

## **Senate Standing Committee on Community Affairs**

### **Public Submission on The Social & Economic Impact of Wind Farms**

To the Committee,

Over the past 15 years I have been a professional working in the electricity industry in Australia. My role in this sector has involved both fossil fuel and renewable energy project development and operation. In this time I have been involved with significant electricity generation investments in Australia and been part of the associated debate in both the social domain and justification in the economic domain.

I currently have a global role in the this sector and for the record the majority of my work is in the renewable energy area, although the company I work for profits from all of the generation technologies, including in nuclear and fossil fuel. I also have project and development roles in “cleaner” technologies involving gas, fossil/renewable hybrids and generally more emission efficient generation.

I have worked with many Australian communities in which wind farms are a part, some of which are considering a new facility while others have had wind turbines operational in their area for several decades. During this I have spent time listening to proponents from both sides of the debate (for and against) and taking part in lengthy stakeholder engagements, both before and after projects have been completed.

I have also spent thousands of hours working professionally in and around operational wind farms, from smaller single turbine facilities in remote areas to very large wind farms with hundreds of turbines. I am familiar with their operational limitations and both their environmental and identifiable social impacts.

From this background I believe some observations from me on the wind energy industry may be helpful to Committee.

There is a definite role for wind energy in Australia and I would support increased investment in the sector. There are negative issues with wind energy, but support is justified when considering emission reduction imperatives, fuel price volatility and the need for a broader generation portfolio in Australia. While wind energy will not solve all of these issues, it is definitely a component of that solution and this is generally acknowledged in the electrical generation industry worldwide.

Wind generated electricity is a valuable commodity and does lower the nations greenhouse impact. Many opponents cite poor capacity factors (“average” generation) and the intermittent nature of the wind resource as reasons against the product, but every unit of electricity generated from wind turbines offsets fossil fuel use somewhere – that is, prevents it from being burned. While the amount depends greatly on load, type of generation technology and even time of day, this is an inescapable result of the flow of energy.

It is not an easy thing to value wind energy against other generation sources, as the electricity industry is riddled with cross subsidies, many hidden. I’ve read many analyses in the public domain which state the poor overall value of wind, but typically

subsidies quoted are only part of the reality and there are usually flaws in the scheduling and market assumptions – similar analyses in the private domain are typically different. Wind energy is certainly not the cheapest form of greenhouse reduction, with energy efficiency being a far more cost effective means. However, the reality is that the pace at which reductions are required cannot be met by efficiency measures alone and the electricity generation sector also must lower its carbon intensity.

While generator efficiency increases and fuel switching are key ways of achieving generator emission reductions, renewable energy will play a part in this and the most cost effective, mature and financeable renewable available, apart from large scale hydro and some biomass technologies, is wind energy. The simple truth is that we need to pursue all options, including some far less publicly palatable than wind farms, if we are to achieve the carbon reductions required.

There are technical challenges in increasing the contribution from wind farms into Australian grids, which were not designed with such distributed input in mind and which don't necessarily allow wind farms to be placed in the best locations from a community and wind resource perspective. While regulation changes are being considered in Australia to relieve this, wind farm developers face a difficult time juggling these technical constraints against social and environmental issues, particularly at the size of plant necessary to achieve attractive financial returns.

The community in Australia also benefits greatly from cheap fossil fuels, but the reality is that the price of these fuels will likely show volatility into the future. What this means is that to an investor in a fossil fuel plant there is a significant risk that a primary cost item in the business case, the fuel, might rise in price. Such risk increases the cost of investment while most renewables and certainly wind turbines do not have such risk. Factor in a cost of carbon – that is, put a price on emission pollution – and levelling out all subsidies and at some point the renewable energy product should become directly cost competitive with fossil fuel, when looking at the full investment case.

The utility sector is changing globally and one of the most interesting developments is around smart grids. Around the world, utilities are looking at better ways of managing electrical load to relieve pressure on congested networks. This includes the use of “smart” devices imbedded in the networks which allow very detailed visibility of load data and control of discrete devices – such as air conditioners and fridges in people's homes – which allows much more efficient network design and operation.

Smart grids also allow load to be better matched to renewable energy input. An example would be electric vehicles, which in theory can be charged when the renewable energy supply is available. It is possible that such developments could significantly alter the need for ancillary generation investment to augment renewable energy generation – in affect, removing any market problems around intermittency.

In reality, intermittency from renewable plant has not been a large issue in Australia. At the Australian Financial Review Energy Conference held in Sydney in 2010, the CEO of AGL, Michael Fraser, discussed this issue and stated that such intermittency is not necessarily driving investment in gas peaking plant. The implication is that the

peaks in the market are doing this, not renewables nor specifically wind energy. As the penetration of wind energy increases it is uncertain whether this will remain so or how the stability of grids will be managed, which is another challenge that wind has.

There has been considerable opposition to wind farms in Australia, which reflects experience in some areas of the world. Australia is fortunate in that it has large areas of land, but unfortunate in that our population is small - meaning that most of the land areas away from people are not serviced by transmission infrastructure. Interestingly, Germany, which is roughly the size of South Australia, has about ten times the amount of wind farms installed as Australia. Germany has opposition groups to wind farms but, on the whole, they are well accepted there.

Wind farms are not suitable for all locations in Australia and unacceptable impacts on individuals and communities must be avoided, as is the case with any power generation plant – in fact, it is very hard to progress any new large scale green-field generation project in this country because of this. However, in my experience what is “unacceptable” is significantly different between stakeholders and this is the heart of the current social debate around wind in Australia.

While I respect opponent’s views to wind farms, I consider that much of the opposition I have seen in Australia is born out of fear of change and a perceived loss, rather than the reality. My direct experience with communities from around the world who live with operational wind farms is that the end product is in reality pretty benign. There are places where it hasn’t worked, but mostly it has.

Some opposition I observe also stems from a general non-belief in the need for cleaner electricity generation – “climate change isn’t real” – and hence the value proposition at the heart of the wind energy product is lost and *any* change is considered unacceptable. Those in support of wind energy know that there will be impacts of a wind farm but believe this acceptable given the benefit the facility brings.

This of course is a gross oversimplification – for example, individuals and communities have very genuine emotional and physical ties to landscape and heritage, leading to a high sense of value in their locale or particular locations while others simply do not believe the product works – and there are areas of Australia where wind farms will be opposed for reasons other than a perspective on climate change. In my experience, even the most strident wind farm supporters realise and accept this.

The challenge is to filter through planning processes to determine when any impacts are unacceptable or the best interests of communities are not served - this can of course include the broader more urban community. This is a tough process to get right and can sometimes reduce to local vs global interests, which are difficult to progress in rural areas some way from major population pressures.

Interestingly, most rural communities live in highly altered landscapes already in Australia and wind energy is just one more element of that change. There has also been opposition to the *removal* of wind farms in Australia, in Esperance where their first wind farm at Salmon Beach was decommissioned in the early 2000s after nearly 15 years of operations. These machines were placed as a monument in the town and a new wind farm built close by at Nine Mile Beach. Such acceptance of wind energy in

really remote communities is common, where energy options are limited.

If greenhouse predictions are right then a significant change in our electricity generation sector will in time be needed and people will have to accept not only more wind farms, but more large scale solar power stations, more hydro facilities, more waste-to-energy plants and many other technologies in their communities. All of these technologies have environmental and social impacts and have experienced public opposition around the world. As confronting as this will be, people may need to be more accommodating both in rural and urban environments.

To date my experience with communities has been positive around wind farms. Novelty factor has certainly a part of this and this sentiment will be tested as wind farms become more common and the industry will need to work hard to ensure communities remain on-side. This will be helped particularly if transmission congestion is eased through targeted investment allowing development across a greater geographic area.

In more marginal farm areas, wind farms have been a significant alternative income and seen as a welcome “farming” income. Where conflict often arises of course is where neighbours do not profit from this, but have to look at the wind turbines on their neighbours property or hear them above background noise. Interestingly, such conflict seems less in regards to tree farming even with species foreign to Australia, but in theory this is more aligned with traditional bio-farming practices.

In my years working around wind turbines I have never seen evidence of health impacts nor experienced any myself from the machines. This includes long hours within operational machines and while staying in accommodation close to such, although I am not qualified to comment any further and impacts, if they exist, should demand attention. I have certainly seen people stressed about wind farms, particularly in the planning stages of facilities. Some wind farm developers have been insensitive during this period but in general developers in Australia use good practices and do consider the communities in which they work.

Wind farms are not perfect and no-one should have to accept inappropriately sited facility nor significant impacts to their way of life from them. However, neither are wind turbines the “monsters” portrayed by some of the technology opponents nor of little value to our Australian energy systems.

I would strongly suggest that the Senate Committee travel to a range of wind farms in Australia, independent of both opponents or supporters and make their own assessment of the plant in situ.

Sincerely

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