Contents

SUBMISSION

Findings and Recommendations

1. Pacific Power recognises that it will be necessary to control greenhouse gas emissions from the electricity sector for Australia to meet its international obligations. In doing so, it is imperative that this be done in a way that maximises economic efficiency and maintains or enhances the competitiveness of Australian industry.

2. Pacific Power strongly supports the early introduction o emissions trading system as the most economically effic environmentally effective manner to abate Australia's e greenhouse gases (refer to Attachment 1 : A Compariso Options).

3. Pacific Power believes it is essential to place a concrete table for discussion. The major questions to be resolved details of how the rights and responsibilities are distrib the parties. Included in our submission is an outline of trading regime that addresses the unique Australian ci a coal dominated power sector, a high proportion of ene exports and a competitive advantage in delivering fores greenhouse sinks (refer to Attachment 2: A Preliminar an Emissions Trading System).

4. The proposal recommends that trading begins with the sector on 1st July, 1999 and progressively expands cove key sectors, the last of which would join by 1st January electricity sector would be an appropriate start point fo trading because of:

   a) a limited number of participants and a high e rate;

   b) long asset life and consequent need for early s existing electricity generators and builders of ne

   c) the similarity of emission trading arrangeme for trading electricity in the national electricity m

GREENHOUSE GAS EMISSIONS IN THE ELECTRICITY SECTOR

The Australian electricity industry is a major contributor to Australia's greenhouse gas emission. The principal greenhouse gas produced by electricity generation is carbon dioxide which results from the combustion of fossil fuels, such as coal and natural gas.

In 1996, the carbon dioxide emissions from electricity generation already exceeded the 1990 emissions by 12% and the forecast, on a business as usual basis for future electricity production and hence carbon dioxide emissions, is for significant growth up to 2010. Details of electricity sector emissions are shown in Attachment 3.

The generation of electricity in Australia is highly efficient and

5. Overall, early introduction offers three potential benefits for Australia:

a) the longest possible lead time in planning a smooth transition to lower greenhouse gas intensity;

b) the opportunity to help define the international trading regime currently under discussion with the UN, the World Bank, the OECD and other international bodies in a fashion which recognises Australia's unique circumstances;

c) The opportunity to demonstrate Australian market capabilities and give competitive advantage to Australian companies as international emissions trading evolves.

6. The precise ways in which the electricity sector could abate greenhouse gas emissions are diverse (refer to Attachment 4 : Summary of the Options for Reducing Electricity Sector Emissions). One important benefit of emissions trading is that, by placing a market value on emissions of gases such as carbon dioxide, it would allow direct comparison of alternative technological approaches and, in turn, comparison of these options with other mitigation strategies such as sequestration.

ATTACHMENT 1: A COMPARISON OF POLICY OPTIONS

Attachment 1: A Comparison of Policy Options

In addition to emissions trading, there are at least five other policy options available to the Commonwealth in responding to greenhouse gas issues (see table below). As the Prime Minister's greenhouse response package recognised, many of these courses of action will need to be pursued simultaneously for Australia to achieve compliance with its international obligations.

Emissions trading stands out as a policy option with the low societal cost and high effectiveness, where it can be appropriately implemented (eg, where there are relatively few parties who are major emitters). International experience has demonstrated the effectiveness of emissions trading, particularly in the case of sulfur dioxide trading in the USA. Emissions trading provides a market driven incentive to cut emissions where most cost effective and allows direct financial comparison of diverse alternatives within and across sectors to mitigate greenhouse gases. A properly constructed emissions trading system therefore allows for the lowest overall cost and smoothest possible economic transition for those sectors where it is applicable.

The table below reviews the benefits and applicability of the other options, the limitations, and a comparison with emissions trading, where emissions trading is applicable (ie, where emissions responsibilities can be assigned to relatively few parties, such as the electricity generation sector, emissions intensive industry, and wholesalers of gas and refined petroleum products).

Policy Option	Benefits and Applicability	Challenges and Limitations	C V
Education & Awareness	Targets the extensive cost-effective opportunities to improve energy efficiency that have been identified. An important component of Australia's response strategy, particularly for sectors with small individual emissions such as households and small business. Difficult to achieve significant benefits without accompanying commercial incentive such as a direct subsidy program or emissions trading. Very low implementation cost.	There is evidence that many consumers do not utilise available information in their purchasing decisions for a variety of reasons. For sectors with diverse emissions sources, or where there is commercial sensitivity, education and awareness campaigns would tend to be generic rather than technology specific.	I t r t H e t l c
Energy Efficiency Standards	Targets the extensive cost-effective opportunities to improve energy efficiency that have been identified. Will incur relatively low societal costs if properly structured. A useful component of Australia's greenhouse response strategy, particularly where low consumer response to education and awareness campaigns reveals significant remaining efficiency opportunities. Well-suited to dispersed emissions-reduction opportunities, such as improvements in the efficiency of appliances, consumer products, and	Not suited to large industrial applications, as the emissions sources and reduction opportunities are highly site-specific, and externally imposed standards are unlikely to be either effective or economically efficient. Further, attempting to develop standards for large industrial applications will raise commercial confidentiality problems. For example, because efficiency activities will present opportunities for gaining commercial advantage, government effort to set generic standards could result in transferring expertise from higher-performance companies to their competitors. This may produce short term efficiency gains, but would reduce incentives for	A f c e r U w w

	building shell improvements.	innovation.	
Emissions Offsets/ Sequestration	Sinks, such as forestry-based sequestration, are likely to be among the lowest cost methods of mitigating the impact of emissions Sequestration projects offer considerable side benefits for the environment and in providing a stable forestry resource. With vast land holdings, Australia has a comparative advantage in sequestration.	Although formally recognised in the Kyoto Protocol, sequestration rules have yet to be developed. Some parties internationally are advocating rules for monitoring, verification, and certification that will be complex, cumbersome, and accordingly, highly limiting. The Clean Development Mechanism of the Kyoto Protocol recognises emissions control activities in developing nations from 2000, whereas Annex I countries emissions controls count only from 2008. This may give Australian-based sequestration projects a temporary disadvantage, reducing export competitiveness until commercial incentives are domestically available.	E s A a T tr ir d th
Support for R&D	R&D efforts in a variety of low emissions technologies -- from renewable energy sources to higher efficiency equipment and appliances to improved industrial processes -- will provide the future options for Australia to make the inevitable long-term transition to environmentally sustainable growth.	Given the long asset life in the energy industry, new technology is limited in its ability to achieve short term change. Most alternative technologies with excellent potential are many years away from being cost competitive with existing generation capacity.	S A R lo P E v o
Carbon Taxes	Gives a clear commercial incentive for controlling emissions. Relatively simple and inexpensive to develop and administer a system that would apply across all emitting sectors.	Unlikely to receive industry support as carbon taxes may degrade asset values and shift significant revenues from the industry to government. Will diminish export competitiveness unless taxes are rebated to energy intensive exporters. Experience indicates that taxes are likely to create only limited emissions reductions for the individual consumer where price inelasticity has been demonstrated.	R e c g b F u A ir A c e

ATTACHMENT 2: A PRELIMINARY DESCRIPTION OF AN EMISSIONS TRADING SYSTEM

Attachment 2:
A Preliminary Description of an Australian Emissions Trading System

Note: This system description is intended not as a final proposal of an Australian emissions trading system for greenhouse gases, but as a starting point for implementation-oriented discussion.

	Suggested Approach	Rationale
es	a. **Environmentally Effective**: To provide a system for meeting Australia's international climate change commitments b. **Economically Efficient**: To establish appropriate economic signals to commercial entities allowing them to determine the most cost-effective manner of meeting Australia's international commitments, with a timely, and gradual phase-in of market signals. c. **Equitable**: To avoid undue harm to existing asset owners while not creating undue barriers to market entry.	**There is a substantial and growing world view, based on s precedence, that emissions trading can deliver environme objectives with the greatest economic efficiency of any pol instrument.** **Early and active implementation of a domestic trading sy only deliver on these objectives, it will demonstrate Austr continuing innovation and leadership in providing comm environmental protection.**

ɔn **dity**	An emissions permit is the right to emit one tonne of $CO_{2\text{-}e}$ in a specified year or any year thereafter. At the end of each year, each emitter has a 45 day period to submit its emissions report and permits equivalent to its total annual emissions. Each permit would carry both a vintage and a unique serial number to facilitate the development of verification systems	While CO_2 is the primary greenhouse gas, five other principa covered under the UN Framework Convention on Climate Ch (Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarb Sulphur hexafluoride). Under the FCCC, these gases are denominated in terms of the equivalence ($CO_{2\text{-}e}$).
ty	Open to all parties, subject to securities law.	To enable an efficient market, permits should be fully market commodities which may be bought, sold, traded or banked fo by any individual or corporation including emitters, brokers, bodies, and members of the public.
ration **er**	Carbon sinks such as sequestration projects will be recognised from the outset or as soon as practicable thereafter, creating new permits to the extent of sequestration impacts.	Sinks may be one of the more cost effective mitigation strateg Australia and globally. Early inclusion could be helpful in bo the capabilities of Australian companies and in contributing t productive international rules governing sequestration. Acco mechanics of certification for sinks need to be established in the earliest possible establishment of a trading system.
ional **nce**	Unless otherwise stated specifically, all accounting, verification, monitoring, and other relevant elements will be compliant with the evolving FCCC rules.	Compliance will ensure that Australian credits are appropriat so that any surplus credits can easily be sold overseas to othe countries or their authorised trading entities. A central eleme any Australian system with the evolving UNFCCC framewor initiate trading in or make provision for later inclusion of trad the six principle gases identified in the Kyoto Protocol. Notably, Australia's leadership and early activity in domestic trading is likely to help frame the ultimate international rules.

le	Start of trading in 1 July 1999 for the electricity industry and progressive implementation for other industries as outlined below.	It will take some time for the market to absorb the signals giv emissions trading regime, to develop expertise in trading and the most appropriate commercial means by which to control e Further, to both build the capabilities of Australian companie and to influence the international rules before international tr domestic emissions trading should begin as soon as practicab UNCTAD is currently projecting the market launch of interna emissions trading in 2000.
ation	Mandatory 1 July 1999 start for electricity generators with plant site emissions exceeding 100,000 tons of $CO_{2\text{-}e}$/year. Optional participation for other parties.	The electricity generation sector presents an excellent opportu and significant introduction of emissions trading. It has relat very large sources accounting for about 30% of Australian C emissions. This makes monitoring and verification relatively Further, the sector already has advanced trading systems and resulting from electricity market reforms of the past several y To avoid biasing consumers' equipment purchasing decisions electricity, it is essential that the trading system is rapidly exp include natural gas and other fuels that are key competitors fo electrical applications. Allowing optional participation will result in lower cost emis solutions being developed in the most timely fashion. Possib include chemical plants, sequestration projects, aluminium sm control perfluorocarbon emissions, and the agricultural secto

e **ation**	Mandatory for all stationary emission sources (including pipelines, landfills, and coal mines with fugitive emissions) with emissions exceeding 100,000 tons of $CO_{2\text{-}e}$/year as soon as practicable, but not later than 1 January 2001. Mandatory for petroleum products refiners or importers of refined product for the proportion of product not covered under the requirements for large stationary emissions sources as soon as practicable, but not later than 1 January 2001. This would apply to companies with sales exceeding an equivalent of 100,000 tonnes of $CO_{2\text{-}e}$/year. Mandatory for local distribution companies of gas with sales exceeding an equivalent of 100,000 tonnes of $CO_{2\text{-}e}$/year as soon as practicable, but no later than 1 January 2001. Optional participation for other parties.	Ideally, emissions responsibility should be assigned as close the source of emissions. To facilitate a practical trading syste imposing undue administrative costs of compliance (eg, costs monitoring and verification), it will be necessary to allocate r for highly distributed emissions such as those associated with natural gas use, transportation and various chemical processe refiners, processors or distributors.
umber **its**	The total permits issued for the initial participants, the electricity sector, should be 168 MT of CO2[1], equivalent to the projected "business as usual" emissions in 1999. Thereafter, total permits issued for each year would follow the curve illustrated in the attached graph and described in numerical form in the adjacent column. This curve would see the sector cut emissions by 2010, the mid-point of the commitment period, by 16% from business as usual projections. For other sectors a similar pattern should be used based on controlling sectoral emissions by 16% from business as usual predictions.	The total permits available is intended to initially produce a r constraint relative to the growth anticipated under business as the first half year of trading in 1999. Thereafter, there would tightening to allow a smooth transition to the emissions level meet Australia's commitment. Australia's FCCC commitment of limiting $CO_{2\text{-}e}$ emissions t 1990 levels by 2008-2012 will require a 16% reduction in the "business as usual" emissions, currently projected at 128% of emissions by 2010. The percentage reduction relative to business as usual emissio year of the domestic trading system is as follows: 1999 2nd half: 0% 2000 1% 2001 2% 2002 3% 2003 4% 2004 5% 2005 6% 2006 8% 2007 10% 2008 12% 2009 14% 2010 16% 2011 18% 2012 20%

1 [1]*Note: All numbers in this section are adapted from Australia's "Second National Report under the United Nations Framework Convention on Climate Change" and Government press releases in 1997. They may not agree with industry projections or other sources and are provided as a starting point for discussion only.*

		The business as usual projection for 2010 is approximately 19 tonnes $CO_{2\text{-}e}$/year for the electricity sector. Total permits allo in consideration of the electricity sector, then, is: (100% - 1 MT-$CO_{2\text{-}e}$ = 162 MT -$CO_{2\text{-}e}$
on of	For the electricity sector: In the first half-year, 100% of the total number of permits identified in Item 9 is allocated to existing plant proportionally based on their average annualised emissions from 1990 to 1997. In following years, 90% of the total number of permits identified in Item 9 less any permits distributed under Item 12 is allocated to existing plant proportionally based on their previous year emissions. New plant (in operation less than 1 year prior to 1 January of each year) must acquire permits totalling 10% of their emissions for that year or portion thereof either through the auction (see below) or through the broader market, but are exempt from further permit requirements for the year. In the following year, such plant is allocated permits as an existing plant. A similar approach would be used for other sectors.	For effectiveness, efficiency and equity, rights & responsibili allocated in a manner that: i) does not punish owners of existing infrastructure, but gives market signals, eg, useful for plant refurbishment and retirem ii) does not unduly hinder new market entrants; iii) provides a clear market signal to all players in the market need for control of emissions. The requirement is set to be far easier in the first half year, to participants to gain experience. Stringency is gradually escal discussed in Item 9.
of	10% of the total permits for each year would be allocated by auction in the month prior to the start of the relevant year (eg, in June 1999; in December 1999 and subsequent years).	An auction would create a highly visible, clear market signal, liquidity. Proceeds from the auction would be used to fund th development of renewable energy projects.
g **iveness**	Emissions intensive exporting companies may apply for emissions permits equivalent to the emissions embodied in their exports to the extent not allocated to them free of charge under Item 10, if the emissions exceed 100,000 tonnes $CO_{2\text{-}e}$/year and are included in the mandatory trading system. This provision would begin in 2000 and end in 2008, at the onset of the first commitment period under the Kyoto Protocol.	Australia's minerals and commodity exporters are in many ca emissions intensive. It is essential that the early introduction emissions trading system doesn't damage their international competitiveness. As their international competitors may face compliance regimes, this provision is necessary to ensure a le field. Sale of their credits will allow Australia's exporters to associated with their emissions.
alties	Emissions in excess of permitted levels will be charged \$60/tonne of $CO_{2\text{-}e}$.	Emissions trading will provide significant incentive only if th penalty for noncompliance. The penalty should be set at a ra high that there is clear incentive to participate. A penalty of \$ $CO_{2\text{-}e}$ would generate the proceeds needed to build new (zero wind generation equivalent to the noncompliant emissions. N penalty is set to a level that far exceeds the likely market pric permits.

ing **nce**	All parties assigned emission responsibilities would be required to report annually on both their total emissions and their net holdings of emission allowances. A Commonwealth authority would be vested with primary responsibility for monitoring, certification, reporting, enforcement and regulatory oversight. Under the oversight of the Commonwealth authority, third party auditing of emissions and the commercial operation of a trading registry should be allowed for.	In the case of coal-fired power plant monitoring specifically, that the Commonwealth does not adopt a policy of mandatory emissions monitoring of gases but rather places emphasis on plant input. Most coal plants in Australia use coal from one o of known chemical composition with predictable combustion Systems to determine weight based input to plants are well es reliable and easily verifiable. Gas monitoring, on the other ha add considerable start-up costs to an emissions trading systen significantly less reliable and accurate than monitoring solid inputs.

THE ELECTRONIC VERSION OF THIS SUBMISSION DOES NOT INCLUDE AT GRAPH TITLED 'ELECTRICITY SECTOR EMISSIONS' SUPPLIED WITH THE ORIGINAL SUBMISSION

ATTACHMENT 3: GREENHOUSE GAS EMISSIONS IN THE ELECTRICITY SECTOR

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1. Emissions in the Electricity Industry

In Australia, electricity is principally produced from coal, natural gas and hydro power plants. Coal is the major fuel and is used to produce around 90% of electricity at the present time. Natural gas is primarily used in Western Australia, Northern Territory and South Australia but has the potential to be used in the other states. Hydro electricity resources are not extensive in Australia with only small potential for further development because potential development sites are located in environmentally sensitive areas.

Preliminary analysis of carbon dioxide emissions based on reported fuel consumption for 1996 indicated that emissions already exceed the 1990 emissions by 12%. Consequently the implementation of emission abatement measures will need to apply to existing plant as well as future generation plant.

1.1 Existing Plant

Emissions reductions can be achieved from existing plant if they are utilised more effectively.

There are significant differences between the greenhouse gas emissions of existing generator plants. For example, existing black coal fired plants produce around 900 g/kWh of carbon dioxide; brown coal plants around 1200 g/kWh and natural gas plants around 550 g/kWh.

Carbon dioxide emissions could be significantly reduced by adjusting the electricity production arrangements to use more electricity from black coal and gas fired plants and less from brown coal based plants. An emission trading scheme would permit this arrangement to be utilised on a rational economic basis.

An emissions trading scheme would enable plants with lower emissions rate to be more competitive. This approach would not involve additional capital cost and would reduce emissions by plant switching, effectively fuel switching. The use of existing plants,

rescheduled through emissions trading incentives, is a low cost option to reduce emissions. It will be much less expensive than installing new plant.

1.2 New Plant

The forecasts for future electricity demand indicate that new generating plant will be required in eastern Australia (Queensland, NSW, Victoria and South Australia) by around 2001. Given that carbon dioxide emissions from existing generation plant already exceed the 1990 emission levels by more than 8%, and would increase (on a business as usual case) to 2001 in line with the increase in electricity demand, it is evident that any new plant constructed should address carbon dioxide emission reduction. Should new plant not address carbon dioxide emission reduction as soon as possible, it would be counter productive as it would further increase the magnitude of emissions that would need to be reduced.

Electricity infrastructure, especially coal fired plant has long lead times, around four to six years, and requires large capital investment. New plant requirements for Queensland are being considered. The absence of any environmental requirements to reduce or trade emissions at an early date will cause decisions to be made that will be inconsistent with any aim to reduce greenhouse gas emissions at a later time.

Emission trading would provide the appropriate economic signals to enable the developers of new generation plant to select the most appropriate generation technology (and hence carbon dioxide emissions) to utilise.

In the absence of an emission trading scheme the selection of the type of plant to be constructed would be largely based on the cost of electricity production.

The plant which best suits the electricity market is that with the lowest short run margin cost and the lowest overall cost of electricity. The plant which best meets this criteria are coal fired units. However, gas fired combined cycle plants and renewable energy based generation have low carbon dioxide emission. In the case of gas fired combined cycle plant the overall cost of electricity is little different from coal fired plant, however the short run marginal cost is higher making it less likely to be scheduled if bid into a pool.

It is very important that any environmental requirements are incorporated in investment decisions as soon as possible, even if this only initially apply to the electricity industry as it has such

long lead times and high capital costs which dictate a long operational life of plant once installed.

2. Potential Solutions to Greenhouse Gas Emissions from Electricity Production

The electricity generation industry is typified by high cost capital plant which has a long operational life. While new low emission plant could be installed to meet future electricity demands, the cost of premature retirement of existing generation plant would be significant (in the tens of billions of dollars).

One of the advantages of emission trading will be to facilitate a smooth transition from existing generation technology to new low emission technologies. Emission trading will enable action to be undertaken both within the electricity industry, and outside the electricity industry to achieve a least cost reduction of emissions to the target levels.

This approach will enable existing generation plant to continue to be used while emerging technologies mature to commercially viable options.

Options for emission reductions are outlined in the following sections.

2.1 Electricity Generation Options

Although a significant challenge exists to reduce electricity based emissions there are many potential solutions within the electricity. These solutions are listed below and a note on each is contained in Attachment 4 for the committee's information.

- Rescheduling plant dispatch
- Energy efficiency in electricity production
- Gas fired combined cycle plants
- Renewable energy (hydro, wind, solar photovoltaic, biomass)
- Fuel switching

2.2 Options Outside the Electricity Generation Industry

There are a range of potential options outside the electricity generation industry which would be made available to generators by the emission trading process. These options include:

- Electricity end use efficiency
- Sequestration
- End use fuel switching

ATTACHMENT 4: SUMMARY OF THE OPTIONS FOR REDUCING ELECTRICITY SECTOR EMISSIONS

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An emissions trading regime to reduce emissions of greenhouse gas will allow market forces to provide the least cost solution to meeting Australia's international obligations. Consequently, it is difficult to predict the precise outcome with regard to a reduction methodologies that may be utilised. Nevertheless, it may be useful to the Committee if it is provided with some potential solutions to emissions within the electricity industry.

Existing Plant

- Improve the efficiency of existing plant. In Australia most existing plant used in utility generation is close to its maximum efficiency. There may be some small gains available in some plant by modifying some equipment (eg., steam turbines blades update may increase efficiency). However, in general this would probably be limited to 1 or 2% increase in efficiency.

- Generate from power stations with less emissions. This amounts to fuel swapping so that renewables are used instead of gas, gas is used in preference to black coal and black coal in preference to brown coal. This may not necessarily favour black coal generators as a combination of renewables and brown coal may give a minimum cost reduction.

- Energy efficiency is viable and will reduce emissions by reducing the requirement for electricity.

- Fuel substitution in the same plant is possible and a substitution of natural gas for black coal will give an immediate 40% reduction in carbon dioxide emissions. There is, however, some cost in modifying boilers to take gas as a fuel. Extensive use of gas in existing boilers is probably not viable. For example, New South Wales inputs 500 PJ a year of coal into its boilers. New South Wales only consumes 100 PJ of gas a year in total. The infrastructure and gas reserves are not adequate for extensive use of gas in existing coal fuel boilers.

New Fossil Fuel Plant Currently Available

- Gas fired combined cycle plant is a technology that will provide a reduction in emissions to 60% between that of New South Wales coal fired plant and 70% below that of brown coal. This type of plant can generate at a similar cost to new black coal or brown coal fired plant.

- New coal fired plant can produce electricity with higher efficiencies than existing plants. However, the emissions produced will only be 10% to 20% less than existing plant. This type of plant includes supercritical boilers and integrated gasification combined cycle.

Renewable Technologies

- Renewable energy technologies use the wind, water or sun to provide the energy which is then converted into electricity. The technologies for conversion are now decreasing in cost substantially with the potential in the near future to provide power at a cost similar to coal fired plants.

- The use of renewables in a utility owned central stations or on residential rooftops has the limitation that it cannot provide firm supply. However, between the use of some renewable and the existing plant a reduction in greenhouse gas emissions can be achieved with full reliability.

Wind Technologies

- Wind turbines have the potential to produce significant energy to the Australian electricity grid. The economies of scale and price of wind turbines is fast approaching a level in good wind sites where it is close to being competitive with fossil fuel generated electricity. Good wind sites are available in many parts of Australia particularly in Tasmania and on the coasts of Victoria and South Australia and in specific locations in NSW. As the technology improves wind sites that were once marginal will become viable.

- Pacific Power is installing a wind farm at Crookwell in New South Wales of 5 MW capacity which is expected to be operational by mid 1998. Pacific Power is also undertaking wind monitoring in New South Wales and other States to ascertain the wind resource. This will allow the installation of wind turbines knowing the expected power output to a degree of reliability where electricity contracts can be exchanged.

Solar Technologies

- Solar technologies have a high potential to reduce emissions from electricity generation. If solar hot water replaced off peak electricity hot water than there is potential to reduce emissions of carbon dioxide by about 10%.

- Solar photovoltaic probably has the most potential for producing electricity at a competitive cost.

- Pacific Solar, a company owned by Pacific Power and Unisearch, is developing photovoltaic cells. By the year 2001 it is expected that a plant will be built to produce these solar cells. It is expected that the price will be around 10 to 13 ¢/kWh, similar to existing grid supplied electricity. This is around five times less than the current price of solar cells.

End Use Efficiency

- End use efficiency has the potential to reduce greenhouse gases significantly at very low cost. This method has not been particularly successful to date in Australia. Emissions trading is likely to allow end use efficiency to take its place as one of the effective methods of reducing emissions.

Sequestration

- Sequestration of carbon in trees by establishing forest on what is now cleared land is likely to have both landcare benefits and sequestration benefits. The cost of sequestration has the potential to be low compared to many other options.