

**Submission to The Senate Community Affairs Committee**

**On**

**The Social and Economic Impacts of Rural Wind Farms**

**By**

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**6<sup>th</sup> February 2011**

**TERMS OF REFERENCE**

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;
- (b) Concerns over the excessive noise and vibrations emitted by wind farms, which are in close proximity to people's homes;
- (c) The impact of rural wind farms on property values, employment opportunities and farm income;
- (d) The interface between Commonwealth, state and local planning laws as they pertain to wind farms; and
- (e) Any other relevant matters.

**1. INTRODUCTION**

**1.1 About Me**

1.1.1 I am a retired naval officer and radar systems design engineer.

1.1.2 I have concern for the environment, but do not support the Greens.

**1.2 About This Submission**

1.2.1 One of the relatively uncommon subjects when discussing windfarms is the issue of physical safety. There are two concerns which are dealt with below: catastrophic disintegration of the blade assembly; and fire.

1.2.2 Many studies, both in Australia and overseas, claim that windfarms do not reduce CO<sub>2</sub> emissions. Given that this is the sole reason for selecting this technology, these claims require careful investigation.

## **2. SAFETY**

### **2.1 Catastrophic Failure**

2.1.1 The video (<http://www.youtube.com/watch?v=CqEccgR0q-o>) shows what happens if a turbine blade shatters while in motion.

2.1.2 This is a scary video clip. The turbine brake (which slows the blades in high wind conditions) failed in high wind conditions, so the rotor and blades ran up to a very high speed. Eventually the whole thing flew apart.

2.1.3 Assuming a blade length of 40m, and a rotation speed of 1 revolution per second, the distance a detached blade tip could go is of the order of 1.5km. Such an object would be hurtling through the air at 250m/sec (900kph), and would most likely kill anyone it hit. As a first guess then, the safety perimeter around a wind farm should be not less than 2km.

2.1.4 A recent newspaper report on the proposed windfarm at Collector, NSW stated that turbines would not be erected closer than 1km to dwellings. This may be insufficient to ensure lives are not lost in such (rare) accidents.

### **2.2 Fire**

2.2.1 The second clip shows a fire in a turbine nacelle. (<http://www.youtube.com/watch?v=MOfHxINzGeo>). In some similar clips the vegetation underneath the turbine is well ablaze. There could be many causes of fire in the nacelle: Lightning strike on the blades (<http://www.youtube.com/watch?v=KcvKXzRYIUs>); brake failing slightly on; electrical system failures. Fire is uncommon but not unusual, and in Australia the implications of fire caused by the common summer thunderstorms are significant. A midsummer fire in high westerly wind conditions could be catastrophic. An appropriate safety precaution would be the regulation of vegetation underneath the turbine structures.

2.2.2 Once again a decent safety perimeter would be desirable. A 1km distance to the nearest dwelling seems insufficient.



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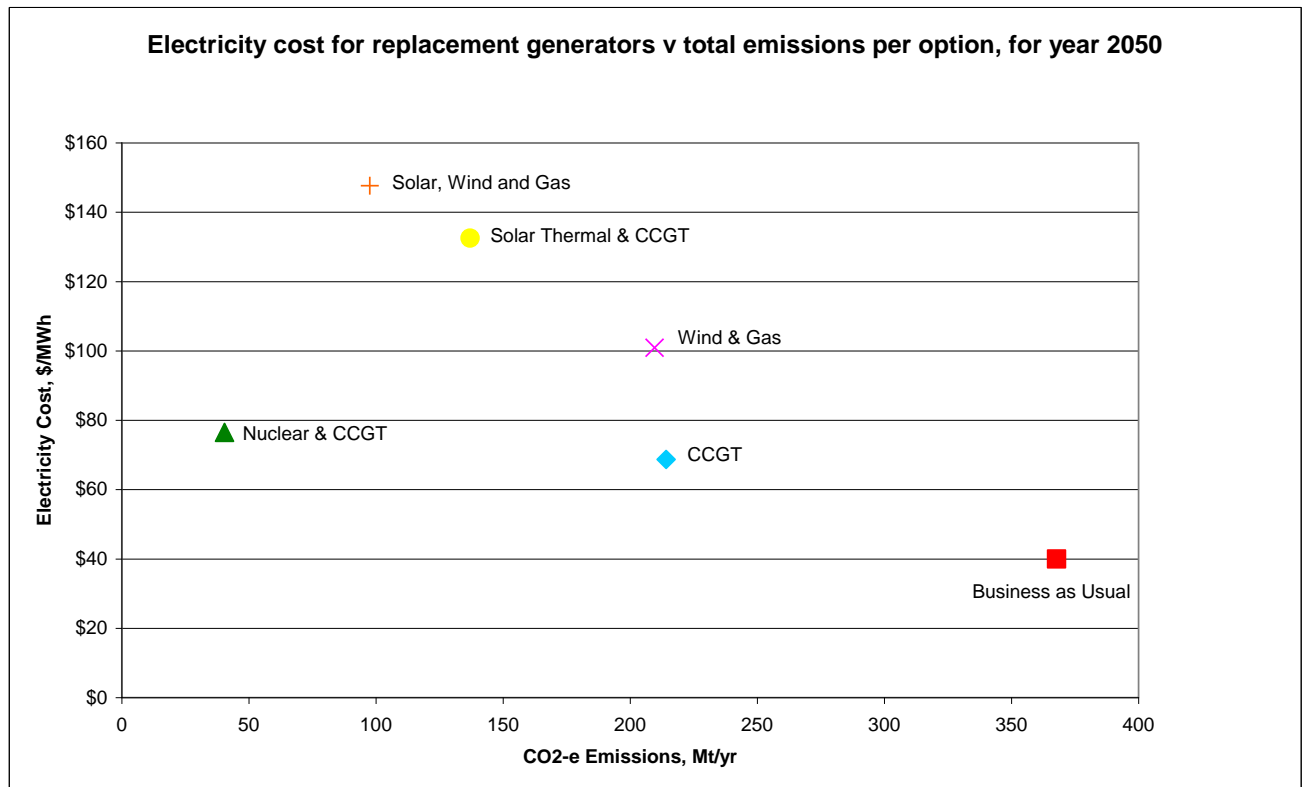
## 2.3 Ice

2.3.1 There may be safety issues with ice build-up if windfarms are erected in the Monaro or other places with low winter overnight temperatures.

(<http://www.youtube.com/watch?v=4EmYe2u6J6g&feature=related> ).

### 3. EMISSION REDUCTION

3.1 Figure 1 shows the comparison in electricity cost against CO<sub>2</sub> produced for the various possible coal-replacement power generation technologies. Gas turbines out-perform wind and solar, but the cheapest way to reduce CO<sub>2</sub> emissions is nuclear power.



**Figure 1:** Long run marginal cost of electricity (A\$/MWh) in 2050 (for the coal and replacement technologies only) versus total emissions (t CO<sub>2</sub>-e/MWh) from all the technologies in each option. CCGT is Combined Cycle Gas Turbines. From “*Emission Cuts Realities – Electricity Generation, Cost and CO<sub>2</sub> emissions projections for different electricity generation options for Australia to 2050*”, by Peter Lang, January 2010 ([http://bravenewclimate.files.wordpress.com/2010/01/lang\\_2010\\_emissions\\_cuts\\_realities\\_v1a1.pdf](http://bravenewclimate.files.wordpress.com/2010/01/lang_2010_emissions_cuts_realities_v1a1.pdf))

3.2 Recently a US economist remarked<sup>1</sup>:

“Windmills don’t run on wind, they run on subsidies. Solar Panels are not powered by sunlight, but by taxpayers. Without subsidies and renewable mandates they don’t operate....The green energy sector takes \$2 worth of inputs and procures \$1 worth of energy. This is not wealth creation, it is wealth destruction. It is not job creation since even more jobs have to be destroyed to fund the subsidies.”

<sup>1</sup> See [http://rossmckitrick.weebly.com/uploads/4/8/0/8/4808045/mckitrick\\_windconference.pdf](http://rossmckitrick.weebly.com/uploads/4/8/0/8/4808045/mckitrick_windconference.pdf)

3.3 The ABC Chairman, Maurice Newman, recently said:

“There is a view that wind power will turn out to be for electricity generation what the Zeppelin was for air transportation. It looked promising but was not the answer.” (The Australian, 27/28 November 2010, front page).

3.4 Although overseas studies from the US, UK, Germany and Denmark claim that windfarms do not help in reduction of CO<sub>2</sub> emissions, there have been no significant scientific measurements done in Australia. It is an open question whether windfarms save CO<sub>2</sub> (and therefore whether they are worthwhile for reducing emissions) until such measurements are performed.

3.5 It has been suggested that South Australia, with its relatively high proportion of wind generation, and its near isolation from hydro back-up, might be a good location for such a study. In commissioning a study it will be important to ensure that there is no bias in the study team (the climategate emails reveal how science can be captured by green activists.)

## **4. ENVIRONMENTAL DEGRADATION**

4.1 I have no particular experience in this field, however while researching material for this submission, I came across the linked video, which seemed to me to make a case for restraint in a calm and rational manner. I recommend this video to the committee.

[http://www.youtube.com/watch?v=s\\_CZIfiFPwk&feature=related](http://www.youtube.com/watch?v=s_CZIfiFPwk&feature=related)

## **5 CONCLUSIONS**

5.1 There is risk of fatalities if catastrophic disintegration of the blade assembly occurs during high wind conditions.

5.2 There is a risk of bushfires originated by failures in turbines or by lightning striking the turbines.

5.3 There should be a mandatory requirement for a Safety Hazard Analysis to be delivered as part of any windfarm proposal. This analysis should address the physical safety perimeter, potential fire hazards, and failure modes.

5.4 The CO<sub>2</sub> mitigation performance of windfarms in Australia has not been scientifically established. Overseas studies suggest this performance may be negligible or detrimental.

5.5 A study by unbiased scientists of CO<sub>2</sub> mitigation performance should be commissioned. It is suggested that the South Australian system may be the best available on which to conduct this study.