Submission
No 57

# INQUIRY INTO RURAL WIND FARMS

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# NSW Legislative Council
## General Purpose Standing Committee No 5

# Inquiry into rural wind farms

**Submission by**
**Future Energy Pty Ltd**


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## Introduction

Future Energy welcomes this opportunity to respond to the Standing Committee's request for submissions in respect of the social, environmental, and economic costs and benefits of rural wind farms.

Future Energy Pty Ltd (www.futureenergy.com.au) was established in 2003 to develop small to medium sized renewable energy projects with an emphasis on mixed ownership structures where communities, landowners, corporates, councils etc are all able to own a portion of the asset and enjoy dividends from the sale of power. To date the main focus has been on wind energy and most of the company's work has involving the planning and establishment of rural wind farms.

The concept of community involvement in the ownership of renewable energy generation facilities – particularly wind farms – is well developed in Europe and has existed in Denmark and Germany for over a decade. In Australia, only one such project – Hepburn Wind - has progressed to the point where construction is imminent.

More recently the company has actively pursued the introduction of solar thermal technologies to generate renewable power and is currently awaiting the outcome of its application for grant funding under the Federal REDP scheme. (www.solenco.com.au)

Each of our current wind projects involves the installation of large modern wind turbines in projects ranging from 4MW to 100MW. The most advanced of these is the Hepburn Community Wind Park which received planning approval in 2007 and is expected to begin construction late this year.

Future Energy has been responsible for all aspects of the project and has worked closely with the Hepburn Community Wind Park Co-operative Ltd (Hepburn Wind) to ensure the community is fully informed and supportive. (For more information visit www.hepburnwind.com.au) . We have also successfully gained development approval for a 14 turbine wind farm near Winchelsea in Victoria on behalf of International Power Australia Pty Ltd.

## 1. The role of utility-scale wind generation in reducing greenhouse gas emissions generated by electricity production, and producing off-peak and base load power.

The generation of electricity by modern wind turbines produces no emissions and relies on the free energy contained in wind. Simplistically therefore, in a closed grid system where supply and demand are always in balance, any input of energy into the grid from wind power must by definition displace energy generated by other means. Given that over 80% of Australia's electricity is generated from black or brown coal, it is primarily generation from this fuel source that will be reduced.

Sustainability Victoria currently estimates that the production of 1megawatt hour (MWh) of electricity from brown coal produces 1.3 tonnes of $CO_2$, whereas wind power produces none. Therefore, again simplistically, every MWh of wind energy entering the grid eliminates over 1 tonne of $CO_2$ emissions.

It is also relevant to note that where wind farms are able to be located near to large areas of energy use, their output will effectively displace energy which may have travelled long distances from a large coal power station. This distributed generation appears as reduced demand which reduces the energy dispatched by the large centralised generators.This has the effect of reducing transmission losses which can exceed 15% that would otherwise occur in simply moving the energy from the main power station to the point of large consumption. This adds further to the reduction in carbon emissions which rural wind farms can provide.

Finally, in the heated debate which often surrounds wind farms, some will argue that the energy embodied in a wind turbine during its construction far outweighs the environmental benefit which it is capable of generating during its operational life. This is patently absurd and has been shown to be so many times over. It is generally agreed that a modern wind turbine generates the equivalent of its embodied energy in a matter of a few months.

In terms of the role of wind farms in providing dispatchable power, it is obvious that the wind may not always blow when power is required and vice versa. Studies by the Bureau of Meteorology have shown however that on hot summer afternoons, typically a period of highest power demand, there is a very high probability that adequate wind will be blowing over parts of southern Australia. Therefore, the spread of proposed wind farms across the entire eastern seaboard virtually guarantees that wind farms in some locations will be making a meaningful contribution to supply at any one time.

The issue of dispatchability and base load power are often raised as reasons why wind farms should not be encouraged. In our view, a bigger picture view need to be taken. The transition of Australia's energy infrastructure to a low or zero carbon system must be seen as a 50 year journey in which coal generation will only phase out as dispatchable base load alternatives become viable and are constructed at scale.

Right now, promising technologies that could meet this need – geothermal, solar with storage, wave, tidal etc are so expensive and unproven at scale that they can only be built at modest scale with significant Government subsidies. Furthermore, this will not change for at least a decade until reducing capital costs and rising power prices as a result of carbon pollution imposts facilitate their commercial viability.

If we accept the need to urgently begin reducing our carbon emissions to slow the advance of climate change, it is not acceptable to wait a decade until these technologies are viable at scale, and even then to substantially replace coal-fired generation would require at least a further decade or two for construction.

Wind therefore should be seen as a transitional option which is able to start reducing our national emissions from power generation quite rapidly in the next decade, and continuing to do so for 20 – 30 years. During this timeframe, the other technologies will achieve viability, and it is quite reasonable to predict some reduction in wind turbine numbers by the middle of the century as the other technologies take over and coal generation is phased out.

## 2. Locating rural wind farms to optimise wind resource use and minimise residential and environmental impacts.

For maximum viability, a wind farm needs to be located within reasonable proximity to an adequate-sized grid interface (terminal station or similar), where wind resources are as high as possible. If either of these key requirements is absent, the wind farm will be less commercially viable and arguably of less value as a source of renewable energy.

Clearly, if outstanding wind resources exist in a particular area, it is always possible to construct a new distribution network to connect it to the grid. However unless or until the cost of such additional infrastructure is borne by the state, commercial developers will try to avoid this additional cost burden wherever possible by not developing wind farms too far from grid connection points.

All States in Australia currently have processes for the approval of wind farm developments that consider each application separately on its merits. Unfortunately this can and will result in wind farm development being concentrated around large power lines and crowding in to areas where good wind resources are nearby. Should the combination of grid access and good wind happen to be near residential areas, or near areas of environmental sensitivity, there is inevitably conflict.

A superior approach would be to conduct a thorough review of the State from the viewpoint of wind resources and grid infrastructure, and to then create planning zones within which wind farm development was encouraged, and the processes for approval simplified. As a further step, wind farm development rights could be considered in the same way as mining exploration leases, with an application or bidding process to allocate such rights on defined tracts of land.

An essential part of such an arrangement however would be a virtual guarantee that approval to develop and build would be given, including a grid connection provided by the State's network service provider at an adequate size to cope with all potential developments in the area.

Such a holistic view of the State's development potential, if correctly managed, would still not totally remove individual rights of objection on amenity or environmental grounds, but would dramatically speed up the development, investment and construction of new wind farms.

## 3. The impact of rural wind farms on property values

There is no doubt that wind farms polarize opinion – people either find them attractive and elegant, or hate them with a passion. It is obvious therefore that to make a general statement about the negative impact of wind farms on property values is absurd. There are numerous factors that can affect the value of any property – market activity, water access, quality of buildings, quality of pastures/trees, proximity to markets etc etc.; To try to argue that proximity to a wind farm will always have a negative impact is simply not sustainable.

No specific studies as to impacts on property values have been carried out here, but in the USA and Europe the work that has been done shows little or no correlation at all as other factors usually have far more impact.

## 4. Mechanisms for encouraging local ownership and control of wind technology

Locally owned and managed renewable energy installations promise to make a profound impact for future generations. They reduce greenhouse emissions, they stimulate economic growth at a local level, and they empower communities with a sense of energy security and independence.

Community ownership of renewable energy is a very exciting global phenomenon. Beginning in Denmark in the early eighties, renewable energy co-operatives have become an increasingly important feature of the fight against climate change. All over Europe, the USA, and now Australia, communities are leading the way by creating their own renewable energy sources from wind, solar and biogas.

To date, wind farms in Australia have mainly been developed and constructed by large corporate entities, most of whom are unlisted. Not only does this model preclude the ability of ordinary citizens to invest directly in wind farm projects, it even prevents them form investing in such companies' shares, so generally the local community derives no economic benefit whatsoever from the development.

Future Energy is committed to creating investment opportunities in its projects for communities, landholders, and individual and corporate investors – very similar to the successful European ownership models. Our project at Hepburn Springs will be Australia's first community-owned wind farm – a trend which we believe will be repeated in many other communities across the country.

It is worth noting that a share in a wind turbine of about $5,000 produces enough energy to power an average home, and outperforms domestic rooftop solar in terms of energy per dollar of cost by a factor of four to six times. So average wind turbine investors can produce enough clean energy to power an average home as well as receive investment returns, which is a natural hedge against increases in their own energy bills.

To encourage community involvement, project developers will need to work closely with Councils and community groups to implement strategies that:

- Engage with the community and local/state media at the earliest possible stage and continuously thereafter to build a strong local support base
- Provide an opportunity for a realistic proportion of the total project to be owned by different entities, some of whom could be community cooperatives, local landowners etc.
- Facilitate debt and equity finance from other sources that is sympathetic to the objectives of the mixed ownership strategy
- Ensure that some of the profits from power sales flow back to the local community via a Sustainability Fund so that even those who cannot directly invest still receive a benefit, and

- Provide for the developer to maintain ongoing operational management of the facility under a management contract.

To date, Future Energy is the only wind farm developer in the country to have obtained a planning permit for a two-turbine wind farm only 100km from a major city (Melbourne) in a popular tourist area. The effectiveness of Future Energy's community engagement strategies can be judged from the fact that over 300 letters of support were received from the local Daylesford/Hepburn Springs community when the permit application was lodged, in contrast to just eighteen objections.

## 5. The potential role of energy generated by rural wind farms in relation to the Australian Government's proposed renewable energy target.

See response to Question 1 as well as the following. The Federal Government is introducing legislation that will require retailers to ensure that 20% of the total energy they sell is bought from defined renewable sources by 2020. The mechanism for this is the purchase by retailers of Renewable Energy Certificates (RECs) on a one for one basis with every MW of renewable energy they buy.

Currently, only some 9,500GWh of renewable energy are available for purchase annually across the country. By 2020, in order to meet this target, annual renewable energy generation needs to reach 45,000GWh – an almost fivefold increase.

As explained earlier, few if any other renewable energy technologies are capable of meeting this need in the next decade except wind, partly because the other technologies are still too expensive to be viable, and partly because their construction at scale will take many years.

It has been estimated that an additional 8,000 wind turbines will need to be installed across Australia if the RET is to be met solely by wind power. This is achievable and represents an investment in excess of tens of billions. With that investment comes substantial economic activity for the States that embrace the opportunity and gear themselves up to facilitate wind farm development efficiently.