

From Janet Rice

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Dear Sir/ Madam,

A Response to the Social and Economic Impact of Rural Wind Farms

I wish to make a submission to the Senate Inquiry into the Social and Economic Impact of Rural Wind Farms.

The bulk of my submission is as per a draft submission sent to me by a colleague. I don't usually just forward on such submissions, as I believe it is better to tell you my personal views on the subject being considered.

However on reading the proposed draft I realised that I was in complete agreement, so there seemed little point in modifying it!

I do however wish to stress the following points:

- it is imperative that decisions on windfarms are based on evidence, not fear
- it is imperative that when considering windfarms as part of our energy mix that their impacts are compared with the impacts of the burning of fossil fuels that they are replacing - dangerous climate change is real and needs to be urgently addressed. Wind energy is a well established 100% renewable energy source that clearly has a big role as part of the mix of renewables that are needed to, and can replace fossil fuels.
- Windfarms are common place throughout europe and north america. There is ample evidence of their social and environmental impact from these locations, and this evidence should be strongly drawn upon in your committee's considerations.
- Location is critical clearly, but to my eye, a wind turbine is no more of an impact on an already highly modified agricultural landscape than a transmission line or even a large shed or dam.
- the potential economic benefits of windfarms in rural communities is massive.

Yours sincerely,

Janet Rice

With what we know about climate change and the need to greatly reduce our greenhouse emissions this decade, it is clear to me that we will need to move away from our current reliance on coal and other fossil fuels to meet our energy needs as soon as is humanly

possible.

The good news is that we already have the technology to do this. The facilitation of a massive roll-out of renewable energy across Australia will be essential if we are to have a hope of reducing our emissions sufficiently to have a chance of avoiding dangerous climate change.

Well planned wind energy projects will be a cornerstone of this new renewables industry.

Wind energy is of great benefit to communities in regional Australia and is already producing a considerable job yield and also direct financial support for many farmers and other land owners. In 2009-10 alone, wind energy in Australia generated almost \$1.6 billion in investment (Bloomberg, New Energy Finance, 2010). The wind industry is of huge economic importance to the nation, not only through the creation of jobs during the development, construction and ongoing operation of the wind farm but also throughout the supply chain, including the manufacturers and suppliers of products and services to the industry. The supply of steel for the wind turbine towers is just one example of the importance of the wind industry to Australian manufactures and suppliers.

Apart from direct jobs in the industry, there is considerable 'down stream' employment opportunities as well as an obvious economic boost for towns and communities which helps to diversify and strengthen opportunities in local communities. This in turn reduces the need for people to leave these communities to seek employment. A key advantage of wind farm development is that the jobs created by wind farms are spread over several regions, not concentrated in a few areas, as tends to occur with larger scale fossil fuel plants such as coal.

I would like to respond to specific areas of interest outlined in the scope of the inquiry.

"This inquiry will look into the social and economic impacts of rural wind farms, and in particular:

(a) Any adverse health effects for people living in close proximity to wind farms";

Current research and scientific investigations have found that there are no adverse health effects for people living in close proximity to wind farms.

The following is a summary of some key research in this realm:

- The National Health and Medical Research Council (NHMRC) recently found that "there is currently no published scientific evidence to positively link wind turbines with adverse health effects".
- In addition the World Health Organisation states that "There is no reliable evidence that sounds below the hearing threshold produce physiological or psychological effect".
- The Victorian Department of Health (WorkSafe, 2010) after examining both peer reviewed and validated scientific research also concluded that "the weight of evidence indicated that there are no direct health effects from noise (audible or inaudible) at the levels generated by modern wind turbines."

Further international studies in North America and the United Kingdom also support this

finding.

For instance, the American and Canadian Wind Energy Associations established a scientific advisory panel comprising medical doctors, audiologists and acoustic professionals from the US, Canada, Denmark and the UK. This panel concluded that labels such as “wind turbine syndrome” are not a recognised medical diagnosis but rather reflective of symptoms associated with annoyance. Factors culminating in annoyance include the nocebo effect defined as “an adverse outcome, or worsening of mental or physical health based on fear or belief in adverse affects”.

The large volumes of negative media coverage related to the effects of wind turbines we are seeing in Australia only serve to create anticipatory fear in some people that they will experience adverse effects from wind turbines. Often once the farms are actually operating, the resulting intrusion is far less than had been anticipated by some people.

Research produced by Sonus for the Clean Energy Council (CEC) highlights this fact - it found that once wind farms are built, the rates of complaints are very low in Australia and New Zealand. It also found that if a noise can be heard, then annoyance can result for some people, regardless of the noise level experienced.

This effect is backed up by the NHMRC review which concludes “It has been suggested that if people are worried about their health they may become anxious, causing stress related illnesses. These are genuine health effects arising from their worry, which arises from the wind turbine, even though the turbine may not objectively be a risk to health” (Chapman, 2010).

(b) Concerns over the excessive noise and vibrations emitted by wind farms, which are in close proximity to people's homes;

Research conducted on modern wind turbines has shown that the levels of low frequency noise and infrasound are within accepted thresholds.

Modern wind turbines can generate noise across the frequency range of human hearing. As with most sounds, some of this energy occurs below the level of human hearing. Human hearing ability ranges from 20Hz to 20,000Hz, with 1dB being the smallest change in noise that humans can detect. Low frequency noise refers to noise in the range of 10 to 200 Hertz (Hz) and infrasound occurs in the range of 20 Hz down to 0.001 Hz – below what the human ear can pick up. Low frequency noise and infrasound is emitted by many other natural sources, for instance wind passing through trees or waves at a beach or manmade sources such as industrial processes, air-conditioning and vehicles.

There is currently no peer reviewed scientific data to suggest that the levels of low frequency noise or infrasound emitted by wind turbines make humans sick. Research to date has not shown any negative health effects at the sound levels produced by operational wind turbines.

Advances in technology mean that noise from wind turbines is minimal. Research conducted on modern wind turbines has shown that the levels of infrasonic noise and vibration radiated from modern, wind turbines are at a very low level; so low that they lie below the threshold of perception, even for those people who are particularly sensitive to such noise even very near turbines (British Wind Energy Association, 2005).

The first wind turbines for large scale generation of electricity began operating over 100 years ago. There are now more than 150,000 turbines installed globally, and some of these have been in place for more than 20 years. With decades of successful wind turbine operation, there has been ample opportunity for any negative effects to be identified. The fact that no credible scientific research has identified any negative effects supports the prevailing view that wind power is one of the safest ways of generating electricity.

Pacific Hydro commissioned Sonus to measure and compare infrasound levels from wind farms and some common environment infrasound sources, both natural and man-made. The report titled “Infrasound and Measurements from Wind Farms and other Sources” demonstrated that the levels of infrasound produced by wind turbines is well below established perception thresholds and, importantly, is also below levels produced by other natural and man-made sources.

Infrasound was measured at two wind farms - Clements Gap in South Australia and Cape Bridgewater in Victoria. As a comparison, measurements were also taken in the Adelaide CBD and suburbs, at the beach, on a coastal cliff, inland from the coast and at a gas-fired power station. At all these locations infrasound was not audible to the human ear and the infrasound was recorded at higher levels on the beach and in the Adelaide CBD than it was near a wind turbine. The report re-affirms that infrasound is not unique to wind farms and provided further evidence to support existing data which shows that infrasound emissions from operational wind farms are significantly below recognised perception thresholds.

(c) The impact of rural wind farms on property values, employment opportunities and farm income;

Studies have found no statistical evidence that wind farms reduce property values.

An assessment of 45 property sales located within a 10 kilometre radius of 8 wind farms sites was made by the NSW Valuer General. It was considering the impact of wind farms on surrounding land values in Australia and found that wind farms do not appear to have negatively affected property values. No reductions in sale price were evident for rural properties located in nearby townships with views of the wind farm.

The findings of the NSW Valuer General are consistent with studies in the United States and United Kingdom which also found no statistical evidence of reduction in property values associated with the development of wind farms.

An extensive and rigorous assessment of the relationship between wind farms and property values was completed in December 2009 by U.S. Department of Energy's (DOE) Lawrence Berkeley National Laboratory (LBNL). The report titled “The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis” was based on site visits, data collection and analysis of almost 7,500 single-family home sales in areas where wind farms have been developed. The data was collected on homes situated within 10 miles of 24 existing wind facilities in nine different U.S. states. Each home in the sample was visited to collect important on-site information such as whether wind turbines were visible from the home. The home sales used in the study occurred between 1996 and 2007, spanning the period prior to the announcement of each wind energy facility to well

after its construction and full-scale operation.

The analysis revealed that home sales prices are very sensitive to the overall quality of the scenic vista from a property, but that a view of a wind farm did not demonstrably impact sales prices. Neither the view of wind farm nor the distance of the home to wind farm was found to have any consistent, measurable, and significant effect on the selling prices of nearby homes.

The Berkeley Lab researchers also did not find statistically observable differences in prices for homes located closer to wind facilities than those located further away, or for homes that sold after the announcement or construction of a wind energy facility when compared to those selling prior to announcement. Even for those homes located within a one-mile distance of a wind project, the researchers found no persuasive evidence of a property value impact.

Another Canadian study by consultants Canning & Simmons, 2010 demonstrated “where wind farms are clearly visible, there was no empirical evidence to indicate that rural residential properties released lower sale prices than similar residential properties within the same area that were outside of the viewshed of a wind turbine”

The employment benefits are substantial.

The benefits of wind farms to local regions are not confined to the initial investment in the project. They also provide a reliable and on-going income for landowners, direct employment opportunities for locals, and flow-on employment for local businesses through provision of products and services to the project and its employees.

This is demonstrated in a study titled “The Economic Impact Assessment of the Hallett Wind Farms” prepared by SKM which investigated the economic impacts that AGL’s Hallett wind farm project had on the mid-north region of South Australia. The report found that \$800 million had been spent on the projects, including \$88 million spent directly in the region, and the creation of 98 construction jobs and 15 ongoing jobs directly created by the wind farm, which will increase to 42 upon completion. The study also found that for every job created directly by the wind farms, at least three further jobs are created indirectly.

(d) The interface between Commonwealth, state and local planning laws as they pertain to wind farms;

I certainly accept the need for robust planning processes, to ensure wind farms are placed in appropriate locations. Equally, the wind industry accepts the need for effective standards for wind projects.

I would urge caution in regards to making substantial changes to existing guidelines simply to appease the vocal but relatively small number of opponents to wind energy, as appears to be the case in Victoria where the new Coalition government has announced a very restrictive wind energy policy.

Like any infrastructure project there may be a small number of local community members who do not support a specific development proposal. Planning policies should recognise this, while balancing the need for outcomes in the greater public good.

Wind farms should not be required to meet unnecessary higher standards than what is faced by other infrastructure developments such as coal mines, conventional power stations or other major industrial operations.

I believe that the planning systems already in place provide a sufficient framework to assess proposed developments, and thus balance the benefits of wind farm development with any impacts that may arise. Further, many jurisdictions have already introduced some form of planning provisions to cater for any unique characteristics of wind farms. Unnecessary burdens on clean energy development are contrary to the government's 20 per cent renewable energy target and are detrimental to the attraction of clean energy investment and the creation of clean energy jobs in Australia.

Wind energy proponents already apply rigorous processes to their developments to ensure they are appropriately managed and mitigate potential impacts on the environment or the amenity of local communities. Extensive and exhaustive assessments are undertaken by proponents prior to submitting a development application to determine whether a wind farm is feasible on a specific site and as to whether there are any potential environmental or social issues that will impact upon the viability of a proposal.

In addition to this, proponents engage with a range of stakeholders at early stages of feasibility assessment to determine whether there are any further environmental, cultural or amenity impacts that need to be understood and responded to as part of the development. Stakeholders that are consulted include not only the local community, the landowners, local council, but also the State and Federal Governments, government agencies such as CASA, Network Service Providers, electricity retailers, indigenous groups and other specific interest groups including groups advocating in relation to local fauna or flora.

There are numerous planning requirements currently in place at Federal, State and local government levels. The interplay of these existing laws already create a sometimes ineffective and unnecessary hurdle to the development process of wind farms, with differing regulatory controls in different jurisdictions making it more cumbersome for developers working across jurisdictions. Certainly, the intention of the Coalition government in Victoria to introduce an exceptionally restrictive set of guidelines will negatively impact on the further development of wind energy in that state.

Adding additional regulatory controls would only act to add to this red tape and make wind energy more expensive.

The industry group for the sector, the CEC, has previously highlighted concerns with the Draft National Wind Farm Development Guidelines. In 2008, a report was developed for the Environment Protection and Heritage Council (EPHC) Report on Impediments to Environmentally and Socially Responsible Wind Farm Development. This report identified that the existing approval systems in the jurisdictions are generally robust and that many of the issues that have been identified are adequately dealt with through the existing procedures.

National guidelines do have the potential to encourage greater consistency between State planning regimes and remove impediments to further development. However the Draft National Wind Farm Development Guidelines as currently proposed only add substantial impediments to wind farm development beyond those imposed on other infrastructure

investments, reducing certainty for the planning assessment process by introducing additional, and often conflicting guidelines. This would add additional costs and delays to wind farm developers without delivering improved outcomes.

(e) Any other relevant matters.

I would like to briefly address the following additional, and very relevant, points:

#### Community support

It should be remembered that while there has been a vocal campaign organised by some people and organisations against the development of the wind industry, it remains well supported in the broader society.

For instance, a Newspoll survey commissioned by the Clean Energy Council in December 2009 found that in regional areas 90% of people said that Australia should produce more renewable energy.

Similarly, an AMR Interactive survey commissioned by the NSW government in mid 2010 on community attitudes to wind farms, found wind farms were regarded as an acceptable form of power generation by 81% of the population. The survey also found that 80% of residents were supportive of wind farms being built in their local region and more than 60% supported them at 1 – 2 kilometre from their residence. There was also broad acknowledgement of the benefits of wind farms to the local community including economic and employment benefits and broad endorsement of more wind farms being built in the area.

#### Greenhouse abatement

The other obvious benefit of wind farms is the greenhouse emissions abatement that they provide.

A study by MMA on “Estimating Greenhouse Gas Emissions Abatement from Wind Farms in NSW” found that wind displaces fossil fuel generation and can act to lower wholesale electricity prices. Wind reduces demand for electricity from other sources, which are typically fossil fuel based generation. An average sized wind farm of 150 MW will displace from 150 kt CO<sub>2</sub>e to 450 kt CO<sub>2</sub>e per annum, while a large (500MW) wind farm will displace from 900 kt CO<sub>2</sub>e to 1,600 kt CO<sub>2</sub>e per annum.

The level of greenhouse gas abatement varies depending on the location of the wind farm. Increased greenhouse abatement occurs for wind farms located in areas with good quality wind resource which are close to electricity users or high quality transmission lines. For many projects the commercial viability of a wind farm relies on optimisation of wind turbine types and layouts to maximise the electricity output which in turn would result in the highest emission abatement. This is of particular relevance for this inquiry.

The MMA study also found that the emissions resulting from the manufacture, construction and operation of wind farms are low relative to those associated with the manufacture, construction and operation of large fossil fuel plants. For a 50 MW wind farm of average

output it takes about 14kg CO<sub>2</sub>e/ MWh to manufacture, build and operate it. This represents less than 2% of the typical emissions reduction that such a wind farm would achieve from displacing fossil fuel generation.

#### Low water consumption

An additional benefit of wind energy is the fact that unlike thermal power stations it does not consume any water for generation. Coal powered stations require large quantities of water to generate steam to drive the steam turbines, and for cooling the exhaust steam. Thermal power plants, primarily coal-fired power stations, are responsible for around 1.4 % of total water consumption in Australia (ABS, 2005).

Given the on-going water stress in most parts of Australia, and growing demands for fresh water supplies for agricultural and other human use as well as to ensure environmental flow in our river systems, wind looks even more attractive compared with older, and dirty, coal fired power generation.