SUBMISSION NO. 13

OFFICE OF THE RENEWABLE ENERGY REGULATOR

Secretary:

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HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON
ENVIRONMENT AND HERITAGE

Committee Secretary
Standing Committee on Environment and Heritage
House of Representatives
Parliament House
CANBERRA ACT 2600

Emailed 30/8/02

Dear Sir/Madam

Thank you for your letter of 4 July 2002 inviting the Office of the Renewable Energy Regulator to make a submission to the House of Representatives Standing Committee on Environment and Heritage inquiry on employment in the environment sector.

The Office of the Renewable Energy Regulator considers this to be a growing and important sector and attaches the following submission to the Committee.

As the organisation with primary responsibility for administering the *Renewable Energy (Electricity) Act 2000*, which supports the Government's mandatory renewable energy target, the submission focuses on the contribution that electricity generation from renewable energy sources can make to employment.

Further information on the mandatory renewable energy target can be obtained by contacting the Office of the Renewable Energy Regulator on (02) 6274 2192 or visiting our website at www.orer.gov.au.

Yours sincerely

David Rossiter
Renewable Energy Regulator
30 August 2002

Submission to the House of Representatives Standing Committee on Environment and Heritage

Inquiry on employment in the environment sector

Background

Electricity generation from renewable energy sources constitutes a growing area of employment in the environment sector. As low or nil emitters of greenhouse gases, the Government has chosen to support an increase in the amount of electricity generated from these fuel sources in order for Australia to make a contribution to the global push to combat the effects of climate change.

This includes a range of assistance and support packages on both the supply and demand side of the economy. The headline measure is the mandatory renewable energy target, introduced in 2001 through the *Renewable Energy (Electricity) Act 2000* and associated regulations.

The legislation requires that wholesale purchasers of electricity increase the amount of electricity purchased from defined renewable energy sources and demonstrate this each year to the Office of the Renewable Energy Regulator. Targets have been implemented each year over the period 2001 – 2020. The target for 2001 was 300,000 megawatt hours (MWh) with this rising to 9,500,000 MWh by 2010. The target then remains stable at this level until 2020. To put this in context, 9,500,000 MWh is equivalent to the amount of electricity required to meet the domestic electricity needs of approximately 4 million people.

This challenging target is being implemented through an innovative certificates trading mechanism. Each MWh of qualifying electricity is eligible to create one renewable energy certificate (REC). These RECs can then be sold or traded between the generators and wholesale purchasers to meet individual liabilities. By allowing open trading across the country, this overcomes the issues of differential resource allocation that occur in Australia.

Significant investment in renewable energy generation capacity will be required to meet this target, with industry estimates ranging from an expected 2,000 to 4,000 MW. With this investment come employment opportunities. Direct investment could be as much as $6 billion over the life of the scheme.

However, the harnessing of renewable energy for electricity generation is not new to Australia. In 1997, approximately 10.5% of Australia's total electricity demand was supplied by renewable energy sources. The majority of this was sourced from hydro-electric generation capacity, harnessing significant resources available in such areas as Tasmania and the Snowy Mountains region.

As such, the use of environmental fuel sources has a proud history of providing employment opportunities to Australian workers.

Future opportunities

Since the introduction of the *Renewable Energy (Electricity) Act 2000* the renewable energy sector has seen substantial activity, directly resulting in the creation of job opportunities.

Employment opportunities in the renewable energy sector can be broadly categorised as:

- Technical: such as project planning and design, manufacturing, construction, operation and maintenance of plant;
- Environmental expertise: site management, emissions and waste management, consultation, environmental impact assessment, resource assessment and management;
- Other related sectors: economic/market forecasting, energy trading and brokering and tourism.

Within the wind power industry alone, jobs may take the form of equipment design, wind data analysts, electrical and system experts, specialist manufacturers for blades, towers, gear boxes, generators, wiring and control and monitoring systems.

The following is a brief overview of the expected or actual employment benefits from renewable energy generation facilities (as reported in various press articles and industry presentations):

Proposed project	**Expected or actual employment benefits**
Ethanol plant development at Tamworth	34 permanent jobs 450 construction jobs 180 industry related jobs in the transport, chemical and trade sectors
Solar Tower project	50 permanent jobs 2700 construction jobs (peak) 1000 construction jobs (average) Local employment content in civil works, hydraulic works, support structure and electrical works
Existing BP Solar Australia manufacturing facility	300 staff – largest factory in the southern hemisphere

Additionally, given the location of renewable energy resources, many of these job opportunities arise in rural and regional areas.

Based on various industry projections, the following are possible job opportunities that may arise as a result of the mandatory renewable energy target and an increase in renewable energy generation capacity.

Eligible Energy Source	Construction employment (approx)			Permanent employment (approx)		
	Direct	Indirect	Total	Direct	Indirect	Total
New hydro	700	2100	2800	9	26	35
Wind	2100	8400	10500	26	79	105
Solar (including PV, Solar Tower etc)	900	2700	3600	45	135	180
Biomass (bagasse, cotton, macadamia, wood waste etc)	3840	11520	15360	480	1440	1920
Landfill gas	3600	10800	14400	180	540	720
Existing resources (upgrading, refurbishment)	350	1050	1400	-	-	-
Totals	**11490**	**34470**	**45960**	**740**	**2220**	**2960**

Note: Construction jobs are of variable duration. For example, the construction of a power station could take between 3 months to 3 years to complete.

Comparisons between employment opportunities in the conventional power supply sector (ie coal, gas and oil) and the renewable supply sector are difficult. These result from the wide variety in technologies and fuel sources that contribute to renewable energy supply. While conventional electricity generation consists predominantly of combustion-based generation techniques, renewable energy sources can vary from solar, wind and hydro to biomass based sectors.

Energy conversion can occur in a range of forms, from using the inherent kinetic energy of the source, to combustion and gasification, to conversion to power through accessing heat or chemical energy. Each of the broad range of technological applications has different resourcing implications.

For example, a wind farm, once constructed, requires limited ongoing maintenance. Much of the operations of the wind farm can be conducted remotely using computers. Similarly for photovoltaic and hydro power stations, only limited job opportunities may arise from the use of these sources. However, the use of biomass sources, where significant handling, processing and sorting activities can be required, plus the higher maintenance associated with combustion-type technologies, can make these sectors comparable with, or greater employers than (per MW of capacity), the conventional fossil fuel sector.

Australia also has significant established expertise in certain renewable energy technologies, such as photovoltaic and solar generation and solar water heating. Supporting the expansion of the renewable energy industry offers direct benefits to Australia in this regard.

The mandatory renewable energy target is also expected to support the development of export-oriented industries in Australia. The growth in renewable energy development potential in Australia appears to be a critical factor in attracting investment in new manufacturing facilities in Australia.

For example:

Proposed manufacturing facility	Expected employment benefits
NEG Micon plans to locate a wind turbine manufacturing and assembly plant in Victoria, with a potential to use Australia as an export base for South East Asia.	200 jobs Possible expansion to include manufacturing blades, towers, assembly of nacelles and hubs could mean a further 180 permanent jobs NEG Micon have estimated a multiplier of 4 times for indirect jobs Service teams of 2 jobs per 30 turbines on an ongoing basis

Vestas plans to locate a component assembly plant in Tasmania	50 new jobs in Vestas plant Up to 100 further jobs in local fibreglass businesses constructing nose cones and composite turbine covers If demand continues to grow, Vestas could consider locating a blade manufacturing facility in Tasmania, with another 250 jobs possible

The Tasmanian Vestas facility will be the first Vestas plant constructed in the southern hemisphere, with other plants located in Denmark, India, Germany, Spain and Italy.

Increased investment in renewable energy also results in supplementary benefits to other market sectors. For example, wind farms have the potential to bring financial benefits to local farmers. Annual land rents of up to $10,000 per turbine per annum have been reported. This can represent a substantial cash benefit to a farmer. Additionally, as a wind turbine takes up a relatively small amount of land space, farmers are able to continue farming their land, making the rent an additional income stream and not a replacement value for lost land.

Other biomass-based renewable energy industries also offer substantial financial and environmental benefits to the agricultural sector. For example, the use of genuine wood waste can be eligible under the measure, where it meets specified eligibility requirements. This has provided a market for a product that was previously a waste and offset other costs that the land holder would have incurred costs to collect and remove the waste. This wood waste is often stockpiled and burnt. However, if collected and used for electricity generation, this fuel source can displace the use of fossil fuels to generate electricity. This is also true in other agricultural areas where the better use of a resource, rather than considering it a 'waste', has been encouraged by the legislation. Wastes from crops such as sugar cane, cotton, rice and macadamia nuts have all been considered for electricity generation. Additionally, wastes from other agricultural activities such as chicken litter (a mixture of sawdust and manure) and pig and cow manure can also be used for electricity generation. Developing facilities to harness these wastes support the ongoing viability of agricultural operations and can result in increased job opportunities in this important sector.

In addition, certain types of renewable energy technologies appear to have a strong tourist attraction potential that can often result in additional employment opportunities. For example, Snowy Hydro and Hydro Tasmania conduct guided tours through their generation facilities. Major wind farms across Australia, such as those in Albany - WA, Codrington - Vic, Windy Hill – Qld and Blayney – NSW, attract significant numbers of tourists.

Summary

While there appears to be little solid data on the contribution that the renewable energy sectors makes to nation-wide employment, it is considered to be a growth area. Existing Australian expertise in specialist technologies, in addition to the skills-

transfer that will occur with the establishment of international manufacturing facilities in Australia, offer the potential for Australia to capitalise on the global growth in renewable energy. In both the private and the public sector, across a diverse range of disciplines, the renewable energy industry will create a need for specially trained renewable energy professionals.