over the world from turbine noise.

They had nothing against the wind farm initially, but as soon as the blades started turning, Noel Dean developed migraines. 'He started waking with headaches, initially dull but, over time, sharp and debilitating... "When the wind is blowing north I got a thumping headache, like someone belted me over the head with a plank of wood and I didn't know whether to go to the hospital or what to do. You couldn't really work.'"⁹

His wife, Janine, developed nausea, sleeplessness and uneasiness.

It was only after they went to their other property in Donald and instantly felt well again, that they wondered if the turbines were affecting their health.

Since then Noel Dean has had sound measurements taken in his home, some by Graeme Hood, an engineer with the University of Ballarat. When they measured both audible and inaudible noises, they found that sound pressure from the turbines registered between 70 and 80 decibels, 'akin to being within proximity of a vacuum cleaner or power drill.'

The sound was 'below twenty hertz, inaudible to humans, but at volumes up to eighty decibels: the equivalent of a freight train passing the house.'¹⁰

Noel Dean, at his own considerable expense, has commissioned an investigation by a Queensland noise expert into the noise levels in his home. What is now called 'The Dean Report' confirms that infrasound from the turbines is present on his farm in high levels. To any doubters of the problems with turbine noise, Noel says they should come and live at his house for a few weeks.

Acciona, the company that owns the Waubra wind farm, denies all noise problems from turbines. And in July, 2009, the managing director of Waubra wind farm, Brett Thomas, said the company had met every standard of noise compliance authorities had placed on the farm.¹¹

But last year, headlines in the ABC News read:

⁹ *Win TV*, <http://www.wintv.com.au/ballarat/news/item/11942>; *WINDFARM RESEARCH*, Thursday 6, August 2009, accessed 6.08.2009

¹⁰ *ibid.*

¹¹ *The Courier*, July 18, 2009,

‘Wind farm noise report reveals planning breaches: Mayor’

‘Noise testing at properties neighbouring the Waubra wind farm has revealed some breaches of the farm’s planning permit conditions.

‘Shire Mayor David Clark [Pyrenees Shire] says the report reveals noise levels are too loud at some of the 23 properties tested.

‘He says properties at the centre of previous noise complaints *were not tested for the report*. [my emphasis]

“There’s effectively two or three key areas where there have been complaints and they’re not included in the compliance testing,” he said.

“Now those people have had tests done by Acciona but those tests have not been made publicly available and certainly we would contend that those people deserve to have their data made publicly available and on the public record.”¹²

Noel Dean and his wife have had to go and live in Ballarat, as they can’t live in their own home in Waubra, and be safe from ‘Wind Turbine Syndrome.’

D) They are not the only ones: Trish Godfrey

Trish Godfrey, a chef whose home at Waubra had a professional kitchen, ended up surrounded by 65 turbines. She stated repeatedly in newspaper articles and on *Stateline* (in tears) that the noise from the turbines made her ill – ‘it makes me feel like I have a

headache, like vertigo,’ (The Weekly Times, September 2, 2009); ‘she experienced almost constant nausea and headaches,’ (The Australian, August 24, 2009); ‘like motion sickness that never goes away,’ (The Australian, August 22, 2009).

In February, 2010, Acciona bought her out. She had complained of ‘major health problems including insomnia, depression, headaches, dizziness, nausea and tinnitus,’ but Acciona said they had bought her out due to the ‘...visual impact of turbines on the Godfrey’s home.’ (*The Courier*, November 18, 2010)

In the above newspaper article, Brendan Gullifer also reported that ‘Waubra wind farm buys more properties.’¹³

‘Waubra wind farm operator Acciona has confirmed that it has now bought out seven property owners... Mr Wickham [of Acciona] said post-construction noise monitoring was completed in September. This monitoring showed turbines near two houses could not be run normally, with noise levels exceeding those stipulated by the project’s planning permit... The turbines would need to have been run in reduced-noise levels...’

¹² *ABC News*, November 16, 2010, ‘Wind farm noise report reveals planning breaches: Mayor’

¹³ *The Courier*, November 18, 2010, ‘Waubra wind farm buys more properties’

‘And in February the company effectively silenced one of its most high-profile critics with the purchase of Victor and Trish Godfrey’s five-acre property.’¹⁴

Confidentiality agreements are signed by the landowner, which precludes them from discussing the arrangements any further. In America, they are called ‘gag’ agreements.

Despite the health effects from the Waubra wind farm, the company is looking at expanding the wind farm with another 60 turbines.

E) **Similar scenarios are played out overseas:**

‘Canadian Hydro Developers Buys Unlivable Homes and Gags Sellers’

‘According to the land registry office in Orangeville...six homes in Dufferin County have been purchased by Canadian Hydro Developers after serious complaints; most recently June 26th, 2009 the Ashbee home.

Before these families could escape the nightmare of their unliveable homes, they had to agree to sign strict nondisclosure contracts (gag-orders) to protect the wind company.

This wind company has spent **over \$1.75 million dollars** clandestinely buying out these six families yet they still try to claim there were no complaints.’¹⁵

The other very disturbing element in all this, apart from the misery that the people living near a wind farm experience, is that a foreign company, whose only aim is to industrialise

our rural land with turbines, is buying up one country property after another. After all, what are they likely to do with the land they have acquired, but propose to put up more turbines, or some other industry, once the surrounding hillsides have been degraded already. This argument was used in Britain after turbines went up in rural areas, to enable further industrialisation.

F) **Donald Thomas at Waubra**

More problems at Waubra are experienced by Donald Thomas, and his parents. They get heart palpitations, headaches, a buzzing in the chest, and suffer from sleep deprivation.

They live three and a half kilometres away from the turbines, but experience many of the symptoms of the wind turbine syndrome. Noise from turbines is often affected by the terrain, and can be heard 10 kilometres away.

Donald spoke at a meeting of the Moorabool Shire Council, at Ballan, on April 29, 2010 (which I attended and at which I took notes on the speakers) to look into the community’s feelings on the wind proposal submitted by Pacific Hydro.

Donald Thomas of Waubra made the point that no government department has ever

¹⁴ *ibid.*,

¹⁵ Wind Concerns Ontario website (posted by WCO 08/26/2009 and accessed 17.12.2010)

responded to his requests for investigation into the problems, and Acciona has not come to measure the noise levels at his home. He said living with sleep deprivation on a daily basis was a form of torture.

Acciona continues to say there are no adverse health impacts from turbine noise. (The Courier, February 11, 2010)

G) The family

The most recent departure from Waubra is the family that left Waubra about two months ago. (September, 2010)

run a four thousand acre property there, some of it wooded and fenced off for wildlife. It is an extremely well organised and well run farm, with a modern brick family home, with outdoor shelter for a barbecue and a well maintained garden for the children.

Except they can't live there. They experience the same problems as other residents at Waubra. They live 900 metres away from a turbine that is on their neighbour's property. They suffer from nausea, interrupted sleep every night, heart palpitations and pressure within ears. Last time I was at their home it stood empty – a beautiful well-appointed house in excellent condition with lovely views over green, partly wooded, undulating land (but with an enormous turbine looming over the view in one direction, with other turbines in other directions visible a little further away), and no one can live in it.

The have had to move to a house in Ballarat. The sicknesses they had experienced have gone. They are sleeping through the night. On Boxing Day (2010) they went back to their property and stayed the night. The symptoms of heart racing, and sleeplessness returned.

The doctor they have been seeing (who is also Trish Godfrey's doctor) sent a letter to Acciona about the health problems suffered by some people at Waubra.

H) In England:

There are many similar stories from overseas; people leave the turbines and feel better.

A similar case is the Davis family; 'Jane and Julian Davis and their daughter Emily had been moving between their home and a "safe house" in Spalding [Lincolnshire] on a daily basis whenever they found noise from the Deeping St Nicholas wind farm unbearable at night.'¹⁶

'Ever since the Davises were first woken up from their sleep three days after the turbines were installed, they have kept a log of the noise. Of those 342 days, 321 have been disturbed... Things have now become so bad that the Davises have been forced to rent out what they call a "sleeping house" in the village for about £600 a month.'¹⁷

¹⁶ Lincolnshire Free Press, 29 May 2007

¹⁷ <http://windbyte.co.uk/noise.html#deeping> (accessed 17.12.2010)

Like the Deans and at Waubra, if you don't want to sell out to a wind company because you love your farm and want to work it (Noel Dean spent forty years improving his farm, and many farmers are third, even fifth-generation farmers of the same property), there is no compensation for your financial hardship, neither from companies or from governments who consistently deny your claims of suffering, when you have to go somewhere else to regularly escape from the noise and health effects of turbines.

The Davises did manage to have their local council rates reduced: 'Jane and Julian Davis, who have been forced to move from their house by windfarm noise, have now had their loss of amenity and loss of their home acknowledged by a Valuation Tribunal which lowered their Council Tax banding in recognition of:

- 'Significant detrimental effect'
- 'Nuisance real, not imagined'
- 'Potential sale price affected'¹⁸

I) Governments cover up the problem

Yet governments continue to help cover up the problem. In Britain, a warning about the health effects of noise from turbines was removed from a government study following

pressure from civil servants. The report had recommended a lower noise level, especially at night, be set for wind farms. (Alastair Jamieson, December 13, 2009, *Telegraph*, UK)

One victim of wind turbine noise in Ontario said: "My various levels of gov't...deserted me and ignored my concerns."¹⁹

What I have mentioned in this report of the continued degradation of life of country residents, due to wind farms, represents only a tiny fraction of what can be read on websites like: *European Platform Against Windfarms*; *Windaction.org*; *Windwatch*, *Wind Concerns Ontario*, *windbyte.co.uk*, and many others. It becomes obvious that governments and wind companies are knowingly ignoring this situation.

J) Senate Inquiry

Given this continued dereliction of politicians' duty towards their constituents, on a world-wide scale, we are very lucky that Senator Fielding of Family First has initiated a Senate inquiry into the health effects (and other effects) on country residents. An email to me, from members of the 'European Platform against Windfarms,' expressed that precise point. In Germany opposition to turbines has been stifled, and donations to wildlife organisations from wind companies have ensured their silence too.

Until that inquiry into health effects and property devaluations from turbines, and related

¹⁸ <http://windbyte.co.uk/noise.html#deeping> see BBC TV News piece: 'Wind farm blights farmhouse'. (accessed 17.12.2010)

¹⁹ www.wind-watch.org/news/2009/07/22/victims-of-industrial-wind-turbines-on-the-rise-in-ontario/

issues has run its course, it would be inappropriate to give the go-ahead to any other wind energy facilities, and condemn more families to the misery, and expense, of not being able to live in their own homes due to the health effects from turbine noise.

K) Noise impact affects work safety

On September, 3, 2009, Peter Kavanagh in a Press Release from the DLP, voiced his concerns: ‘Following a recent inspection of farms in the vicinity of windfarms and concerns by some residents about possible health effects, Peter Kavanagh, DLP Member for Western Victoria, in Parliament last night asked the government to study farms and farmhouses as Workplaces to see if those within the vicinity of windfarms are safe places to work.’

It is obvious that for the family, the Deans, for Donald Thomas, and for Trish Godfrey at Waubra, it was not a safe place for them to run their businesses and farms.

L) Evidence of health effects mounts up

Given that:

- A number of Waubra residents have been forced to leave the district, just to be able to sleep away from the noise of turbines, and suffering a range of illnesses, now called Wind Turbine Syndrome.
- there is world-wide misery experienced by rural residents near wind farms (thirty Ontario municipalities have called on the provincial government to do a comprehensive health study into turbine’s effect on human health)²⁰
- a study done in 1997 by K.Persson Way, R.Rylander (Sweden), S.Benton (England) and H.G.Leventhall (England) into effects of low frequency noise on performance found there was a problem,²¹ and:
- at Toora, Victoria, the owners of the wind farm (Stanwell, Queensland Government) bought and demolished the home of Les Osbourne, who was suffering from the noise of the turbines

– it is no longer appropriate for Lane Crockett, general manager of Pacific Hydro, to say: ‘...it had found no evidence of health issues relating to wind farms.’²²

M) Clause in Contract

If the wind industry continues to deny the existence of a problem, one wonders why then the need for this particular clause in a contract written by Wind Power Pty Ltd (now defunct) in its ‘Tenant Agreement for Lease:’ (2007)

20 Joan Delaney, *The Epoch Times*, May 22 – June 4, 2009, ‘The hidden cost of free wind energy,’

21 K.Persson Waye, R.Rylander, S.Benton, H.G.Leventhall, *Journal of Sound and Vibration*, ‘Effects on Performance and Work Quality due to Low Frequency Ventilation Noise,’ March 3, 1997,

22 ABC Radio South West Victoria – News: ‘Moorabool residents unite against wind farms news Council, April 30, 2010

7.3 Landlord's Release

To the extent permitted by law, the Landlord releases the Tenant [read: the wind company] from any liability for loss, damage or injury occurring in the Premises or on the Land arising from the Tenant's breach of the Environment Protection Act 1970 (Vic) **due to noise emitted from the Wind Turbine Generators.** (page 7) [my emphasis]

N) Paid to keep quiet: why the need for this:

'Patricia Pilz of Caithness Energy... is making a tempting offer [in Oregon, USA]: sign a waiver saying you will not complain about excessive noise from turbines... and she will cut you a check for \$5,000.

"Shall we call it hush money?" said one longtime farmer, George Griffith, 84.'²³

Conclusion

There is growing world-wide recognition of the health effects of turbine noise on nearby rural residents. Symptoms include sleep deprivation, headaches, heart palpitations, nausea, vertigo, dizziness, depression, anxiety and feelings of malaise.

Despite denial by wind companies and governments that there is a problem, the facts tell another story:

- 'Rural residents in Texas, Maine, Pennsylvania, Oregon, New York, Minnesota, Wisconsin, Canada, New Zealand, Australia and England have been complaining about the noise from wind turbines, particularly about sleep deprivation.'²⁴(The author of this article is the managing editor of 'Energy Tribune.'
- Research into health effects of low-frequency sound proves negative health effects.²⁵
- An international symposium was set up in Ontario in October, 2010, to look into the problem of the health effects of turbine noise on nearby residents.²⁶
- World-wide, wind companies are buying out those suffering from the noise who 'make a noise about it,' (even demolishing those houses) and offering financial incentives to neighbours not to complain about turbine noise.

²³ William Yardley, *NYTimes*, July 31, 2010

²⁴ Robert Bryce, *Wall Street Journal*, March 1, 2010, 'The Brewing Tempest Over Wind Power'

²⁵ K.Persson Waye, R.Rylander, S.Benton, H.G.Leventhall, *Journal of Sound and Vibration*, 'Effects on Performance and Work Quality due to Low Frequency Ventilation Noise,' March 3, 1997,

²⁶ *Ontario, Press Release*, September 14, 2010, 'Symposium on adverse health effects and industrial wind turbines'

- There are more and more court cases on this issue; ‘Lawsuits that focus on noise pollution are now pending in Maine, Pennsylvania and New Zealand. In New Zealand, more than 750 complaints have been lodged against a large wind project near Makara, since it began operating last April.’²⁷
- Globally, there is an outcry from residents that are being disenfranchised, and suffering physical and financial hardship from wind turbines; ‘The European Platform Against Windfarms lists 388 groups in 20 European countries. Canada has more than two dozen antiwind groups. In the U.S. there are about 100 such groups.’²⁸

Other sources of renewable energy are being developed all the time. Government money (ultimately the taxpayer’s) and power companies’ money (ultimately the consumer’s) should be spent in more efficient ways.

Wind power stops and starts at the whim of the wind, and needs other power sources to be available instantly to take over all energy needs. This fact doubles up on energy costs, and actually increases greenhouse gases, as those power plants are not working at full capacity and emit more pollution. In fact, only gas-fuelled power stations can take up the slack from the wind’s inconsistency quickly enough. So the more wind power you have, the more gas-fuelled power stations you need, doubling up on energy costs and making electricity prohibitively expensive. This impacts on jobs in industry, and on middle- and lower income earners.

The time has come to call a halt to anymore wind farms till more research has been done. There is too much at stake for us to say “laissez-faire” and let the damage continue.

²⁷ Robert Bryce, *Wall Street Journal*, March 1, 2010, ‘The Brewing Tempest Over Wind Power’
²⁸ *ibid.*