



**Submission of Mark Duchamp**

Director, Climate Change and Alternative Energies,  
Iberica 2000, Spain

5 February 2011

**To: The Senate, Commonwealth of Australia, Canberra**

**Re: Inquiry into the Social and Economic Impact of  
Rural Wind Farms**

Ladies and Gentlemen,

Public energy policy in Australia, as in other Western countries, is based on a fundamental premise. Let's

examine that first.

## **A) - CRITIQUE OF THE PREMISE: WIND FARMS ARE A MATURE TECHNOLOGY FOR PRODUCING GREEN ENERGY, AND ARE COMPETITIVE.**

If they are competitive, why do they need enormously expensive subsidies, direct or indirect?

The wind farm industry routinely replies to this question by pointing to the “external costs” of producing energy with fossil fuels. These external costs are, in a nutshell, pollution, CO<sub>2</sub>, and global warming.

The flaw in this line of argumentation is that the external costs in question apply equally to wind farming, as I shall now demonstrate.

### **a) – Wind farms cause conventional power plants to burn more fossil-fuels per KWh produced.**

It is an undisputed fact that anyone driving in city traffic spends **considerably** more fuel than he would on a motorway. There are two reasons for this:

- An engine burns fuel more efficiently when running at its optimal cruising speed.
- An engine burns fuel with low efficiency and produces more harmful gases when it accelerates. Who hasn't noticed the black smoke that comes out of the exhaust pipes of poorly-tuned diesel-powered cars

when they accelerate? (frequently seen in Europe, where diesel engines are common in cars).

In city traffic, cars accelerate, come to a stop, accelerate again, stop again, etc. This, and standing still at red lights while burning fuel for nothing, cause most of the incremental pollution and fuel consumption affecting cars in city driving.

The coal, diesel, or gas-fired power plants that generate most of our electricity also consume and pollute more when stopping and accelerating frequently. And the crux of the matter is that wind farms force these plants to operate in that inefficient manner. Here is how:

- When the wind is blowing, fossil fuel power plants (FFPPs) must curtail their production because electricity produced by wind farms enjoys priority on the grid. As there are no batteries large enough to absorb excess production, the plants are thus ramped down to lower levels of efficiency (the optimum being about 95% of nameplate capacity). This causes them to burn more fuel, to emit more CO<sub>2</sub>, and to pollute more for each KWh they produce.
- Conversely, every time wind speed goes down, whether or not temporarily, FFPPs must ramp up their production rapidly so as to maintain the required frequency of 50 Hz on the national grid, failing which there would be crippling black-outs, something a

modern economy cannot tolerate. This ramping up is comparable to the acceleration of an automobile in that it burns fuel quite inefficiently and emits more gases.

As this ramping up and down occurs frequently during a single day due to the high variability of wind speed, fuel consumption, CO<sub>2</sub> emissions, and pollution increase greatly for each KWh produced by FFPPs. Wind farms are responsible for it.

- Finally, when one or more FFPPs must stop producing altogether because an increased quantity of wind-generated electricity has entered the grid, they must continue to spin in stand-by mode, burning fuel and emitting gases but not producing any electricity. This is necessary because wind is unpredictable, and these power plants will be required to ramp-up again at a moment's notice when wind speed will go down.

Coal-fired power plants would need hours for producing electricity from a cold start. Closed-cycle gas turbines (CCGT) can respond quicker, but not at the flick of a switch. Nuclear plants cannot ramp up rapidly. Hydro power can, but is kept in reserve for emergencies (e.g. a FFPP breaking down). Flick-of-a-switch open-cycle gas turbines (OCGT), which are relatively expensive to operate, are being kept in reserve like hydro or used for peak loads only, i.e. at the hours of the day when electricity demand is high.

In the circumstances, a number of coal-fired or CCGT

plants must be kept operating in stand-by mode when the wind is blowing, just in case it would abate rapidly. This causes much fuel to be burnt for nothing, because of the windfarms. The higher the installed capacity of windpower in a country, the more FFPPs must be kept on stand-by when the wind is blowing, causing more unnecessary pollution.

An example will help people understand this concept. Suppose a country has 20,000 MW of installed capacity in windpower. Suppose that, on a very windy day, these windfarms are producing at 95% capacity, i.e. 19,000 MW. Now suppose that the wind abates rapidly, and that within 2 hours only 10,000 MW of windpower capacity are actually being used. All things being equal, especially the demand for electricity, the grid manager will have to ramp up 9,000 MW into the system. If he doesn't have at that moment a number of FFPPs already spinning on stand-by, he will not be able to avoid a black-out, or at least a brownout – this is when electricity supply is cut to certain customers, generally industries using a lot of electricity.

Brownouts already occurred in California and Spain, and a black-out in Germany. Although windfarms were not made officially responsible for the damaging disruptions (political correctness oblige), these would not have happened if FFPPs had been built instead of windfarms. I have documentation on file that proves this.

**Recapitulation: extra fuel burnt to back-up windpower**

1) Unnecessary fuel is burnt by FFPPs spinning in stand-

- by, assuring against the risk of wind abating;
- 2) extra fuel is burnt when they are ramping up as the wind abates, even temporarily;
  - 3) extra fuel is burnt when they are forced to ramp down and operate at a lower level of efficiency when the wind is blowing.

In fact there is considerable suspicion that wind farms may be saving next to nothing (if at all) in fuel, pollution, and CO<sub>2</sub> when their detrimental effects on FFPPs are considered. Yet these plants are needed to back-up windpower: without them there would be black-outs every time there is a change in wind speed, for the electricity's frequency on the grid must remain steady at 50 Hz. To achieve this, the grid operator must match supply with demand at all instants, with temporary variances in grid frequency not exceeding 1%.

Several papers, and a book, have been published on this matter, addressing some of the points raised above:

**“The hidden fuel costs of wind generated electricity”**

K. de Groot & C. le Pair

<http://www.epaw.org/documents.php?lang=en&article=backup7>

**“Subsidizing CO<sub>2</sub> emissions via windpower: the ultimate irony”** - Kent Hawkins

<http://www.epaw.org/documents.php?lang=en&article=backup4>

And here is a paper by the **Institution of Engineers and Shipbuilders in Scotland**

<http://www.epaw.org/documents.php?lang=en&article=backup3>

And this one is about **the cost of backing-up windpower in Australia:**

<http://www.epaw.org/documents.php?lang=en&article=backup1>

There are more, all raising important questions, all calling for a comprehensive study on the unproved claim that wind farms save on fuel, pollution, and CO2. Unfortunately for taxpayers, consumers, and windfarm neighbours, who all pay dearly for this unreliable energy, no such study was ever made. Arguably, the results would be embarrassing for those governments that have been destroying so much landscape for nothing.

This lack of transparency causes a growing number of people to think that wind farms are in fact useless, and just a means for a few to get rich quick at the expense of the many.

Internet is full of warnings from independent engineers, economists, and environmentalists. But the mainstream media ignores them, having abandoned investigative journalism long ago. Political correctness is so much more rewarding for them, and easier to follow than ethics.

Here is a paper, written by a retired Australian engineer with 40 years' experience on a wide range of energy projects throughout the world, including managing energy R&D and providing policy advice for government and opposition:

**“Cost and Quantity of Greenhouse Gas Emissions**

## **Avoided by Wind Generation” - Peter Lang**

<http://carbon-sense.com/wp-content/uploads/2009/02/wind-power.pdf>

The paper concludes: ***“Wind power does not avoid significant amounts of greenhouse gas emissions.”***

Other valuable insights:

***“ Because wind energy is variable, unreliable and cannot be called up on demand, especially at the time of peak demand, wind power has low value.***

***“ Because wind cannot be called up on demand, especially at the time of peak demand, installed wind generation capacity does not reduce the amount of installed conventional generating capacity required. So wind cannot contribute to reducing the capital investment in generating plant. Wind is simply an additional capital investment. ”***

In other words, the uncontrollable amounts of electricity produced by wind farms are simply redundant in a market where the needs of consumers must be filled exactly and instantly. Back-up by FFPPs is a necessity, and in the final analysis we would be better off letting these plants function at their optimal level of efficiency, rather than force them to burn more fuel and pollute unnecessarily by operating in conjunction with unpredictable wind farms.

This truth becomes more uncomfortable still when one takes into account the collateral damage done by wind

farms: they are harmful to people, the environment, landscapes, tourism, property values, bird and bat life, and the economy (see further below).

And there is more. The very construction of these superfluous wind farms causes considerable amounts of fossil fuels to be burnt:

- when steel is manufactured for the turbine towers, fiber-glass for the blades, etc.
- when the wind turbines are shipped, trucked, and then assembled on location.
- when the top soil is moved, borrow pits are excavated, roads and platforms are built across the numerous landscapes that wind farms gobble up across the land.
- when cement is produced for the concrete bases of the wind turbines. To make one ton of cement one must burn approximately one ton of oil or its equivalent in coal or gas. Each turbine base requires over 1,000 tons of cement to anchor the tall structure firmly into the ground, i.e. 1,000 tons of oil must be burnt to install each wind turbine. And brand new concrete bases will be needed for replacing the turbines 15 - 25 years down the line, as the old ones can't be used.
- when thousands of miles of new high-tension power lines are built to link hundreds of windfarms to the national grid, often from remote locations all over the country. By the way, the transmission cables must be 4 to 6 times bigger than the average amount of electricity

produced by windfarms would require, for these produce only on average 15-25% of their nameplate capacity. Yet on those few days when the wind blows strongly, the transmission cables must be able to accommodate up to 100%. This is wasteful, and so is the amount of electricity lost while being transported from so far away to the big cities where most of it is used (loss is about 9% of the electricity transported). - when the grid itself must be updated, at the expense of electricity consumers, to allow for the highly variable amounts of wind energy to be distributed around the country.

Consider then all this fuel burnt in the construction of hundreds of redundant wind farms, their access roads, and their power lines. Add it to the increased amounts of fuel burnt by back-up plants which must run in stand-by mode, or at reduced capacity, or ramp up in response to the capricious nature of windfarm electricity production. **One may then legitimately wonder if wind farms do not actually increase the total amount of fossil fuels burnt.** Some of the papers quoted above speak of that possibility.

Actually, with all the sophisticated measuring instruments at the disposal of governments and industry, no figures have been published on the supposed CO<sub>2</sub> and fuel savings realised thanks to wind farms. Since this is the whole purpose of our colossal investments in this form of energy, why would these figures be kept secret?

If there are no such savings, then the famous “external costs” of electricity obtained from fossil fuels apply equally to wind farms. Their alleged “competitiveness” based on the external costs of fossil fuels is therefore a fallacy. Indeed, not a single conventional plant was ever decommissioned thanks to wind farms. On the contrary, more of them are being built (see the example of Spain in Section B below). Windfarms are thus redundant rather than competitive.

**b) – Wind farms will never be competitive in the short to medium term.**

On average, throughout the world, wind farms produce electricity at about 300% of the cost of conventional energy, 400% when offshore. In these figures are included direct and indirect subsidies, plus the cost of backing-up wind farms' unreliability with fossil-fuel power plants, capital costs included.

Direct subsidies may take the form of:

- price fixing assorted with an obligation to purchase all electricity produced by wind farms at that price;
- financing a percentage of capital costs - cash grants;
- Renewable Obligation Certificates - UK;
- Premiums over the market price (“Primas”) - Spain);
- Etc.

Indirect subsidies are awarded by way of:

- tax credits;

- special low-interest financing;
- government guarantees given to banks doing the financing;
- Etc.

Opacity generally prevails in these matters. Rent-seeking investors know everything there is to know about the financial advantages being offered to them, but the general public is poorly informed. When, further down the line, electricity prices are incremented to alleviate national budgets from these costly subsidies, the blame is placed on rising petroleum prices, regardless of how little electricity is actually produced from oil. This is occurring presently in Spain, where a new hike was decided in spite of the deep recession. In Denmark, the European champion in wind energy per capita, household electricity prices are more than 100% higher than in the UK, France, Spain etc.

Wind power enthusiasts are often heard saying that the rising price of fossil fuels will soon make their technology competitive. It is a fact that the price of oil has risen lately, caused in part by a succession of severe winters. But diesel generating units only account for a tiny percentage of total electricity production. Coal, gas and nuclear account for the bulk of most countries' production of energy. The price of coal has remained relatively cheap, that of natural gas has been **declining** substantially in 2010, and the new generation of nuclear is more expensive than the old. The exploitation of huge reserves of shale gas is likely to maintain the price of gas down for many decades to come.

Therefore, the “soon-to-be-competitive” argument does not stand scrutiny either. Countries that stay away from wind power, investing in gas-fired power plants instead, will enjoy a competitive advantage over those that burden their economies with expensive renewable energies.

**c) – Wind farms will never be competitive in the long term.**

Wind power is a mature technology, say its proponents. But this also implies that there is little to expect from cost improvements in the future. In fact, wind farms are becoming more expensive because of the rising price of steel and other materials. Placing them offshore also causes costs to spiral upwards. The fact that the new, gearless wind turbines use “rare earth” metals, of which China has a quasi-monopoly, does not bode well for their future cost. And, so much for energy independence!

There is no valid reason whatsoever permitting to say that wind-produced energy will one day be cheaper than electricity generated by coal, gas, and nuclear plants. That's because windfarms need to be backed-up by fossil-fuel power plants, and that alone ensures that their electricity will never be cheaper than that of the fossil fuels they need in order to be able to supply stable, useable energy to the grid.

Promises of new battery technology, of electric cars recharging at night when the wind blows, and other such

wishful ideas cannot form a reasonable basis for decision making.

#### **d) – Wind farms hurt the economy.**

We have seen that, when running fossil fuel power plants without hindrance from wind turbines, we were not consuming any more fuel than if we had a large penetration of wind energy displacing some of their production when the wind is blowing. Therefore, the only thing that wind farms really do is to increase the cost of electricity, and render uncompetitive the countries that build them.

Several studies have shown that green jobs created by way of subsidies are actually destroying jobs in other sectors of the economy. Here is one of them:

**“Study of the Effects on Employment of Public Aid to Renewable Energy Sources”** - Gabriel Calzada Álvarez PhD – University of King Juan Carlos, Spain

*“for every green job, we can be highly confident that 2.2 jobs are destroyed elsewhere in the economy, to which we have to add those jobs that the non-subsidized investment would have created”.*

[www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf](http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf)

A study along the same lines was performed in Italy by Carlo Stagnaro and Luciano Lavecchia, researchers with the Istituto Bruno Leoni. Here is what they found:

*“one green job costs on average as much 4.8 jobs in the*

***entire economy, or 6.9 jobs in the industrial sector. The same amount of subsidies that have already been given or committed could produce nearly five times as many jobs if allowed to be spent by the private sector elsewhere in the economy”***

<http://washingtonexaminer.com/blogs/beltway-confidential/new-study-finds-five-real-jobs-lost-each-green-job-government-subsidizes>

Another aspect of this wasteful spending are the inflated prices and resulting inflated profits for the rent-seekers of the subsidised wind farm business, and the total absence of accountability when it comes to meeting performance standards:

***“With green energy policies now promoted as economic opportunity and jobs programs, governmental incentives have shifted the bulk of project risks onto rate and taxpayers. Sixty-five percent or more of a project's monetary costs and risks are presently met through governmental subsidies, including cash grants, DOE loan guarantees, and premiums on energy prices. Whether intended or not, the American public has become the largest buyer/developer/investor of renewable energy while the profits remain privatized. This has created an environment where the likes of PG&E, Iberdrola, turbine suppliers and all other parties involved in a project's construction and O&M are free to inflate prices but share limited, or even no responsibility for meeting performance standards.”***

<http://alleghenytreasures.wordpress.com/2011/01/26/5759/>

There are more things to say about the waste of taxpayers' money into this half-baked technology that will make Western economies less competitive world-wide. But suffice to say at this stage that the premise upon which are based our governments' energy policies is flawed. Windfarms are neither a mature technology, nor are they competitive. They are maintained alive by enormously expensive subsidies that are hurting the economy and creating more unemployment.

Following is a case in point: Spain.

Continued in Part II,

Mark Duchamp

Environmentalist

Director, Climate Change and Alternative Energies,  
Iberica 2000



Part II of:

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Ladies and Gentlemen,

Part II

**B) – THE CASE OF SPAIN.**

An article in the reputable national newspaper La Vanguardia (see link below) reveals the following: during calendar year 2010, the owners of gas-fired power stations in Spain were paid € 1,008 million to compensate for the time their plants were kept idle. These are mostly brand new combined cycle gas turbines (CCGT), which are used to provide what wind power can't: security of supply. Spain has built them concurrently with its more than 500 wind farms in order to generate electricity as needed when there is no wind. This is a duplication of investment, for the overall production of electricity remains about the same: no more than what is needed to cover the needs of the country.

Indeed, exporting unwanted electricity is rarely good business, generally being done at a loss if it can be done at all. Denmark, for instance, gets rid of its surplus electricity that way, at a loss, as its wind turbines produce mainly at night, when consumer demand is very low. Then it imports electricity from Sweden during the day, at a premium. A bad business indeed.

In the same article we can see that the installed capacity of CCGT plants in Spain grew nearly tenfold in 8 years: from 2,756 MW in 2002, to 12,514 MW in 2005, and 25,000 MW in 2010.

<http://www.lavanguardia.es/vida/20110127/54106759176/-zapatero-apaga->

This is the part of its energy policy that the Spanish government rarely talks about, evidencing as it does the basic flaw of windpower: its uncontrollable intermittency. It is indeed a terrible waste to build so many CCGT power plants, and then pay them to stay idle, some of them burning gas for nothing in stand-by until the wind drops.

This is one of the causes of Spain's gaping budget deficit: paying power plants **not to produce**, or to do it inefficiently, so that “green” wind turbines may supply their electricity to the grid without causing black-outs.

In addition, there is a dead-weight of nearly € 7 billion a year: the subsidies to renewable energies. The government has just cut those to the solar industry by 30% temporarily, until the next elections – a gesture to appease international financial markets.

€ 6,787 million for 2010, including cogeneration:

<http://www.elmundo.es/mundodinero/2010/11/15/economia/1289818955.html>

Combined with the cost of keeping CCGT plants idle (€ 1 billion a year – see above), the squandering of public funds on “green” energies adds up to nearly 8 billion per annum, and is set to grow: in 2013 more wind farms will be built, hundreds more.

In the Extremadura region alone, 240 projects have been presented for approval. Yet Extremadura is the EU's most

important haven for declining species of large birds: storks (of 2 different species), cranes, great bustards, eagles (5 species), and vultures (3 species). Large birds are especially vulnerable to wind turbines - see this video:

<http://www.epaw.org/multimedia.php?lang=en&article=b2>

The European Commission, which are in charge of protecting threatened species EU-wide, have received several complaints, but they look the other way:

<http://www.iberica2000.org/Es/Articulo.asp?Id=4242>

The Zapatero government, socialist as it may be, prefers to make cuts in social expenses (pensions, civil servants' salaries, etc.) rather than stop investing in renewable energy. The question is: do Spanish politicians really believe in wind power, or do they subsidise it because of the generous financial contributions they receive from this industry?

It must be remembered that Spain's two largest political parties each owe about € 300 million to the banks. These loans must be repaid somehow, and subsidies to the wind and solar industries may be the way to do it, as they trigger generous donations. Is it corruption? Not really, for both subsidies and contributions to election campaign funds are legal. But it is a fine line indeed.

The money is not owed to the big banks, but to various *Cajas de Ahorros*. These are regional savings banks where politicians or their appointees have a say in the credit decisions (an open avenue to graft). No wonder the “Cajas”

are practically bankrupt now, and must seek capital injections totalling about € 20 billion before year-end. This was announced in January by the Minister of the Economy, Elena Salgado.

In such a sleazy context, it is doubtful that Spanish energy policy is driven by reason, green sentiment, or both. And if the country is currently the biggest threat to the stability of the Euro zone, it is for a large part because of the huge cost of its renewable energy policy.

Yet this financial effort has produced no positive result:

- No nuclear or fossil fuel plants have been closed down since the onset of wind farms and solar plants.
- No fossil fuel savings have been made that can be attributed to renewable energies.
- No savings in CO<sub>2</sub> emissions were realised that can be attributed to renewable energies.

A book has been published in the UK about the inadequacy of wind power for saving on fuel and CO<sub>2</sub> emissions: “**The Wind Farm Scam**” by Dr. John Etherington, retired, formerly lecturer in ecology at the University of Wales.

[http://www.amazon.co.uk/Wind-Farm-Scam-Independent-Minds/dp/1905299834/ref=sr\\_1\\_1?s=books&ie=UTF8&qid=1296278754&sr=1-1#reader\\_1905299834](http://www.amazon.co.uk/Wind-Farm-Scam-Independent-Minds/dp/1905299834/ref=sr_1_1?s=books&ie=UTF8&qid=1296278754&sr=1-1#reader_1905299834)

As for solar energy, each KWh produced by photovoltaic plants costs the Spanish taxpayers 12 times (yes, twelve times) as much as a KWh produced conventionally. Having subsidised this industry till its generating capacity reached

3,700 MW, the recent cuts now threaten the 40,000 green jobs that had been created.

In addition, let's not forget the 100,000 or more regular jobs destroyed in the private sector by the subsidised green jobs (see the studies on green jobs mentioned in Part I).

Officially, Spain has presently 4,700,000 unemployed, i.e. 20.3% of the workforce. This number has kept growing in 2010 at the average rate of about 1,000 a day.

<http://www.abc.es/20110129/local-madrid/abci-parados-201101290139.html>

To see where “green jobs” Spain stands in comparison to other countries:

<http://www.elmundo.es/mundodinero/2010/08/31/economia/1283249048.html>

Governments are notoriously bad at “picking winners”. Spain is a good example of what happens when they try their luck at it. And no, Germany cannot be used as a counter-argument: its rapid economic recovery from the crisis can be explained by the high demand for its products in fast-growing countries like China, India, Brazil and Russia. Germany produces top quality manufactured goods that the world wants. It can afford to throw good money away, though I'm not sure its taxpayers would agree with me.

**C) - WIND FARMS HAVE A LONG LIST OF DELETERIOUS EFFECTS ON NEIGHBOURS, NATURE, TOURISM, AND QUALITY OF LIFE.**

## **a) - Effects on neighbours.**

### **- Health**

People living within a couple of miles from wind farms can suffer adverse effects on their health. Several doctors recommend a distance of 2 km as a minimum setback to be respected when building wind farms near habitations. In Scotland, no wind farms may be built closer than 2 km from villages. The problem is the noise, to which must be added its inaudible component: infra-sound.

There is ample scientific literature on the subject:

- The Windfarm Syndrome

[www.windturbinesyndrome.com](http://www.windturbinesyndrome.com)

- The First International Symposium on the Global Wind Industry and Adverse Health Effects. See the presentations made by acoustic experts here:

[http://www.windvigilance.com/symp\\_2010\\_proceedings.aspx](http://www.windvigilance.com/symp_2010_proceedings.aspx)

- More documentation here:

[www.epaw.org/documents.php?lang=en](http://www.epaw.org/documents.php?lang=en)

(see in the right margin: Noise, health)

Governments take a biased view of this literature, declaring it invalid by ukase. They put forward instead reports financed by the wind industry itself. This is hardly a guarantee of objectivity. Besides, these reports totally ignore the infra-sound issue, which is at the core of the

problem.

Using such unethical tactics, most governments let wind farms be built as close as 500 meters from habitations, ruining the lives of the unfortunate people living in them.

An important lawsuit has been launched on this matter in Canada. The following expert witnesses will testify that there is indeed a health problem:

Dr. Robert Y. McMurtry, M.D., F.R.C.S.(C), F.A.C.S.,  
Surgeon and Health Policy

Dr. Michael A. Nissenbaum, M.D., Physician

Dr. Jeffery J. Aramini, Ph.D., M.Sc., Epidemiologist

Dr. Carl V. Phillips, Ph.D., M.P.P., Epidemiology and Public  
Policy

Dr. Christopher D. Hanning, BSc, MB, BS, MRCS, LRCP,  
FRCA, MD, Sleep Specialist

Dr. Arline L. Bronzaft, Ph.D., M.A., B.A., Noise Specialist

Richard R. James, INCE, Noise Control Engineer

Dr. Jeff Wilson, Ph.D., Epidemiologist

Dr. Robert Thorne, Ph.D., Noise Specialist and  
Environmental Policy

Dr. Daniel Shepherd, Ph.D. Psychoacoustic Specialist

<http://windconcernsontario.wordpress.com/2011/02/04/global-call-for-support>

## **- Quality of life**

Health is the most important aspect of quality of life, but there are many others. Noise and infra-sounds are among them. Some people may not suffer adverse effects on their health from being exposed to them, but nevertheless their

quality of life may be severely diminished for having lost the peace & quiet so many people long for.

Some homes are also affected by what has become known as the “shadow flicker”, on sunny days in the early mornings or before sunset when the sun is low on the horizon. Here are 2 videos on this disturbance:

(in right margin: “Shadow flicker”)

<http://www.epaw.org/multimedia.php?lang=en>

A spoiled view is another degradation that has been experienced by many wind farm neighbours. See my further comments on this and on quality of life further down this submission, for it has economic and social implications.

### **- Losses in property values**

This is the sort of thing that sounds unimportant unless it happens to you. But if you add together all these losses nationwide, they will add up to billions of dollars. Such a loss of capital makes the whole nation poorer.

It affects houses and land that are within hearing or infra-sound distance from the turbines, but also those within their view shed, as a spoiled view decreases the value of any property. The wind industry has financed a few studies to try and prove that the problem does not exist. But as with other studies funded and controlled by the industry, there is no objectivity to be found anywhere in them. Money can buy anything, including experts. And many of these make a living of it.

In most cases, people defending themselves from an

invasion of wind turbines have no money to finance a study. The consequence is that, generally speaking, the only studies available are the ones financed by the industry or by equally biased governments. But at times, something may come up from an independent source, as in the following case. **Here is a telling testimony from a senior real estate agent from Australia:**

[www.iberica2000.org/Es/Articulo.asp?Id=4528](http://www.iberica2000.org/Es/Articulo.asp?Id=4528)

Some people have actually abandoned their homes, which had become unsaleable and where they could no longer live (insomnia, dizziness, stress, depression, etc.). But some less fortunate ones don't have the money to move, let alone to buy or rent a new house as long as theirs is not sold. And if selling means taking a 30, 40, or 50% loss, it means they'll have to settle for a home of lesser quality. That's if they can sell their house at all, which is not always possible: who would buy a house where it is impossible to have a good night's sleep? For it is indeed at night that noise and infra-sounds are the most disturbing, because all else is silent. Yet, experts from the courts or the government can only come to measure sound levels during the day.

As you can see, we are not talking here about a loss of money on paper. We are talking about real distress, and about ruined lives.

## **b) - Effects on Nature.**

### **- Bird strikes**

I don't suppose that this public consultation is concerned about the biodiversity issue. But if it is, then I recommend reading the following papers on the subject of bird strikes at wind farms. They reflect 8 years of investigations worldwide, and uncover some of the dirty secrets of the windfarm bird mortality cover up.

<http://www.iberica2000.org/Es/Articulo.asp?Id=1875>

<http://www.iberica2000.org/Es/Articulo.asp?Id=4242>

<http://www.iberica2000.org/Es/Articulo.asp?Id=4282>

<http://www.iberica2000.org/Es/Articulo.asp?Id=3717>

And here is another one, which shows how an ornithologist writing reports for windfarm developers unrepentingly misleads the Australian authorities and the Aussies in general:

<http://www.iberica2000.org/Es/Articulo.asp?Id=4382>

Actually, he has condemned the Tasmanian Wedge-tailed Eagle to extinction.

### **- Bat strikes**

Bats are killed in even greater numbers than birds: about twice as many:

*“This final version of the first-year survey of the wind facility on the Tug Hill Plateau in Lewis County, N.Y., concludes that an estimated 2,200 to 4,094 birds and bats were killed by 120 turbines during the 5-month study period in 2006. Ignoring seasonal variability (as well as shortcomings of methodology), that would extrapolate to 8,580 to 15,967 birds and bats killed by the currently operating 195 turbines over a whole year. That’s up to 23 birds and 59 bats per turbine per year.”*

<http://www.wind-watch.org/documents/maple-ridge-wind-power-project-postconstruction-bird-and-bat-fatality-study-2006/>

The study in question was performed in 2006 by Curry and Kerlinger, who are widely known in America as being biased in favour of their employers, the windfarm developers. Their estimates should therefore be considered as absolute minima.

Like raptors, bats are attracted to wind turbines. On this infra-red video taken at night, one can see bats “investigating” the moving blades of a wind turbine. Strikes are also recorded:

<http://www.bu.edu/cecb/wind/video>

I quote from the Fort Collins Science Center, a Federal biological science center of the U.S. Geological Survey:

*“Dead bats are turning up beneath wind turbines all over the world. Bat fatalities have now been documented at nearly every wind facility in North America where adequate surveys for bats have been conducted, and*

*several of these sites are estimated to cause the deaths of thousands of bats per year.”*

<http://www.fort.usgs.gov/batswindmills>

Bats are very useful in the control of insects, yet their numbers are declining rapidly. Many bat species are considered threatened and are protected by law. One million or more wind turbines worldwide will accelerate their decline.

### **- Loss of habitat**

The biodiversity issue is not limited to collisions. Windfarms also displace birds, causing a loss of habitat. Here is a study on the subject:

**- The distribution of breeding birds around upland wind farms** <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2664.2009.01715.x/abstract>

*ROWENA H. W. LANGSTON*: Conservation Science Department, **The Royal Society for the Protection of Birds**

An article from Times Online on this study reads:

*"Scientists have found that birds, including buzzards, golden plovers, curlews and red grouse, are abandoning countryside around wind farms because the turbines act as giant scarecrows, frightening them away."*

<http://www.timesonline.co.uk/tol/news/environment/article6974082.ece>

I am not sure about buzzards, as evidence from Germany shows that, like other raptors, many are being killed by wind turbines. But yes, grouse and other ground-dwelling

birds don't like to forage, let alone breed, under wind turbines, or any tall structure from where raptors may be stalking them:

*"The lesser prairie chicken, in rapid decline like the greater prairie chicken, instinctively resists nesting anywhere near trees or man-made structures - especially tall towers or buildings, where birds of prey can perch and spot them below, according to recent studies by Kansas State University biologists.*

*"One of the biggest threats on the horizon is wind farms," says Steve Sherrod, executive director of the George Miksch Sutton Avian Research Center in Bartlesville, Okla. "These wind farms are billed as green, but they're a huge threat to the prairie nesting species."*

***Other grassland birds are similarly affected."***

<http://www.csmonitor.com/2004/1202/p13s01-sten.html>

## **- Bush fires**

Wind turbines are known to catch fire.

It must be borne in mind that about **400 litres of oil** are stored in each wind turbine, to lubricate the moving parts (except in the new, gearless wind turbines, but these have not been tested by time).

When a malfunction develops in the electrical components, or when lightning strikes, this oil may catch fire. The result can be seen on the following picture, where a ball of fire

(burning oil) falls to the ground:

[http://www.iberica2000.org/documents/EOLICA/PHOTOS/FIRES/ON\\_FIRE\\_1.pdf](http://www.iberica2000.org/documents/EOLICA/PHOTOS/FIRES/ON_FIRE_1.pdf)

Burning droplets may also be dispersed over a large area by the moving blades. Here are more pictures of turbines on fire (select photo album "Turbines on fire"):

<http://cid-08ab0bbd2d5db954.photos.live.com/browse.aspx/TURBINES%20ON%20FIRES%20-%20INCENDIOS>

or here:

<http://mark-duchamp.spaces.msn.com/PersonalSpace.aspx>

and here:

<http://www.iberica2000.org/documents/EOLICA/PHOTOS/FIRES>

Sooner or later, a bush fire of major proportions will be caused by a windfarm. One or more may already have occurred, unbeknownst to the public: it is easy for public officials to say something else caused them. But when a windfarm happens to be in the middle a major fire, it is difficult not to be suspicious.

Many press articles evidence the propensity of wind turbines to catch fire:

- Nov 11, 2005 7:34 pm US/Central(AP) Slayton, Minn. , USA.

*"A South Dakota man died and two people were injured Friday in a wind tower fire in southwestern Minnesota. ... When help arrived, Donahue said, **"the wind generator was engulfed in flames."*** Full article here:

[www.iberica2000.org/documents/EOLICA/SUNDRY\\_ARTICLES/Man\\_Dies\\_In\\_Wind\\_Tower\\_Fire.doc](http://www.iberica2000.org/documents/EOLICA/SUNDRY_ARTICLES/Man_Dies_In_Wind_Tower_Fire.doc)

- **Another, from Australia:** Monday, 23 January 2006.

*“Engineers from Melbourne will today begin inspecting the scene of a \$3 million fire at the **Lake Bonney wind farm**. Yesterday afternoon's blaze began in a turbine located near Tantanoola. While the flames were initially contained at the top of the structure, **falling debris caused the fire to spread to the grass below.**”*

<http://www.abc.net.au/news/items/200601/1553257.htm>

- **And another, from California:** Firemen climb 213-ft tower in rescue December 07, 2004

*“Two electrical workers were treated and released at Buena Vista Regional Medical Center last week after they were rescued following a fire at one of the MidAmerican Energy turbines just south of Schaller.”*

[www.iberica2000.org/documents/EOLICA/SUNDRY\\_ARTICLES/Turbine\\_fire\\_California\\_2004.doc](http://www.iberica2000.org/documents/EOLICA/SUNDRY_ARTICLES/Turbine_fire_California_2004.doc)

- **An article in the Tri-Valley Herald of California reports 40 fires in one year** at the large Altamont Pass windfarm, 90% of them caused by wind turbines:

[http://www.iberica2000.org/documents/EOLICA/PHOTOS/FIRES/ON\\_FIRE\\_36\\_TIMES\\_IN\\_ONE-YEAR.JPG](http://www.iberica2000.org/documents/EOLICA/PHOTOS/FIRES/ON_FIRE_36_TIMES_IN_ONE-YEAR.JPG)

- **There are many more:** a webpage in the UK endeavours to maintain a record of wind turbine accidents that appeared in the press worldwide. It states: *"Fire is the second most common accident cause in incidents found ... A total of 154 fire incidents were found"*

And also: *"it may only be the "tip of the iceberg" "*  
Go to: <http://www.caithnesswindfarms.co.uk>  
and click "accident statistics" in the menu bar on top.  
The page can be downloaded in printable form - look for  
one of the links saying: *"here"*

A complete list with more details and with the sources can  
be downloaded from another link saying: *"here"*

Today, it may be downloaded from:

<http://www.caithnesswindfarms.co.uk/fullaccidents.pdf>

But this url may change with time. In such a case, look for  
the link *"here"* (under the tab "accident statistics").

**Bushfires may also occur during the construction phase,**  
as recognized by **Meridian Energy**, the promoter of the  
Makara windfarm in New Zealand: *"The greatest potential  
risk to the plant communities within the study area is  
considered to be fire."*

<http://www.meridianenergy.co.nz/NR/rdonlyres/4A221C2F-FC68-46E3-9F21-1C1C6F988EF5/24732/0231MERWebPDF.pdf>

(See page 36, section 8.2.1 of the environmental study).

Fires during construction and maintenance would occur  
regardless of whether the turbines are gearless or not. It's a  
different risk altogether (negligent workers for instance).

Also to be considered: after construction, people will be  
using the access roads to have a look around, to picnic on  
the hills and whatnot. Picnics are not without risks: a  
barbecue was the cause of a major fire in Spain which cost  
11 lives (Guadalajara, 2005).

[http://es.wikipedia.org/wiki/Incendio\\_de\\_Guadalajara\\_de\\_2005](http://es.wikipedia.org/wiki/Incendio_de_Guadalajara_de_2005)

Cigarette butts are another hazard.

There can be no doubt that wind farms are a significant fire hazard. To mitigate this risk, windfarm promoters can only offer "fire fighting readiness". But we know only too well that, once a fire has started, things can rapidly get out of control, especially in a sun-parched land such as summertime Australia. Can your country afford multiplying its forest fires? - especially in view of the reservations to be had about the usefulness of this form of energy (see Part I).

## **- Water**

### **Contamination by oil and other agents:**

Most wind turbines are lubricated by oil, and hold over 400 litres of oil in their nacelles. As with any engine, leaks develop. Pictures of oil leaks may be found here:

<http://www.iberica2000.org/documents/EOLICA/PHOTOS/CONTAMINATION/>

When a turbine crashes to the ground, as happens more often than the windfarm industry would admit, about 400 litres of oil contaminate the vegetation, the topsoil, and are eventually washed down by rain into the water supply of some homes or villages.

Here are some pictures of fallen wind turbines:

<http://cid-08ab0bbd2d5db954.photos.live.com/browse.aspx/ACCIDENTS%20-%20-%20-%20ACCIDENTES>

or:

<http://spaces.msn.com/mark-duchamp>

And here is a compilation of wind turbine accidents:

<http://www.caithnesswindfarms.co.uk/page4.htm>

Excerpts from an environmental impact study concerning a wind farm project in Scotland - Muaitheabhal project, Appendix 3.2

[www.iberica2000.org/documents/EOLICA/LEWIS/EISHKEN\\_EAGLE\\_KILLER.doc](http://www.iberica2000.org/documents/EOLICA/LEWIS/EISHKEN_EAGLE_KILLER.doc)

*"7.57. A pollution incident during construction could have **an impact of major magnitude on the water quality of the surface and ground waters of the area, potentially irrevocably damaging the ecology.**"*

*"10. During the upgrading works a number of potential pollutants may be present on site, including **oil, fuels, chemicals, unset cement and concrete.** Any pollution incident occurring on the site may detrimentally affect the water quality of the nearby surface waters and groundwater. Where there are **fisheries and water supply interests** this may have a **significant impact.**"*

*"11. Similarly there is likely to be ground disturbance during the upgrading works, which may prompt **soil***

***erosion and sediment generation. Sediment transport in the surrounding watercourses and lochans may result in high turbidity levels which will impact on the ecology, fisheries interests and water supplies."***

### **Contamination by sedimentation:**

The wind industry admits that windfarm construction work may cause deposits of silt in watercourses, and...

*“This has a **disastrous effect on the full food chain**, starting with invertebrate life and consequential effects on other insect life, fish, mammals and birds at the head of the food chain. In the two cases mentioned also have migratory salmonoids (salmon and sea trout) as well as native brown trout that use these headwaters of the river catchments for spawning in gravel banks which are destroyed by silting and can destroy the work generations of river management.”*

[http://www.iberica2000.org/documents/eolica/contamination/sedimentation\\_water\\_contamination.txt](http://www.iberica2000.org/documents/eolica/contamination/sedimentation_water_contamination.txt)

Note: Yes2wind is a website and discussion forum set up by the wind industry and supported by pro-wind associations.

### **Contamination by cleaning liquids:**

As part of maintenance, the blades of the wind turbines need cleaning, for their performance is impaired when dead insects form a paste on their surfaces. The towers also need

a good wash when their aspect is marred by oil leaks (also a way of making the evidence disappear). A water cannon is used, as shown in the pictures here:

[http://www.iberica2000.org/documents/eolica/contamination/WASHING\\_TURBINE.jpg](http://www.iberica2000.org/documents/eolica/contamination/WASHING_TURBINE.jpg)

[http://www.iberica2000.org/documents/eolica/contamination/WASHING\\_TURBINES.jpg](http://www.iberica2000.org/documents/eolica/contamination/WASHING_TURBINES.jpg)

Cleaning liquids are thus spread into the wind, and ultimately on the vegetation, into streams and into the ground.

An environmental study by the government of Valencia, a region of Spain, mentions cleaning liquids as a contamination hazard.

Here is the translation:

[http://www.iberica2000.org/documents/eolica/contamination/translation\\_english.doc](http://www.iberica2000.org/documents/eolica/contamination/translation_english.doc)

Here is the original document in Spanish:

[http://www.iberica2000.org/documents/eolica/EN\\_ESPANOL/PLAN\\_EOLICO\\_VALENCIANO/Contaminacion\\_de\\_las\\_aguas.jpg](http://www.iberica2000.org/documents/eolica/EN_ESPANOL/PLAN_EOLICO_VALENCIANO/Contaminacion_de_las_aguas.jpg)

## **Water supply:**

[http://www.iberica2000.org/documents/eolica/contamination/water\\_tables.doc](http://www.iberica2000.org/documents/eolica/contamination/water_tables.doc)

And:

*“Earlier this month, councillors in Perth and Kinross rejected Scottish and Southern Energy’s plans for a wind farm at Drumderg because of the risk to **the local water supply** and wildlife, and an "adverse visual impact".*

<http://scotlandonsunday.scotsman.com/technology/Wind-farms-chaos-leads-to.2599255.jp>

About that same decision:

*“Concerns over the effects of excavation works on the water supply to local residents and the risks to a nearby Site of Scientific Interest were uppermost in the minds of councillors who spoke against the issue.”* Press release from Scottish Wind Watch, January 19th 2005

### **c) - Effects on Tourism.**

The wind farm industry, which has grown deep pockets thanks to generous subsidies, has produced studies showing that wind farms do not harm tourism. One would have to be very gullible indeed to believe such conclusions.

Countryside dwellers, who are the main victims of wind farms, rarely have financial resources to spare to hire experts. But sometimes a government study gets published before the subject becomes a burning issue, such as in this case:

A poll was made among tourists visiting the Monfragüe National Park in Spain. The results were:

- 60% of the tourists replied that they would definitely avoid visiting an area that had wind farms. More of them voted NO when shown pictures of areas with wind farms.
- 24,8% said that they might visit an area that has a wind farm, but depending upon a number of factors (size of the

wind farm and location, importance of the cultural or natural sites they would want to visit, availability of pictures so as to make a decision).

- 11.6% said that wind farms would make no difference in their decision.

- 3.6% replied in a confused manner.

The results of this poll were published in the magazine of the Monfragüe National Park (which was then a “natural park”) in its edition of February 2006. The regional government of Extremadura sponsors that publication, which is available upon request to

[save.the.eagles@gmail.com](mailto:save.the.eagles@gmail.com)

It is written in Spanish and weighs 5.33 MB.

At the time (2006), the government of Extremadura had no wind farms on its territory, and was considering the possibility of accepting their implantation.

This poll only confirms what common sense tells us. Only biased studies published by the windfarm industry or by pro-windfarm governments dare pretend that tourists are not deterred by windfarms.

#### **d) - Effects on quality of life.**

Inspiring natural landscapes, unspoiled horizons, bird songs and the occasional sight of wild animals like a skein of geese, are all elements of our quality of life. This has **important economic and social consequences**: houses and plots of land with spectacular views will sell at a premium,

whereas their equals facing an industrial zone will be shunned by home buyers. This is but common sense.

Quality of life is what all humans strive for. This is why different monetary values are attached to properties depending on their location. **This is also why certain places attract tourists while other don't.** Some people (e.g. Nicole Kidmann) will even pay \$3,000 a night to enjoy the quality of life offered by an exquisitely refined hotel in a tropical island.

Quality of life, as you can appreciate from the above remarks, is an important factor being considered before some important spending decisions are made. The tourist planning his next vacation, or the tycoon looking for a place to build a luxury hotel, will often make their decisions principally on that basis. **Quality of life is therefore a valuable asset for any country to have, and destroying it is a costly mistake for its citizen as a whole.**

The PR men of the windfarm industry are often heard saying that beauty is in the eye of the beholder. But it is not true of most things. Beauty is an essential part of our quality of life, and **in most cases people share the same aesthetic values.** If not, why would houses with sea or mountain views sell at a premium?

Donald Trump was furious when he learned that a wind farm would be built offshore his billion-dollar seaside golf resort in Scotland. He is presently fighting the plan with all his might.

*“Donald Trump has declared war on a proposed*

*windfarm, claiming it would "destroy" Scotland's natural heritage.*

*Trump said the giant structures would **spoil the view** from his £750million golf complex.*

*Trump said he would "vehemently oppose" the application when it goes before Marine Scotland next year.*

*He said: "**Every component of our project is based upon sea views.** We cannot allow the construction of what is tantamount to 65-storey structures off our coastline."*

*"These turbines, if ever built, will in one fell swoop destroy Scotland's magnificent natural heritage. They are **noisy and unsightly** and we will oppose the siting of this vehemently."*

*"Trump's course is expected to open in 2012 and the resort, which includes a 450-bedroom hotel, 950 holiday homes and 500 houses, could create more than 1000 jobs."*

<http://www.dailyrecord.co.uk/news/scottish-news/2010/12/08/donald-trump-claims-windfarm-will-spoil-view-from-his-750m-golf-course-86908-22769755>

Had Mr. Trump known about the wind farm project before investing in his resort, he would have cancelled his plans and chosen another country. Northern Ireland for instance:

From the Washington Post, December 7, 2007:

*"When local government officials rejected the project last week, Trump threatened to walk away -- perhaps to go over to Northern Ireland, where government ministers said they would welcome his big-bucks development."*

<http://www.washingtonpost.com/wp-dyn/content/article/2007/12/06/AR2007120602387.html>

By the way, when the Scottish government learned that

Northern Ireland was wooing Trump, they promptly gave the green light to his project.

**This is a good example of how wind farms will deter future investments in the tourism industry. But they will also affect investments into second homes, recreation activities, and any other sector where quality of life is important.**

Who would build a holiday home within sight or sound of industrial wind turbines?

These huge structures can be seen from up to 20 or more kilometers away, affecting vast areas of land (or sea) which thus **become degraded as regards tourism, second homes, and recreational activities such as fishing, hunting, trekking, mountain climbing, paragliding, sky diving, ballooning, rafting, boating, etc.**

It takes about 500 windfarms totalling 15,000 wind turbines to produce as much as a dozen medium sized CCGT power plants, which will be needed anyway as back-up. **The footprint is monstrous.**

Few people realise the economic, social and environmental disaster windfarms bring along with them.

I hope this presentation will help you make the correct decision, which is to spare your beautiful country, its people, and its wildlife, from further degradation by this redundant technology.

Thank you for allowing me to submit the results of my investigations.

Yours, faithfully

**Mark Duchamp**

Environmentalist

Director, Climate Change and Alternative Energies,

Iberica 2000