Department of the Senate
PO Box 6100
Parliament House
Canberra ACT 2600
Australia

To the Senate Community Affairs Committee,

Re: Environment Victoria's submission to the Senate Inquiry into the Social and Economic Impacts of Rural Wind Farms.

Environment Victoria is Victoria's leading independent environment group. We are a not-for-profit, member based organisation with 20,000 supporters and 100 member groups made up of local climate action, conservation and sustainability groups as well as some sustainable businesses.

Environment Victoria welcomes the opportunity to submit to the Senate Inquiry into the Social and Economic Impacts of Rural Wind Farms.

Environment Victoria is a strong supporter of wind technology as a proven renewable energy technology with great potential in Victoria and across many parts of Australia. We have been engaged in advocacy and campaigns in support of wind technology for over a decade, and more recently have worked with a variety of Victorian and national organisations from the environment sector, social sector, unions, churches, local government and other community organisations in support of policies to increase investment in wind farms in Victoria.

Environment Victoria recognises the important role that renewable energy must play if Australia is to cut our greenhouse pollution, reduce our impact on climate change, and prepare our energy systems to be clean, safe and reliable for our future. We recognise wind energy as a necessary part of Australia's renewable energy mix required to meet the federal government's Mandatory Renewable Energy Target and as part of national efforts to transition to a low carbon economy.

Wind farms in Victoria have helped the state to stabilise our greenhouse gas emissions, increase our energy security, generate new investment across the state and deliver new jobs to rural and regional towns across Victoria. Further, where wind farms and other renewable energy technologies are used to replace existing polluting generation such as brown coal, they have the potential to reduce the emission of dangerous pollutants such as dioxins and particulate matter which have been linked to increased rates of asthma, cancer and other illnesses in communities located near coal fired power stations and coal mines.

Environment Victoria understands that a small minority of community members (some living close to wind farms, and some not) are concerned at the potential health impacts of living in close proximity to wind farms due to 'excessive noise'. However, current research from across the world shows that no such health impacts can be directly linked to wind farms. Further, the Victorian Department of Health (Worksafe, 2010) concluded after examining both peer reviewed and validated scientific research 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, it is also important to note the high levels of support for wind energy and other forms of renewable energy across Victoria and Australia. Victorians are already taking action in their own lives to cut their greenhouse pollution at home and at work. As of June 2010, 295,182 households and businesses in Victoria voluntarily paid a premium on their electricity bills to ensure that a percentage of their energy use was sourced from renewable energy. Nationally, customers of *GreenPower* amounted to 841,928. A significant proportion of this energy was sourced from wind farms.

In addition, many more Victorias are choosing to support wind energy directly through financial or other support for community wind projects such as Hepburn Wind located near the Victorian town of Daylesford.

In May 2009, Environment Victoria partnered with the Brotherhood of St. Lawrence to host a full day summit titled *Victoria - The Green Jobs State: Seizing the Opportunites*, bringing together representatives from the Federal Government, State Government, Local Government, unions, industry, business, the social sector, the environment sector and the community to discuss potential clean technology job growth in Victoria.

Environment Victoria developed a set of case studies of clean industry growth opportunities in Victoria that was launched at the summit. One of the case studies included in the report related to the potential for wind development in Victoria. This case study is attached for the Committee's reference. While the policy environment has developed since this document was released, many of the same opportunities, risks and findings remain relevant today. In summary, the case study found that with appropriate support the potential for wind farm growth and consequent job growth across Victoria – with specific opportunities for low skilled and semi-skilled workers in regional and rural communities – was significant.

Environment Victoria urges the Committee to acknowledge the important role that wind farms are set to play in Australia's future clean energy mix, the high level of community support for wind farm development, and the important economic function that wind and other renewable energy technologies can play in rural and regional communities across Australia.

Please contact me directly if you have any queries in relation to this submission.

Sincerely,

(...)

Mark Wakeham
Campaigns Director
Environment Victoria
PO Box 12575 A'Beckett St
VIC, 8006

Mark.wakeham@environmentvictoria.org.au
03 9341 8127

SEIZING THE OPPORTUNITIES

VICTORIA – THE GREEN JOBS STATE: SEIZING THE OPPORTUNITIES

Environment Victoria

Summary

• Total installed capacity of wind power in Victoria reached 192 MW in 2008, and could reach more than 2000 MW by 2012.

• The Australian wind industry currently employs more than 2000 people, up from about 1000 in 2005.

• Keppel Prince in Portland currently operates the only wind manufacturing in Victoria, and supplies towers to wind farms around the country. They operate five factories in Portland employing 430 people, with annual turnover of $110 million. About 60 per cent of their business is wind energy.

• The federal government's Mandatory Renewable Energy Target (MRET) is likely to deliver a huge spike in jobs and projects in Victoria, with the potential for 4000 jobs in 2010.

• The design of the MRET scheme is likely to lead to another boom-bust cycle for the wind industry. The target should be maintained until 2030 and revised upwards to ensure continued steady growth in the industry.

An introduction to the industry

By the end of 2008, 1300 MW of wind power had been installed in Australia, up from less than 100 MW in 2000.[1] The last five years have seen an average annual growth rate of 47 per cent.

Compared to the world leaders, however, wind capacity per person is still low.

Spain, for example, has 386 MW per million people, compared to just under 60 MW in Australia.[2] This is despite the fact that Australia has some of the best wind resources in the world. (See Fig 1)

Wind power capacity in Australia is expected to increase five fold over the next seven years, primarily as a result of the federal government's 20 per cent Mandatory Renewable Energy Target.[3] The expanded MRET was preceded by state targets, including the Victorian Renewable Energy Target (VRET, legislated in 2007). VRET gave Victorian wind projects a headstart over other states, with more than 40 per cent of the wind power delivered under the increased MRET target expected to be located in Victoria.[4]

The growth in wind power is expected to result in investment of more than $4 billion in Australia between 2010 and 2020.[5] (See Fig 2)

The Australian wind industry currently employs more than 2000 people[6], up from about 1000 in 2005[7]. Annual installations in 2008 doubled compared to 2005, so the development, construction and installation sectors show particularly strong growth. On current projections for growth, employment in the wind industry will peak at nearly 6000 people in 2011, and then decline sharply unless there are policy interventions to prevent the boom-bust cycle.

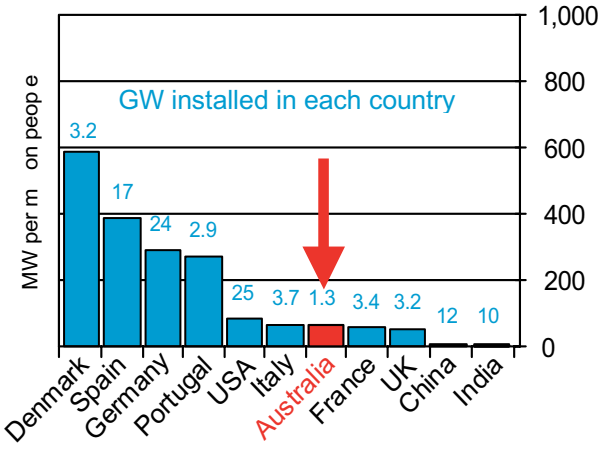

Fig 1: Capacity per million people, ten leading countries plus Australia.

The state of the industry in Victoria

The first wind farm in Victoria was commissioned in 2001 at Codrington, near Port Fairy, and was rated at 18 MW. Total capacity in Victoria reached 192 MW by the end of 2008, and could reach more than 2500 MW over the next four years according to the projections prepared for the National Electricity Markets Management Company (NEMMCO)[8]. (See Fig 3)

After a strong start, there was very little growth from 2005 until 2008 as the national MRET target (set at 9500 GWh under the Howard Government) was reached ahead of schedule and was not increased. By 2006 it had become uneco-

nomic to construct new projects and a number of wind installers and manufacturers were forced to move offshore, including the Vestas blade manufacturing facility in Portland, Victoria.

The commencement in 2007 of the Victorian Renewable Energy Target (VRET) for 3274 GWh of renewable energy by 2016 meant that projects, planning and construction were ramped up. The VRET will be incorporated into the revised national mandatory renewable energy target, although the legislation has not yet been finalised.

There are now 1650 MW of approved projects in Victoria, with a further 2513 MW proposed. (See Table 1)

The only wind manufacturing currently operating in Victoria is at Keppel Prince in Portland, which supplies wind towers to wind farms around the country. Keppel Prince operates five factories in Portland. They employ 430 people, including 200 working on wind. Their annual turnover is $110 million, with 60 per cent of that in the wind energy business. (Read more about the Keppel Prince success story further on).

Current state and federal government policies

As described, the federal government's MRET and the state government's VRET have been the major drivers of new wind projects in Victoria. A secondary driver of wind projects nationally has been consumer GreenPower purchases. Victoria currently has the highest consumer take-up of GreenPower. The GreenPower program is threatened by the introduction of the Carbon Pollution Reduction Scheme (CPRS) in its current form.

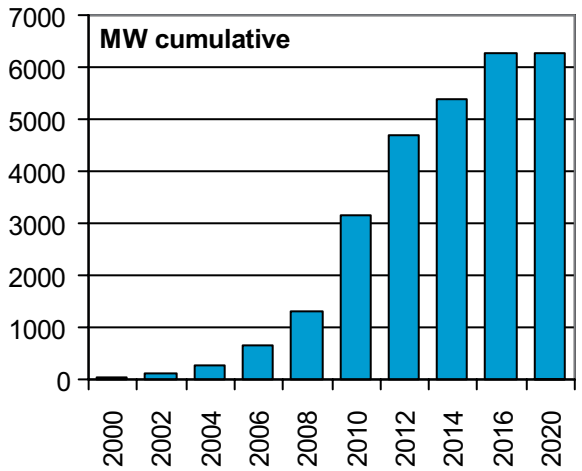

Fig 2: Wind power in Australia and projection to 2020.

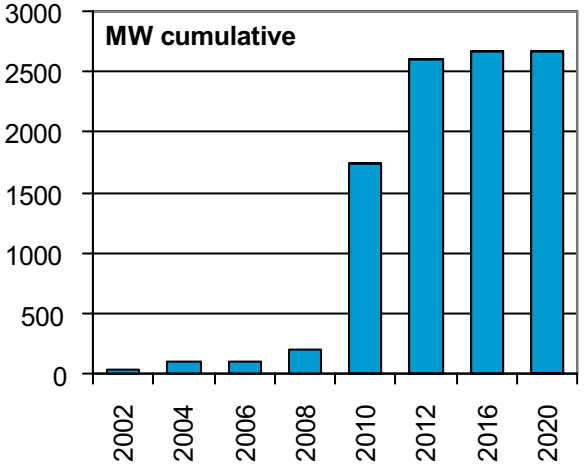

Fig 3: Wind power in Victoria and projection to 2020.

If the CPRS becomes law it will deliver an additional incentive to develop wind projects (aside from its impact on GreenPower), although the carbon price is not expected to be sufficient to get new projects off the ground independent of the MRET.

Jobs created by this industry

The types of jobs created in wind are varied, ranging from engineers, electricians, and construction workers to highly specialised consultants in noise or meteorology.

More than half of the direct employment related to wind turbines is in manufacturing, most of which currently takes place off-shore. The only large scale manufacturing currently taking place onshore is fabrication of the towers. This accounts for an estimated 19 per cent of the manufacturing value of a wind turbine.[10]

Blade manufacturing accounts for a further 23 per cent, so re-establishing this capability in Australia could secure up to 2000 jobs. Manufacturing jobs are entirely dependent on new installations, however, and it is very challenging to maintain or expand facilities in Australia if installations follow a boom and bust pattern. Development and consultancy staff, which currently make up nearly 20 per cent of jobs in the wind industry, will also not remain without prospects of new development.

Smoothing the growth profile for the wind industry is a top priority if we want to develop a stable local manufacturing industry.

Photo: Waubra wind farm, courtesy Acciona Energy

TABLE 1: Wind farms in Victoria at end of January 2009 by developer[9]

Operator/ developer	Operating	Approved	Proposed	Total
Wind Power Pty Ltd	12 MW	29 MW	930 MW	971 MW
Union Fenosa	-	198 MW	705 MW	903 MW
Acciona Energy	-	471 MW	288 MW	759 MW
Pacific Hydro	159 MW	107 MW	173 MW	438 MW
AGL/ Meridian	-	409 MW	-	409 MW
West Wind Energy		131	140 MW	271 MW
RES Southern Cross	-	-	150 MW	150 MW
Wind Farm Developments	-	112 MW	30 MW	142 MW
Mitsui & Company (Australia) Ltd	-	104 MW	-	104 MW
Roaring 40's	-	-	68 MW	68 MW
NewEn Australia	-	30 MW	30 MW	60 MW
Synergy Wind Pty Ltd	-	28 MW	-	28 MW
International Power	-	28 MW	-	28 MW
Transfield Services	21 MW	-	-	21 MW
Hepburn Renewable Energy Association	-	4 MW	-	4 MW
TOTAL	**192 MW**	**1,650 MW**	**2,513 MW**	**4,355 MW**

Growing the industry

Prospects for growth in the wind industry are very strong until 2016. Wind power in Australia is expected to increase five-fold, and in Victoria is expected to increase nearly fourteen-fold. While this is good news, it is important to avoid the boom and bust cycle of the past eight years.

The wind industry in Australia came close to stalling in 2007. The first national Renewable Energy Target, for 9500 GWh renewable energy by 2010, was met ahead of time in 2006. Although projects were in advanced stages of development, they were unable to go ahead without the income from Renewable Energy Certificates.[11] With uncertain prospects, wind developers struggled to remain in Australia, especially at a time when the industry was booming globally.

The commencement of the Victorian Energy Target in 2007, followed soon after by the NSW target, kick-started Australian wind energy on a new growth cycle. These targets are set to be rolled into the 20 per cent national renewable energy target.

The projection for growth to 2020, however, looks set to repeat the boom and bust cycle unless there is a policy change. Estimated employment in the wind industry is set to reach nearly 6000 people in 2011 as a result of the projected surge in construction.[12] On current projections, jobs fluctuate between 4000 and 5800 until 2016, and then drop back to 4000 when annual installations cease. (See Fig 4) In Victoria, employment could reach more than 4000 in 2010, and fall to 900 as installations stop.

This may overestimate the jobs that would re-

main if the industry stalls once more.

The Vestas blade factories in Tasmania and Portland were victims of the previous downturn in Australian wind energy. The factories closed in 2006 and 2007, with the loss of 300 jobs, 130 of which were in Victoria. The poor outlook for Australian wind energy in the absence of a higher national renewable energy target meant the Danish parent company could not justify the capital investment needed to expand and retool for larger turbines, so the operations became uneconomic. Keppel Prince is currently considering recommencing blade manufacture in Victoria[13], but has said it would find it difficult to justify unless policies are structured to maintain steady and predictable industry growth.

Policy measures that would help promote this growth

The legislation for the expanded renewable energy target is not yet in place, although the federal government undertook consultation on draft legislation in February 2009.

A number of key issues need to be addressed, however, to prevent a repeat of the boom and bust cycle which has characterised the development of wind energy in Australia thus far:

- The full target should be maintained until 2030;
- The target should be tapered from 2030 so that all projects have a 15 year time period to recoup investment when they enter the scheme; and

Keppel Prince Engineering – A Wind Power Success Story

Keppel Prince Engineering was set up in 1979 with five employees, initially to undertake construction work and maintenance for the Alcoa aluminium smelter. In 2000 there was an opportunity to grow their business by manufacturing wind towers and offering tower installation services to the wind industry.

Keppel Prince invested $15 million to expand and retool, and now have five factories in Portland. They employ 430 people, including 200 working on wind. Their annual turnover is $110 million, with 60 per cent of that in the wind energy business.

Employment in the wind part of the business is down from 300 in 2008, essentially because wind projects are queued up waiting for the national renewable energy target legislation to be finalised. Once those projects go ahead, the company hopes to rehire staff.

Keppel Prince expects to see continued growth over the next ten years. Turnover is expected to reach $150 million, with $100 million of that wind related.

"Keppel Prince's wind related business could expand to 450 people and $150 million annually with the forecast growth in wind power," says Steve Garner, Keppel Prince CEO.

"If there were good policies in place to sustain that growth, we would expand further to manufacture other wind components. But that's a big capital investment; we can't do it if wind is going to continue with boom and bust."

Photo courtesy Acciona Energy

QUICK FACTS ABOUT KEPPEL PRINCE

- Started in 1979 and expanded into wind power services in 2000
- The annual turnover of their wind business is $66 million ($110 million in total)
- They have five factories in Portland, Victoria
- They employ 200 people for wind power work (430 people altogether)
- This could expand to greater than 450 wind related jobs with the forecast growth in wind power
- They purchased the Vestas blade factory site when it closed in 2007
- They aim to expand into manufacturing wind components, particularly blades

Keppel Prince manufactures towers for wind turbines, and erects them at sites all over Victoria, NSW and South Australia. They also export towers. Jobs include fabrication and mechanical engineers, blasting and painting, electrical fitters, crane drivers and riggers, and drivers.


Photo courtesy Keppel Prince

Darren Chapple

"I used to manage an industrial laundry but when an opportunity came up with Keppel Prince I took it.

"They are a solid company involved in wind energy, which hopefully has an exciting future.

"Keppel Prince has provided me with quite a bit of training in my 15 months with the firm including fork lift, rigging, elevated work platform, heavy vehicle escort and working at heights training.

"It means I can go out and work on site or assist in the administration area."

– Darren Chapple, employee, Keppel Prince

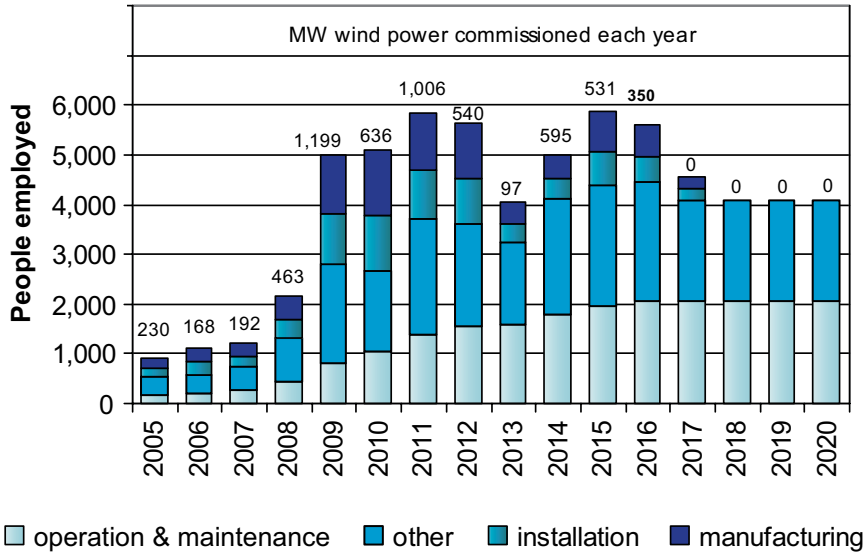

Fig 4: Wind – projected jobs in Australia and MW commissioned each year.

- The target should be revised upwards so that a minimum of 20 per cent of electricity comes from renewable energy by 2020.

The current draft MRET legislation only maintains the 45,000 GWh target until 2024, after which it tapers to 23,000 GWh by 2030. This means that there will be a rush to build projects early so that they can recoup their investment through REC sales. Projects generally require a 15 year term for debt repayment. A number of submissions on the draft legislation highlighted the need to maintain the target at 45,000 GWh until 2030 in order to spread development across the whole period.[14]

Over the longer term a higher renewable energy target will be necessary to achieve the level of emissions reduction necessary to achieve a safe climate future.

Projections for the current draft legislation show that wind capacity will grow rapidly until 2014 – 2016, and then virtually stop. At this point there is likely to be about 6000 MW of wind power in Australia.

This would provide about 5 per cent of Australia's electricity – well below the amount that could be managed within our electricity system. It would bring Australia to about the same capacity per person that Germany has now.

Increasing the time horizon and the target would avoid the scramble to get projects constructed early, and encourage a steady growth period rather than a repeat of the boom bust cycle. This

in turn would create more sustainable jobs and allow developers the necessary time to consult properly with local communities without rushing to get their projects off the ground.

Given the potential boom in the wind industry, the Victorian Government should enter into discussions with the major wind companies (both developers and manufacturers) with a view to helping them locate within Victoria.

Training required to promote this growth

The following skills are needed in the wind industry[15]:

Wind farm developers

- Project managers (eg. engineers, economists) to coordinate the process.
- Environmental engineers and other specialists to design projects and analyse the environmental impacts.
- Programmers and meteorologists for wind energy forecasts and prediction models.
- Community engagement and consultation.
- Support staff (eg. admin., sales managers, marketing, accounting).

Manufacturing

- Electrical, mechanical and materials engineers.
- Semi-skilled workers for production and assembly.
- Health and safety experts.
- Support staff (eg. admin., sales managers, marketing, accounting).

Operations and maintenance

- Electrical, environmental and civil engineers for the management of plants.
- Technical staff for the operations and management of plants.

Consultants

- Programmers and meteorologists for analysing wind regimes and output forecasts.
- Engineers specialised in aerodynamics, computational fluid dynamics.
- Environmental engineers.
- Energy policy experts.
- Experts in social surveys, training and communication.
- Financiers and economists.
- Lawyers specialised in energy and environmental matters.
- Marketing staff and event organisers.

Construction

- Electrical and civil engineers to coordinate the building work.
- Specialists in the transport of heavy goods
- Electricians.
- Technical staff for wind turbine installation, (eg. crane drivers, fitters).
- Semi-skilled and non-skilled workers for the building process.

Importance of community wind

Community wind has the potential to significantly contribute to Australia's renewable energy target of 20 per cent by 2020. The model has been proven in Denmark, which sources almost 25 per cent of its electricity from wind power, largely through community owned infrastructure with over 150,000 households owning over 5500 turbines.

Benefits of community wind include:

- **Increased community involvement in renewable energy development**
- **Financial benefits are available to local community investors; not just the landowner**
- **Provides a long-term perspective on investment that will be required to develop a sustainable energy supply for future generations**
- **Distributed generation increases grid stability and reduces transmission losses**
- **Greater acceptance by communities of wind or other renewable power generation**
- **Opportunities for rural diversification and enterprise development.**

Construction and installation uses similar skills to mining, so the current boom in wind farm construction will absorb some of the downturn in the mining sector.

Current shortages are primarily in the project management and engineering roles needed for wind farm development, and the highly specialized consultancy work needed to get projects from inception to completion.

Success Stories

Hepburn Wind – pioneering community owned renewable energy in Australia

Hepburn Community Wind Park Co-operative (Hepburn Wind) will be one of Australia's first community owned wind farm projects. Based on a highly successful European model, Hepburn Wind's significant local ownership ensures that it will play a leading role in the environmental, economic and social sustainability of the region.

The project will consist of two wind turbines each rated at 2 MW, located on Leonards Hill approximately 10km south of Daylesford, Victoria. The energy production from the wind park will average over 12,200 MWh of renewable electricity each year, which is enough energy to power over 2300 homes, offsetting the entire residential electricity demand of both Hepburn Springs and Daylesford. This electricity will be fed directly into the local distribution network.

The project has progressed through several critical development stages, from preliminary site analysis through to permit approvals and fund-raising. Over two-thirds of the $12 million needed for the project to proceed has been secured.

Further information

Certified wind farms - a Clean Energy Council and industry initiative to promote best practice in wind farm development: www.auswind.org/accreditation/index.php

Clean Energy Council: www.cleanenergycouncil.org.au

European Wind Energy Association: www.ewea.org

Global Wind Energy Council: www.gwec.net

Victorian wind farm status: www.dpi.vic.gov.au

Wind in Australia – information on existing and proposed wind farms (private site): www.geocities.com/daveclarkecb/Australia/WindPower.html

Endnotes

1 Global Wind Energy Council. 2009. Global wind 2008 report.

2 Op cit 1

3 Projections for growth to 2020 for states other than WA are from NIEIR (2008) Projections of Non-scheduled and exempted generation in the NEM, A report for the National ElectricityMarket Management Company, Prepared by the National Institute of Economic and Industry Research in association with Carbon Market Economics. The projection for WA is from SEDO. WA 2020. Renewable energy target. Consultation on scheme design. Presentation October 2007.

4 Growth between 2006 and 2020 is assumed to be a result of the new MRET. Projections from NIEIR (2008) op cit 3 and SEDO (2007).

5 Based on $1.2 million on-shore investment per MW (compared to $1.7 total), from the BCSE Clean Energy Report 2007.

6 The most recent data for employment is the Business Council for Sustainable Energy (now the Clean Energy Council) Clean Energy Report 2007, which listed 988 employed in wind energy in 2005. There is no more recent data, so employment has been estimated using projected installations and employment factors from the European Wind Energy Association (2009) Wind at work. Wind energy and job creation in the EU, Table 7. Manufacturing data has been adjusted, assuming that only 19 per cent of manufacturing occurs onshore (effectively tower manufacture only).

7 BCSE 2008. Clean Energy Report 2007.

8 NIEIR (2008), op cit 3.

9 DPI Victoria. Wind Projects in Victoria. Downloaded March 2009 www.dpi.vic.gov.au

10 From Opportunities for Canadian Stakeholders in the North American Large Wind Turbine Supply Chain, Figure 23. www.ic.gc.ca/eic/site/rei-ier.nsf/eng/nz00166.html#figure2.3

11 Under the Mandatory Renewable Energy Target electricity retailers are required to purchase Renewable Energy Certicates (RECs) equivalent ot 9500 GWh by 2010 (according to their share of electricity sales). Renewable energy generators such as wind create RECs and sell them. This mechanism drives the development of renewable energy by ensuring an income stream to bridge the gap between coal fired electricity costs and renewable electricity costs, with the

price of RECs is set by the market. Once sufficient renewable generation to meet the target is in place, any further renewable projects built would create an oversupply of RECs, causing the price to collapse. Effectively, developers could not go ahead.

12 Data on Australian employment is not available, so projected numbers are estimated using projected construction rates and employment factors from the European wind industry (see note 6). Actual manufacturing numbers are used for 2007 and 2008.

13 See boxed text, Keppel Prince, a wind success story.

14 For example, the Clean Energy Council, the Centre for Environmental Markets (UNSW), Pacific Hydro Pty, Wind Prospect Pty. Available from www.climatechange.gov.au/renewabletarget/consultation/sub_ret/submissions.html

15 European Wind Energy Association (2009) Wind at work. Wind energy and job creation in the EU. Table 09, page 27-28.