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10th February 2011

Social and Economic Impact of Rural Wind Farms

Regional Development Australia Adelaide Hills, Fleurieu and Kangaroo Island (RDA) is part of a new initiative of state, federal and local governments. Our task is to work to create successful and sustainable communities in partnership with the private sector and the community. Our approach is to:

- Support informed regional planning
- Consult and engage with stakeholders to identify and resolve critical issues
- Liaise with government and communities about the best programs to support regional development; and
- Contribute to business growth, investment plans, environmental solutions and social inclusion strategies

Our core funding comes from the federal department of Regional Development the state department of Trade and Economic Development and from six councils, Adelaide Hills, Alexandrina, Kangaroo Island, Mount Barker, Victor Harbor and Yankalilla.

Our region includes three of Australia's fastest growing communities; Mt Barker, Goolwa and Victor Harbor. They are expected to double in size over the next fifteen years or so and we believe that vibrant communities depend on successful

businesses and skilled workers. The scale of anticipated growth indicates that many of the changes we envisage will happen over a short period.

Mt Barker is a dynamic region with only 40% of the workforce working in the region; the balance works in Adelaide and elsewhere. Ideally we would like to see an increase in local workforce retention as well as ensuring that we cater for the needs that increase in populations will bring. Victor Harbor and Goolwa are key 'sea change' destinations and will see considerable growth as retirees and tourists flock to these attractive regions.

1. Regional Energy Policy

The electricity market in South Australia is integrated with the national electricity market. The market is disaggregated and complex; the major players are the generators, retailers, distributors, transmitters and AEMO the market operator. The market is dominated by large national and international companies.

The market is characterised by a supply side philosophy with large generators, limited retail and monopoly distributors. The rules and regulations are, by and large, constructed to facilitate economic efficiency and reliability based on this centralised model with the following characteristics

- Major players are rewarded by market growth, not efficiency
- Retailers and generators are merging, leading to fewer participants
- There are no capacity signals in the market, hence no incentive to change
- There is no incentive to minimise emissions or consumption
- Customers do not participate in the market
- No central planning regime
- Lack of coordination between generation and distribution
- No need to consider alternate models

Electranet and ETSA utilities are planning to spend \$1.632 billion during this decade on the Fleurieu to effectively maintain the status quo. Our concern is that the community does not have the knowledge or expertise to participate in the decision making process regarding the future direction of the generation and distribution of energy in our region. Five of our six council areas are classed as part of Greater Adelaide. We have a population of 115,000 people that is expected to grow rapidly and where the community wishes to be engaged better in key decisions such as the future direction for energy.

Kangaroo Island has experienced significant issues with electricity supply. The headline issues are:

- Lack of available capacity. This is particularly prevalent on the 19kV SWER network.
- The expense and difficulty in obtaining new network connections has led to a significant number of off-grid installations.
- The frequency and duration of supply interruptions is many times that experienced by customers on the mainland.
- Heavy reliance on petrol and diesel generation as the sole source of electricity supply or for standby purposes has meant that the island community bears a significant financial and logistical burden to much greater extent than other South Australian communities.

The reliability of supply on Kangaroo Island is impacted by the rural nature of supply and customers supplied at the end of a long radial supply network

We support the development of a regional body that advocates for local issues and concerns regarding energy generation, distribution and use. This would initially focus as an advocacy body that builds and creates local knowledge and expertise and engages with the regulatory and economic agencies. Its functions could include

- Information exchange covering issues such as policy, planning, distribution
- Advocacy to consider new energy sources and distribution mechanisms
- Promoting energy efficiency and community models
- Contributing to the development of environmental policies

2. Role of community wind

The transition to a low carbon economy is inevitable. In these early days, the transition may not happen as quickly as many would hope for, or as aggressively as the science demands, but it is clear this transition has to happen. Politically, we are acutely aware that broad community support must be present before effective climate policy can be enacted.

While most Australian's will agree that climate change presents a unique and massive challenge – few know what they can do personally to make a real difference. Without obvious avenues of response, the public becomes at once, frustrated, impatient and paralysed. We turn to our leaders for solutions but without a clear mandate our leaders are hamstrung.

Community ownership of renewable energy facilities has been integral to the broad acceptance of clean energy technologies in other jurisdictions. A host of countries

including the UK, USA, Germany, Canada and Denmark have significant community ownership of renewable energy infrastructure.

Inspired by the success of Hepburn Wind – Australia’s first community owned wind farm now under construction – many other communities are keen to participate in, and benefit from, the transition to zero carbon energy sources.

What is community wind?

Community wind refers to a wind project that is appropriately scaled and supported by the community in which it is located. Community wind is:

- Instigated by the local community
- Scaled to the community’s own energy requirements
- Predominantly funded and controlled by the community
- Financial benefits remain in the local community
- Welcomed by the community
- Accountable to the community
- Built and managed to create local jobs

Most importantly, community wind has economic, environmental and social benefits for the local community above and beyond that which commercial wind energy developments offer.

Why is it important?

Although community ownership and financing of renewable energy projects is a relatively new concept in Australia, it is widespread in several European countries and rapidly developing in the US. Many more communities will need to embrace renewable energy infrastructure in their backyard over the coming decade for Australia to meet the expanded RET target of a four-fold increase in renewable energy generation.

The benefits of community wind projects are many, and include the following:

Empower communities to be active in carbon abatement

- Community wind projects offer people the chance to make a significant, collective contribution to reducing climate change – way over and above what they can achieve by installing fluorescent light bulbs, using public transport, improving home insulation or other energy savings measures.
- Direct ownership changes attitudes at the local level, and leverages committed individuals in a community, giving them a positive outlet for action;

- Community ownership increases support for additional climate change mitigation measures and improves people's broader environmental awareness.

Delivers regional economic benefits

- Community wind projects create jobs in regional areas, and generates new income streams for communities adding depth to local / regional economies;
- Most community wind projects commit a specific proportion of profits to the community as financial support. An example of this is the Hepburn Wind project near Daylesford, in Victoria. On top of dividends to investors, revenues will be poured into the Community Sustainability Fund. This fund will provide \$15,000 per turbine per annum (increasing annually with inflation) for local projects that address social, economic and environmental sustainability.

Accelerate renewables industry development and impact

- Small projects often lead to large ones. Denmark and Germany provide examples where community wind initiatives have led the way for large scale corporate investment in renewable energy;
- With successful local examples, community opposition is reduced.

Taps a new funding source - the community investor

- Community ownership encourages greater diversity in the investor base and taps a latent and lower-cost patient source of capital.

Bridges the gap between individual and corporate action

- The average rooftop solar installation delivers 1.5 kW, while a utility scale renewable energy project may deliver in excess of 100 MW. Between these two extremes lies an enormous opportunity for medium scale and community energy to play a part;
- Community wind projects, typically in the range 2-10 MW, can deliver efficiencies that approach those of utility-scale infrastructure without sacrificing the many benefits of small scale initiatives.

Examples of community wind in Australia

Hepburn Wind

- Hepburn Wind, Australia's first community-owned wind farm, is currently being constructed near Daylesford in Victoria.

- Around the middle of 2011, the two 2.05 MW REpower wind turbines are expected to be generating enough clean electricity to power the houses of Daylesford and much of the surrounding area.
- Profits from the sale of emissions free electricity will be paid as dividends to co-operative members, as well as \$1m over 25 years to a Community Sustainability Fund.
- The fund will support local initiatives that promote the sustainability of the Hepburn Shire.
- Over the past two years Hepburn Wind has secured over \$8.6 million from more than 1,400 mostly local members.
- Hepburn Wind's membership numbers continue to grow and speak volumes about community support for this project.

www.hepburnwind.com.au

Mt Barker Community Wind Farm

- The Mt Barker Community Wind Farm is now under construction on a hill on a private sheep farm 4 km north of Mt Barker in South West WA consisting of three wind turbines and costing about \$8.5 million in total.
- Of the people who own the wind farm, 80% are local.
- Over a third of the required capital was provided by a Renewable Remote Power Generation (RRPG) grant from the Federal government and administered by the state organisation SEDO.

www.mtbarkerpower.com.au

Woodend Integrated Sustainable Energy (WISE)

- The Macedon Ranges Sustainability Group (MRSC) and WISE have been working on developing a small-scale community owned wind park facility to be sited south of Woodend, Victoria on Crown land leased for pine plantation purposes.
- They hope to build a community trust funded by local wind power production, and to use these funds for local sustainability projects.
- Plans for the project are in limbo as a result of the change in Victorian state government. If the new government determines that the Woodend area is a 'No-Go Zone' for wind development, all of the community's hard work will be put at risk.
- Small scale community-owned and supported wind developments (especially when situated in non-indigenous forestry plantations) should be exempt from this condition.

- WISE are currently gathering community support to erect a wind measurement mast in the pine plantation.

www.wisegroup.org.au

Mount Alexander Sustainability Group (MASG)

- MASG is working on developing a small scale community-owned wind farm near Mount Alexander in Victoria.
- Locals will be responsible for ownership and control of such a facility, and there will be opportunity for all shire residents to have a financial stake in the project if they wish to do so.

www.masg.org.au

Status of community wind internationally

- In the United Kingdom and Europe, community-owned projects are commonplace.
- Denmark alone has over 200,000 investors owning more than 5,500 turbines.
- In the United States and Canada, the community renewables sector is strong and growing, with an installed capacity similar to Australia's entire renewables sector.
- According to Windustry, the peak US body for community wind, US community wind projects added 544 megawatts (MW) of new energy capacity in 2009, bringing the January 2010 total for community wind capacity to 1,521 MW. According to the Clean Energy Council, Australia's total operating wind capacity at the end of 2009 was 1712 MW.

3. Response to the specific areas outlined in the inquiry

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

Current research and scientific investigations have found there are no adverse health effects from living near wind farms:

- 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"
- The NHMRC review 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"

- The Victorian Department of Health after examining both peer reviewed and validated scientific research also concluded that “The Department of Health has examined the available scientific literature on wind farms and has concluded that there are no direct health effects that can be attributed to modern wind turbines.”
- In late 2010, the Clean Energy Council (CEC) commissioned expert noise consultants Sonus to provide the latest information on environmental noise from wind farms. Sonus found there is no evidence that residents will suffer any direct health effects from living near operating wind farms.
- The Sonus report also found that once wind farms are built, the rates of complaints are very low in Australia and New Zealand.
- The World Health Organisation also noted “There is no reliable evidence that sounds below the hearing threshold produce physiological or psychological effect.”
- 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. The panel concluded that ‘wind turbine syndrome’ is 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.”

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 turbines has shown that the levels of low frequency noise and infrasound are within accepted thresholds.
- Like any machine, wind turbines emit sounds across a broad range of frequencies, including those below the frequency threshold of human hearing. The sound characteristic is not particularly unusual, and the intensity is similar to sounds emitted by natural sources like ocean waves, and wind passing through trees, and industrial sources like vehicles and air-conditioners
- There is currently no peer reviewed scientific data to suggest that the levels of low frequency sound or infrasound emitted by turbines have the potential to cause any adverse medical effects. This position is supported by both the Victorian Chief Health Officer and the National Health and Medical Research Council.
- The British Wind Energy Association conducted research in 2005 on modern turbines which showed that the levels of infrasonic noise and vibration

radiated from modern turbines are at a very low level; so low that they lie below the threshold of perception, even for people who are particularly sensitive to such noise and even when very near to turbines.

- The new organisation RenewableUK (formerly the British Wind Energy Association) has published an independent report finding that “the consistent and scientifically robust conclusion has always been that there is no independent evidence to demonstrate any significant health effects from noise at the levels of that generated by wind turbines”.
- Pacific Hydro commissioned Sonus to measure and compare infrasound levels from wind farms and some common environment infrasound sources, both natural and human-made. The report “Infrasound and Measurements from Wind Farms and
- Other Sources” demonstrated that the levels of infrasound produced by wind turbines are well known.

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

Economic importance of wind energy

- Australia’s Renewable Energy Target (RET) will deliver 20% of the country’s electricity from renewable sources by 2020, unlocking more than \$20 billion in investment and creating many jobs.
- Wind power is the lowest cost form of readily available renewable energy available.
- As a result much of the 20% target will come from wind.
- In 2009-10, wind energy in Australia generated just under \$1 billion in investment

(Bloomberg, New Energy Finance, 2010)

Employment opportunities

- Modelling by SKM-MMA (Sinclair Knight Merz – McLennan Magasanik Associates) for the Clean Energy Council found that the wind industry is expected to provide 1600 direct employees by 2020 and 17,000 full time equivalent jobs in construction over the next decade. These jobs will be primarily in regional Australia.
- The Hepburn Wind project has already spent \$2m in region Victoria, with more to come. The project employs three locals and has provided valuable learning opportunities to many in the region.

Wind energy and property value

- In an assessment by the NSW Valuer General of 45 property sales located within a 10 km radius of 8 wind farm sites, it was found that property values were not negatively affected. 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 international studies in the United States and the United Kingdom.

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

- We accept the need for effective environmental standards for wind projects. It's recognised that Australia's existing standards and guidelines for wind farm development are some of the most rigorous in the world.
- All infrastructure projects tend to face a small and vocal portion of local community members who oppose development. Planning policies need to recognise the needs of those people while balancing the need for outcomes for the greater public good.
- Wind farms should not be required to meet unnecessarily higher standards than those faced by other infrastructure developments.
- Existing planning systems already provide the framework to assess impacts. The assessments that precede planning approvals are detailed, and take into account a wide range of potential impacts including environmental, social, cultural, and technical impacts.
- 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 developments beyond those imposed on other infrastructure investments, reducing certainty for the planning assessment process by introducing additional, and often conflicting guidelines.
- Unnecessary burden on clean energy development is contrary to the government's 20% renewable energy target.
- Any setbacks should have a scientific basis and refer to noise, visual amenity, flicker etc, and not distance.

e) Other relevant matters

Research indicates extensive support for wind farms including in the local regions where they are being built

- While a small but vocal opposition continues to rally against the development of the wind industry, it's important to note that it is well supported across broad sections of society.
- A News poll 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.
- Recent polling conducted in regional NSW during 2010 by AMR Interactive for the NSW Government on community attitudes to wind farms, found that 85% of residents supported wind farms being built in NSW. The survey also found that 79% of residents were supportive of wind farms being built within 10km of their residence and more than 60% supported them at 1 – 2km from their residence.
- More than 1400 people have invested in Hepburn Wind, proving that under the right conditions, communities can be very welcoming of wind energy. When Hepburn Wind's applied for its planning permit, council received 18 objections and 325 letters of support for the project.

Greenhouse abatement

- Every kWh of wind energy produced reduces the need to generate a kWh of coal- powered electricity.
- A report by respected economics firm, MMA found that every MWh of wind energy results in more than 1 ton of emissions reductions.
- An additional benefit of wind energy is that it does not consume water in operations. Traditional thermal power plants that generate steam to drive turbines use 1.4% of Australia's water (ABS, 2005).

Conclusion

Over the next decade, our national targets require a quadrupling of installed capacity to see renewable energy eventually represent 20% of Australia's electricity mix. Wind farms are the lowest cost, most widely deployable renewable energy technology and have the potential to create enormous economic, environmental and social benefits for Australian regional communities. Community engagement will be central to creating the social license that enables the necessary change.

Yours Sincerely

Terry Lee (Director Strategy and Major Projects)



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