TOTAL ENVIRONMENT CENTRE INC

Nature Conservation Council of NSW

GREENPEACE

Professor Anthony Owen
Owen Inquiry into Electricity Supply in NSW
GPO Box 5431
Sydney NSW 2001

6 July 2007

Dear Professor Owen,

Please find attached a joint submission from the Total Environment Centre, Nature Conservation Council of NSW and Greenpeace to the Owen Inquiry on Electricity Supply in NSW.

We are concerned that the terms of reference for the inquiry are overly narrow and will not allow a complete study of how NSW can reduce greenhouse gas emissions whilst meeting energy service needs.

NSW must make energy policy decisions within the context of climate change and the need to quickly and efficiently reduce emissions from the electricity sector. Our key recommendations to the inquiry and the NSW Government are detailed in our submission. The NSW Government must:

1. Rule out any new coal-fired power

2. Expand the inquiry to specifically focus on how energy efficiency and demand management can meet NSW's energy needs

3. Legislate for greenhouse emission reduction targets of 30% reduction on 1990 levels by 2020 and 80%-95% reduction on 1990 levels by 2050. The inquiry should assess meeting NSW's energy needs within this framework.

If you require more information or clarification please contact Jane Castle on 02 9261 3437 or Owen Pascoe on 02 9279 2466.

Yours sincerely,

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Submission to the Owen Inquiry on Electricity Supply in NSW

Total Environment Centre, Nature Conservation Council of NSW and Greenpeace

Executive Summary

The Total Environment Centre, Nature Conservation Council of NSW and Greenpeace deplore the limited scope of this inquiry, in particular, the misconceived assumption that NSW needs more baseload power and its failure to lay the ground for a comprehensive investigation into all of the demand and supply options for NSW's energy future, including demand management and energy efficiency.

No decisions on the future energy needs of NSW should be made without reference to achieving at least 30% greenhouse emission reductions on 1990 levels by 2020 and 80-95% reductions by 2050. These targets align with mainstream scientific assessments of the need to reduce emissions to avoid catastrophic climate change, with governments and businesses around the world increasingly adopting these targets.

The NSW Government must rule out new coal-fired power by setting maximum emissions intensity of 0.4 tonnes CO2/MWh for all new generation (and ruling out offsets). More coal-fired power presents a huge environmental and economic risk to the people of NSW. The state's electricity emissions have already increased by 31% since 1990. Any new coal would lock in a further, massive increase for 20 to 30 years.

The full costs of a new coal-fired power station are at least $9 billion, including capital, fuel, network and greenhouse emissions costs. Compared to demand management and energy efficiency, this is an inappropriate imposition on electricity consumers of NSW.

Unpredictable and increasing carbon costs and the risk of creating another supply overhang present a massive and unnecessary risk to NSW tax-payers. Forcing NSW tax-payers to carry this burden by the NSW Government indemnifying new coal-fired power against carbon costs or insufficient demand levels would be reckless and unwarranted, and would provide a perverse incentive for climate change. Likewise, the NSW Government's enthusiasm for 'carbon holidays' for energy intensive industries must end, and should not be considered for any new generation.

NSW does not need more baseload capacity. To the extent that new capacity is needed at all, considering the vast, untapped potential of demand management and energy efficiency, it is peak demand that needs to be addressed. Currently around 12,000MW of NSW capacity is baseload capacity, but ***baseload demand is only around 8500MW***. It is therefore incorrect to assume that NSW needs more baseload generation.

The missing link in NSW energy policy, as in the terms of reference for the inquiry, is a comprehensive Energy Savings Plan to harness the huge, untapped potential of demand management and energy efficiency to serve NSW's energy needs. Interval meters are due to be rolled out across the National Electricity Market. These can deliver reductions on ***average energy demand by 4-10% in addition to harnessing substantial peak demand savings.*** A comprehensive Energy Savings Plan would build on these savings by using the entire suite of demand management and energy efficiency tools.

NSW has plentiful renewable resources. By 2020, 25% of our electricity could easily be supplied by a mixture of hydro power, bioenergy, wind and solar. This would prepare us to make the transition to clean energy in the period beyond 2020. A 25% renewable energy target for NSW would conservatively deliver:

- 4,000 permanent jobs
- $9 billion new investment in NSW
- 4000 MW new capacity, equivalent to 2 coal-fired power stations
- 13 per cent reduction in electricity sector greenhouse emissions
- Enough renewable electricity to power every household in NSW

So called 'clean coal' technologies are not the solution to NSW's energy needs. The technological potential and economic viability of Carbon Capture and Storage (CCS) is yet to be proven and will not be available within the timeframe necessary to make significant cuts to our emissions. There are no suitable geology for carbon dioxide storage within 500km of NSW main power generating regions, the Sydney and Hunter Basins.[1] The NSW government must direct its resources towards renewable energy technologies and energy efficiency rather than propping up the ailing, inefficient and polluting fossil fuel industry.

NSW can easily and cheaply meet all its future energy needs with low or no emissions energy technologies – demand management, energy efficiency, renewable energy and gas-fired power. Environment groups have identified energy supply and savings projects in *The Real Solutions for NSW's Energy* report which can conservatively increase current capacity by 50%. More than 6000MW of energy savings or supply are identified which are available for implementation over the next 10 years. Over 5000MW of this is available for periods of peak demand.

Water use must be a key consideration in decisions on NSW's energy needs. Coal-fired power consumes vast amounts of water. Availability of water will be an increasing concern as droughts are predicted to become more severe and prolonged under a changing climate. By comparison, to generate the same electricity coal-fired power needs more than ten times more water than solar photovoltaics and more than 100 times more water than wind power.

The effectiveness of NSW's Greenhouse Gas Abatement Scheme (GGAS) has been brought into doubt by a number of credible investigations. It cannot be relied upon to deliver the greenhouse emissions reductions that it claims. For this reason, it should not be used validate any increase in emissions from the electricity sector.

There are serious concerns about the feasibility, impacts of and rationale behind the proposal to sell-off NSW Government owned electricity retail businesses to the private sector. The sale could result in massive incentives for increased electricity sales and, therefore, greenhouse emissions. Any risks of increasing consumption and greenhouse emissions must be fully investigated.

[1] Hugh Saddler, Chris Riedy, Robert Passey, 2004. *Geosequestration: What is it and how much can it contribute to a sustainable energy policy for Australia?* The Australia Institute, Discussion Paper Number 72, September 2004.

Recommendations

The Total Environment Centre, the Nature Conservation Council of NSW and Greenpeace call on the NSW Government to plan for a clean energy future and rule out any new coal fired power for NSW. In order to ensure the most prudent, cost-effective and responsible energy future for NSW, the Government should implement the following recommendations. NSW should:

1. Expand the inquiry to specifically focus on how energy efficiency and demand management can meet NSW's energy needs

2. Legislate for greenhouse emission reduction targets of at least 30% reduction on 1990 levels by 2020 and 80%-95% reduction on 1990 levels by 2050

The inquiry should assess meeting NSW's energy needs within this framework.

3. Rule out any new coal-fired power

Any decision on NSW energy should meet the greenhouse emission reduction targets of at least 30% reduction on 1990 levels by 2020 and 80%-95% reduction on 1990 levels by 2050. Any new generation that exceeds this target should be ruled out.

The NSW Government should set a maximum emissions intensity limit of 0.4 tonnes CO2/MWh for all new base load electricity generation (without allowance for offsets).

NSW must make a clear statement that the Government will not provide indemnity or exemption for any new power plant or energy intensive industry, including any future exposure to a carbon regime.

4. Recognise that NSW's energy needs concern peak-load, not baseload demand and supply options

5. Commit to zero energy growth by 2010

To avoid the need for more unnecessary and expensive generation capacity, NSW must aggressively harness the huge potential of energy savings by legislating a target of zero new demand growth by 2010, followed by annual reductions of 1.5% per year.

The target should be reached by the implementation of a comprehensive package of energy efficiency and demand management measures, including:

- *Extension of the Climate Change Fund for 20 years, secured against use for any other purposes*
- *Require NSW Government owned electricity networks to fast-track the roll-out of smart meters with remote load control capabilities*
- *Require all electricity retailers operating in NSW to offer flexible electricity tariffs based on time of use*

- *Implement a mandatory 5 star energy efficiency target for commercial buildings*
- *Continue to ramp up the BASIX requirements and include higher rise buildings*
- *Phase out domestic electric water heaters outside niche applications by 2012*
- *Replace electric water heating with solar or heat pump systems on all public housing by 2012*

6. Aggressively Pursue Renewable Energy

- *Increase the NSW Renewable Energy Target to 15% of renewable electricity by 2012 and 25% by 2020*
- *Implement a feed in tariff for solar PV with the tariff set to ensure private investment*

7. 'Clean coal' should not be considered - cleaner, cheaper options are available

8. Meet NSW's future energy needs with currently available low or no emissions technologies – demand management, energy efficiency, renewable energy and gas

9. Water use must be a key consideration in deciding how to meet NSW's energy needs

10. The NSW Greenhouse Gas Abatement Scheme must not be used to validate any increase in emissions from the electricity sector

The NSW Greenhouse Gas Abatement Scheme must be fixed to exclude claims of emissions reductions when these are no different from business as usual.

11. The sell-off of NSW Government owned retail businesses must not progress until the risk of increasing consumption and greenhouse emissions is fully considered and prevented and consumer risks removed

12. The NSW Government should vigorously pursue changes to the National Electricity Law and market operations so that energy efficiency and renewables are treated as genuine alternatives to new fossil fuel generation

1. Limited Scope of the Owen Inquiry

1.1 Pre-determined conclusion locks out proper consideration of demand management and energy efficiency

The terms of reference of the inquiry are overly narrow and inappropriately fail to consider demand management (DM) and energy efficiency (EE) as key tools to meet NSW's energy needs. NSW needs to examine these options as they comprise the quickest, cheapest and least carbon intensive means of meeting NSW's energy needs. The inquiry's failure to prioritise DM and EE shows how far behind current National Electricity Market processes NSW has fallen. The current aggressive engagement of DM and EE at the national by the Ministerial Council on Energy and the Australian Energy Market Commission puts this inquiry's terms of reference back at least a decade, when DM and EE were not on the agenda.

1.2 Pre-determined conclusion of need for baseload locks out proper assessment of whether the issue is one of peak and/or intermediate generation

The supporting material for the inquiry prejudices the focus of the inquiry in stating 'New South Wales now needs to focus on securing future baseload supply of electricity'. This is a premature foundation that sets the bias of the inquiry towards more baseload power. The need for baseload power over demand management, peaking or intermediate generation has not been established.

We note that NEMMCO, in their submission to the inquiry, which was made available on 28 June 2007, stated that 'it may be uneconomic to meet this additional capacity using baseload plant' and that 'additional capacity could be delivered by reduced demand'. This is a clear indication that the inquiry's focus on baseload power is premature.

Reflecting the politically biased nature of this inquiry, statements by Premier Iemma that NSW may need one, and perhaps two, coal-fired power stations[2], before the inquiry has reported, reveal synchronous bias and undermine the credibility of the inquiry.

Environment groups are extremely concerned the limited scope of the inquiry and the leading terms of reference will prevent a full investigation of the issues and an open-minded interpretation of the inquiry's findings.

1.3 Need for a thorough and transparent review of all options for meeting NSW's energy needs

The Owen Inquiry should not be a substitute for a comprehensive, equitable and transparent debate on how to meet NSW's future energy and greenhouse reduction needs. A full, public review of the demand and supply options available should be undertaken. The signatory groups do not consider the Owen Inquiry as presently structured fulfills these needs.

[2] Sydney Morning Herald, 26 June 2007. 'Water bill up $100 Electricity up $100 Gas supplies cut', p1.

2. NSW's Greenhouse Reduction Targets

Premier Iemma has an outstanding election promise to review NSW's greenhouse gas reduction targets and renewable energy targets before legislating them in 2007. Without legislated targets, the Owen Inquiry's investigation into how best to meet NSW's energy needs while minimising greenhouse emissions lacks a coherent framework.

In the absence of legislated targets, the Owen Inquiry should use the framework informed by the best current science, which indicates the need for a reduction of 30% greenhouse emissions from 1990 levels by 2020 and 80%-90% by 2050. Any conclusions drawn without reference to these targets will at best constitute a missed opportunity to make an informed assessment of how best to meet NSW's energy needs.

2.1 Why we need a 30% target

The necessity to provide a framework of 30% reductions on 1990 levels by 2020 is borne out by the weight of scientific evidence which shows that the world is facing catastrophic environmental and economic consequences if it fails to significantly reduce emissions within the next 10 to 15 years.

The world is heading for a global temperature rise of between 1.1 and 6.4ºC by 2100. When the global average temperature was only 5ºC cooler the world was in the grip of the last major ice age, with metres of ice covering what are today's major cities. The global temperature has risen 0.6ºC since 1860, and we are already experiencing serious climate change consequences in Australia and around the world.

The consensus amongst scientists, governments, businesses and the community is that avoiding dangerous climate change means keeping warming as far below 2ºC as possible.[3]

It is in Australia's interests to keep the temperature rise lower still, as even a 2ºC rise means we are likely to lose unique ecosystems like the Great Barrier Reef, experience even more severe drought, suffer reduced water supplies, be subject to more frequent and more intense extreme weather events, and more frequent and hotter bushfires.

Pre-industrial levels of carbon dioxide were 280 parts per million in the air, and are currently 380 parts per million. Scientists have confirmed that to have a reasonable chance of keeping temperature increases below 2ºC we need to stabilise levels below 400 parts per million. Anything beyond 450 parts per million is a "reckless flirtation with catastrophe".[4]

> 'Once the global temperature increase exceeds 2ºC, climate impacts on ecosystems, food production and water supply are projected to increase significantly and unexpected response of the climate becomes more likely and irreversible catastrophic events may occur." *European Union, February 2005*.

[3] Preston, B.L. and Jones, R.N. 2006. Climate Change Impacts on Australia and the Benefits of Early Action to Reduce Global Greenhouse Gas Emissions. Report for the Australian Business Roundtable on Climate Change. Page 11

[4] Athanasiou,T., Kartha,S., and Baer, P. 2006. Greenhouse Development Rights. EcoEquity and Christian Aid. Page 2.

We have a small window of opportunity to reduce greenhouse emissions if we are to keep below the 2ºC threshold. Emissions need to stop growing by 2010 and then start falling. Developed countries including Australia and the US will need to commit to reductions of 30-35% from 1990 levels by 2020 and more than 80-90% by 2050. In January this year, the European Commission proposed to unilaterally reduce its own emissions to at least 20% below 1990 levels by 2020, and said it would take on a target of 30% by 2020 as part of a global agreement.

NSW should set an example by committing to the emission cuts we need to keep below the 2^{O}C threshold: 30% greenhouse emission reduction by 2020. As electricity, more than any other sector, has the ability to reduce its emissions to potentially zero, it can be argued that it should reduce emissions even further.

3. Rule out coal-fired power

It would be a reckless Government that fails to rule-out new coal-fired power for NSW. Coal-fired power is the biggest contributor to Australia's greenhouse emissions and presents huge economic and environmental risks to the people of NSW.

3.1 NSW's electricity sector emissions

Greenhouse emissions from NSW's electricity sector have already increased by 31% since 1990. Any new coal would push this rate of increase even higher. A new 1500MW coal fired power station, for example, would add another 8 million tonnes of greenhouse pollution per year, and continue to do so for another 20 – 30 years.

NSW would not be able to achieve a 30% reduction in total emissions by 2020 if a new coal fired power station was built. Indeed, even the current inadequate target to stabilise emissions at 2000 levels by 2025 would not be met. If the NSW government intends to meet its own target, or the higher science-based targets, they must rule out a new coal-fired power station. Having done so before the inquiry was announced would have allowed a much more vigorous examination of clean energy technologies.

3.2 The true costs of new coal-fired power for NSW consumers

New coal-fired power would also mean higher electricity bills for NSW consumers. In 2005 the Total Environment Centre found the actual, full cost of the proposed 1500MW expansion at Mount Piper was equivalent to $9.4 billion at current prices.[5] This is equivalent to $3915 for every current household in NSW, compared to $500 with an energy savings strategy.

While the capital cost of the proposed 1500MW expansion were generally estimated at $2 billion[6], this only included the cost of the new plant. It did not include the fuel, new network infrastructure that would be needed to deliver the power or the cost of greenhouse emissions. When the full costs of 1500MW of new coal-fired generation are included, the actual cost to NSW consumers of 1500MW of new coal plant would be $9.4 billion over the 30 year life of the power station.

The cost of greenhouse emissions is also likely to rise. If they do, the cost of the proposed plant would be even higher. Under a carbon price of $30/tonne the cost of emissions would add an extra $5.7 billion to the cost of the proposed expansion of Mt Piper, bringing the total cost to $15 billion or $6244 per household in NSW.

In contrast, for a fraction of the cost, NSW could dramatically reduce its baseload demand growth, reducing greenhouse emissions and electricity bills. Reducing demand growth by half over 30 years, for example, would save consumers $2.2 billion on their energy bills.

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[5] Total Environment Centre, *New Coal or Energy Savings?: the True Costs of NSW Consumers*, p. 4. Also at Appendix 1.

[6] Sydney Morning Herald, 'Power play threatens supply', March 8, 2005.

3.3 Severe community backlash of new coal-fired power

Coal has now lost its legitimacy in the public mind as the magnitude of climate change is hitting home. Since the NSW Government last prematurely considered new coal-fired power, community awareness and education has significantly matured. In 2006, 40,000 people marched in Sydney in the Walk Against Warming, organised by the Nature Conservation Council of NSW, and more are expected this year. Recent campaigns over greenhouse intensive projects such as the Anvil Hill coal mine and the Kurnell desalination plant have had major community support and media coverage, and are a small scale preview of the massive community backlash that awaits any move towards new coal-fired plant. The expected backlash would cause the NSW Government and any potential investor major electoral and reputational risk.

3.4 Risks to NSW tax-payers of new coal-fired power

Under any reasonable carbon-pricing regime, new coal-fired generation presents a massive liability to the tax-payers of NSW, whether owned by the private sector or the Government. Carbon costs are uncertain and very likely to rise as the urgency of addressing greenhouse emissions increases. A slight rise in the cost of carbon can dramatically alter the economics of power generation.

The proposed 1500MW expansion of Mt Piper can be used as an example. This proposed coal-fired plant would generate over 8 million tonnes of greenhouse emissions each year[7]. On three scenarios developed by the State Governments' National Emissions Trading Taskforce (NETT)[8], the costs of these emissions would range from $5.2 billion to $6.6 billion. These are outlined in the table below.

Emissions costs of 1500MW of new coal-fired power under NETT

	CO2	2010		2020		2030		Estimated Total Costs
	pa (Million tonnes)	Carbon Price ($/tonne)	Annual Cost ($ Million)	Carbon Price ($/tonne)	Annual Cost ($ Million)	Carbon Price ($tonne)	Annual Cost ($ Million)	($ Billion)
Scenario 1	8.4	12	100.8	26	218.4	29	243.6	5.9
Scenario 1a	8.4	6	50.4	17.5	147	28	235.2	5.2
Scenario 2	8.4	12	100.8	32	268.8	33	277.2	6.6

Table 1: Annual and total costs of a Mount Piper extension based on three carbon price scenarios of the State Governments.

These scenarios are based on either stabilising emissions at 2000 levels by 2030 or reducing emissions to the level of electricity generation emissions in 1997. However, it is clear that the emissions reduction task is going to be greater than these targets, and that the electricity sector may have to shoulder a greater burden of the emissions reduction responsibility.

[7] Based on a 75% capacity factor and an emissions intensity of 0.85 tonnes of CO_2 per MWh.
[8] National Emissions Trading Taskforce, 2006. *Possible Design for a National Greenhouse Gas Emissions Scheme*. p. xvi

Emerging science on the urgent need to reduce emissions suggests more stringent caps than those already announced by governments. For example, in May 2007 the Federal Opposition stated a target of 60% reductions by 2050. However, the recent report of the Intergovernmental Panel on Climate Change of the United Nations announced that if carbon dioxide concentrations in the atmosphere reach twice their pre-industrial levels, the global climate will probably warm by 3.5 to 8 degrees, a situation most earth scientists say poses an unacceptable risk[9]. This increased risk has now translated into calls from the scientific community for cuts of 80% - 95% on 1990 emissions to avert devastating climate impacts. The scientific uncertainty around climate change is reflected in the NETT Discussion Paper:

> *The cap should be able to respond flexibly to the evolving scientific understanding of climate change.*[10]

A cap that is responsive to new science suggests that the price of carbon may have to increase significantly to send the right signals to the electricity generation industry. The proposed NETT 10 year cap approach, while providing short-term indicators, is no guarantee of a stable long-term carbon price for projects with a 20 to 30 year payback period – such as coal-fired power. This presents a huge risk of stranded assets if new coal-fired plant is built. Increased carbon costs, along with supplementary renewable energy and energy efficiency programs will in turn create their own feedback effects, putting downward pressure on demand for carbon intensive generation. These elements present a huge economic risk to NSW tax-payers.

A new coal-fired generator in NSW would also risk creating an unnecessary and expensive supply overhang. This situation was created in the 1980s in NSW when coal-fired power stations were built prematurely. Perverse strategies to encourage such premature investment are discussed further below.

3.5 Underwriting new coal is an unacceptable risk to NSW tax-payers

If a new coal-fired plant was proposed to be built by the private sector, there would be pressure for the investment to be underwritten in some way by the NSW Government. Underwriting, be it by indemnification against future carbon costs, or the guaranteed purchase of electricity by NSW Government-owned retailers, would be a perverse incentive for spiraling greenhouse emissions and a reckless imposition of risk on the NSW tax-payer.

To provide sufficient return to investors, new coal-fired generation would need to run at 70% or greater capacity. This means that the NSW Government would be under pressure to guarantee high consumption to achieve adequate returns on the investment. Judging on recent statements by Premier Iemma encouraging investment in new baseload capacity, and flagging the need for coal-fired power, it is possible that such a commitment from the NSW Government is now being considered, as private sector investment is not currently coming forward on its own. If this occurred, it would be in

[9] IPCC WGI Fourth Assessment Report, Summary for policy makers, May 2007
[10] National Emissions Trading Taskforce, 2006. *Possible Design for a National Greenhouse Gas Emissions Scheme*. p. xvi

direct conflict with the NSW Government's programs to encourage energy efficiency and create a massive increase in greenhouse emissions.

3.6 No more carbon holidays

There should be no 'carbon holidays' for energy intensive users or new generation plant. Exemptions from emissions trading schemes, renewable energy targets and other programs distorts the financial analysis of new generation plant, discourages private investors from planning for a carbon constrained future and removes the natural advantage of renewable energy.

The NSW government has already acted to exempt Bluescope Steel from future carbon costs. Likewise, the NSW Renewable Energy Bill proposes to exempt trade exposed electricity intensive industries from surrendering renewable energy certificates. This is inequitable and creates perverse incentives for greenhouse pollution. A 'carbon holiday' for a new coal-fired generator in the form of exemptions, indemnification or allowance of the use of offsets would be seen for what it is: a massive incentive by the NSW Government for more greenhouse pollution. This would put the liability for the carbon cost on the NSW public and pose a risk to the health of the state budget and economy. It is simply bad policy. The NSW government must rule out exempting any private entities from their carbon liability.

3.7 'Leaving it to the market' is an abdication of responsibility

The partial hand-over of decisions regarding the addition of more polluting fossil fuel generation to NSW can in no way substitute for responsible government. To ensure that any new investment in baseload power avoids increasing NSW's emissions, the NSW Government should set a maximum emissions intensity of 0.4 tonnes CO2/MWh for all new baseload electricity generation, without allowance for offsets.

4. Does NSW Need More Baseload Power?

Coal-fired power stations in NSW are currently operating at only 65% capacity, well below the capacity of those in other states. This indicates that more baseload power is not required for some time. Meanwhile, peak demand is steadily growing. To the extent that new capacity is needed at all, considering the vast, untapped potential of demand management and energy efficiency, it is peak demand that needs to be addressed rather than baseload.

NSW currently has around 16,300 MW of generation capacity, including imports from Queensland and Snowy. Around 12,000MW of this capacity is baseload capacity. While peak demand recently reached 13,306 MW, ***only around 8500MW of this was comprised of average demand requiring baseload plant***. It is therefore incorrect to assume that NSW needs more baseload generation.

Coal is the wrong fuel for meeting NSW's energy needs. Peak load is most effectively met by demand management or gas-fired power.

5. The Missing Link – an energy efficiency plan for NSW

The exclusion of a meaningful exploration of the vast, untapped potential of demand management (DM) and energy efficiency (EE) by the Owen Inquiry's terms of reference is a reflection of the NSW Government's failure to develop and implement a comprehensive energy savings target and plan for the state. This plan should commit a legislated target of zero new demand growth by 2010, followed by annual reductions of 1.5% per year.

The Owen Inquiry should have been established to consider the full capacity and costs of the various forms of demand and supply options to meet NSW's energy needs. Such consideration would include capital costs, fuel costs, transmission and distribution network costs and carbon costs. Failure to consider these options for meeting NSW's energy needs falls well short of a thorough and responsible investigation.

Currently, the NSW Government has a misconceived bias against demand management and energy efficiency options, which may explain the inappropriate terms of reference of the Inquiry. This ill informed bias is reflected in a recent statement by Premier Iemma that…'while demand management can smooth out the peaks in demand, it does not necessarily mean that less energy is consumed'.[11] This statement not only shows the mistaken assumption that NSW needs more baseload power, but illustrates the dearth of knowledge about demand management and energy efficiency.

A multitude of studies, for example, show how interval meters designed to manage peak demand ***also reduce average demand by 5-10%***. A recent world-wide study, for example, focused on savings in total energy use rather than peak load reductions and found that advanced metering identified an average of 12% carbon savings and implemented an average of 5% carbon savings.[12] Another recent study summarised reviews of over 50 individual studies in a range of countries in which additional information about household energy use was provided.[13] In 21 studies that involved direct feedback about energy use, the majority showed savings in total energy use in the range of 5-14%.

In Australia, the Energy Australia Strategic Pricing Study found that even with only a critical peak pricing trial, reductions of between 5.5% and 7.8% in total daily energy consumption were achieved on days when a CPP event was called.

The Ministerial Council on Energy is now progressing with preparations for the roll-out of interval meters in National Electricity Market jurisdictions, including NSW. If the above studies are any indication, it is likely that significant reductions in average demand of between 4-10% could be achieved with this measure alone. The expected energy and greenhouse savings are outlined below.

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[11] NSW Legislative Assembly Hansard, 21 June 2007.

[12] The Carbon Trust, *Advanced Metering for SMEs: Carbon and Cost Savings*, London, the Trust, 2007. Available at: http://www.carbontrust.co.uk/Publicsites/cScape.CT.PublicationsOrdering/PublicationAudit.aspx?id=CTC713

[13] Owen, G. and Ward, J., *Smart Meters: Commercial, Policy and Regulatory Drivers*. London, Sustainability First, 2006.

Possible Annual Reductions in Greenhouse Gas Emissions from a National Rollout of Advanced Meters[14]		
Savings in Total National Electricity Use	**Annual Reduction in Greenhouse Gas Emissions (Mt CO2-e)**	**Proportion of Total National Emissions**
4%	7.8	1.4%
6%	11.7	2.1%
8%	15.5	2.8%
10%	19.4	3.5%

The savings in average demand outlined above should only be considered as one element in a comprehensive energy savings plan. There are a range of other measures that should be implemented to complement the roll-out of interval meters, including:

- Extension of the Climate Change Fund for 20 years, secured against use for any other purposes
- Require NSW Government owned electricity networks to fast-track the roll-out smart meters with remote load control capabilities, ahead of the national roll-out
- Require all electricity retailers operating in NSW to offer flexible electricity tariffs based on time of use
- Implement a mandatory 5 star energy efficiency target for commercial buildings
- Continue to ramp up the BASIX requirements and include higher rise buildings
- Phase out domestic electric water heaters outside niche applications by 2012
- Replace electric water heating with solar or heat pump systems on all public housing by 2012

[14] From Energy Futures Australia and Total Environment Centre, *Advanced Metering for Energy Supply in Australia,* June 2007, p. 61.

6. 25% Renewable Energy by 2020

NSW has plentiful renewable resources. One quarter of our electricity could easily be supplied by a mixture of hydro power, bioenergy, wind and solar. This would prepare us to make the transition to clean energy in the period beyond 2020. To implement this target, the NSW Government should bring forward the review of the NSW Renewable Energy Target to 2010.

Environment groups have developed a plan for increasing the proportion of NSW baseload supply to 25% by 2020. The report, **The Great Opportunity: 25% Renewable Energy for NSW**, can be found at Appendix 2.

A 25% renewable energy target for NSW would conservatively deliver:

- 4,000 permanent jobs
- $9 billion new investment in NSW
- 4000 MW new capacity, equivalent to 2 coal-fired power stations
- 13 per cent reduction in electricity sector greenhouse emissions
- Enough renewable electricity to power every household in NSW

NSW electricity prices would remain among the cheapest in Australia with a 25 per cent renewable energy target. Sourcing one quarter of our electricity from renewable energy would increase prices by only 1 cent per kilowatt hour by 2020. Strong energy efficiency programs would reduce or negate the impact on household monthly electricity bills. Importantly, NSW electricity prices would remain among the cheapest in Australia with a 25 per cent renewable energy target.

Electricity prices with a 25 per cent NSW Renewable Target[15]

	Residential Cents per kWh	**Business** Cents per kWh
Australian Capital Territory	9.78	10.6
New South Wales now	**11.0**	**7.4**
New South Wales – 2012 with Renewable Target	**11.3**	**7.7**
Queensland	11.6	8.1
New South Wales – 2020 with 25% Renewable Target	**12.1**	**8.5**
Tasmania	12.5	5.0
Western Australia	14.7	10.8
South Australia	14.8	12.6
Northern Territory	15.4	15.1
Victoria	15.6	8.7

A carbon price, which is very likely to be introduced before 2020, would make the added cost even smaller. With a carbon price factored in a 25 per cent renewable electricity supply for NSW would add about half a cent to NSW electricity prices.[16]

[15] Retail electricity prices from ABARE 2006 *Energy in Australia 2005*, page 43
[16] This assumes a carbon price of $25 in 2020.

Renewable energy projects are ready to go. The following tables summarise the investment and jobs opportunities currently on offer in NSW.

Renewable energy investment and jobs NSW

	SIZE	NSW INVESTMENT
Wind power	1160 MW	$2.5 billion
Bioenergy/solar thermal/ hydro	185 MW	$0.65 billion
Total	**1345 MW**	**$3.1 billion**

Renewable energy projects in NSW

	Capacity MW	**NSW investment** million dollars
WIND PROJECTS ALREADY APPROVED[17]		
Crookwell II	100	$160
Gunning	62	$99
Liverpool Range	6.6	$11
Snowy Plains	30	$40
Taralga[18]	105	$168
Woodlawn	50	$80
WIND PROJECTS SEEKING APPROVAL OR UNDER DETAILED INVESTIGATION[3]		
Bannister	85	$204
Ben Lomond	106	$254
Black Springs	40	$96
Conroys Gap	30	$64
Cooma	100	$240
Cullerin Range	30	$64
Evandale	30	$64
Molonglo	120	$288
Murrurundi	35	$84
Paling Yards	90	$216
Rock Flat Creek	100	$240
Southern Highlands	30	$72
Spring Hill	10	$24
BIOENERGY, SOLAR AND HYDRO PROJECTS[19]		
Agricultural and Green Waste	56	
Hydro	52	
Landfill gas	8	
Solar - thermal (Buronga)	69	
Bioenergy, solar and hydro: total NSW investment		$650 million
	1345 MW	**$3,118 million**

[17] List supplied by Auswind, October 2006.
[18] Currently under appeal in Local Environment Court
[19] List supplied by BCSE, October 2006.

In order to make sure that we realise the benefits of renewable energy, NSW needs:

- A legislated target for 25 per cent of NSW electricity to come from renewable energy by 2020
- A feed in tariff for solar PV sufficient to ensure private investment
- Further energy efficiency support measures to keep growth in electricity consumption to below 1 per cent
- Targeted efficiency measures to protect low income consumers

7. So called ‘Clean Coal’ Technology is not the solution

So called ‘clean coal’ technologies are not the solution to reducing NSW electricity sector emissions and reaching science based greenhouse reduction targets of 30% by 2020. Proposed ‘clean coal’ demonstrations in NSW would only reduce emissions by up to 25 to 30% compared to traditional coal generation. This would only be a small reduction against a business as usual scenario and would make no significant contribution to achieving cuts on 1990 levels.

The potential for Carbon Capture and Storage (CCS) is yet to be proven, particularly from coal combustion. It will not be available within the timeframe necessary to make significant cuts to our emissions. There are no is also no suitable geology for carbon dioxide storage within 500km of NSW main power generating regions, the Sydney and Hunter Basins.[20]

The NSW government must direct its resources towards renewable energy technologies and energy efficiency rather than continue to waste time and effort on false solutions like so called ‘clean coal’.

[20] Hugh Saddler, Chris Riedy, Robert Passey, 2004. *Geosequestration: What is it and how much can it contribute to a sustainable energy policy for Australia?* The Australia Institute, Discussion Paper Number 72, September 2004.

8. The Real Solutions – Demand Management, Renewable Energy and Gas

NSW can easily and cheaply meet all its future energy demand with clean energy technologies – demand management, energy efficiency, renewable energy and gas-fired power.

Environment groups have identified energy supply and savings projects in *The Real Solutions for NSW's Energy* report (Appendix 3). This report shows how NSW can meet energy needs for the next 15 years. These savings are summarized below:

	Peak-load Contribution	Total
Energy savings, demand savings	**1305 MW**	**1864 MW**
Renewable energy generation	**631 MW**	**1655 MW**
Cogeneration	**570 MW**	**570 MW**
Gas generation	**2697 MW**	**2697 MW**
Total	**5203 MW**	**6786 MW**

Demand growth can be dramatically reduced through energy efficiency. Renewable energy can meet additional baseload supply needs over the longer term as well as the need to significantly reduce greenhouse emissions. In the short term, efficient gas generation and demand management can meet any temporary shortfalls in peak demand.

The energy supply and savings projects identified in *The Real Solutions for NSW's Energy* can conservatively increase current capacity by 50%. More than 6000MW of energy savings or supply are identified which are available for implementation over the next 10 years. Over 5000MW of this is available for periods of peak demand. However, this represents just a tiny fraction of the renewable resources and potential energy savings in the state. Wind, solar, and bioenergy alone could supply the same amount again by 2020 so that a minimum of 25% of our electricity is generated by renewable energy.

These energy supply and savings options are the most prudent, timely, cost-effective and low-risk solution for NSW's medium term energy future. They allow for the incremental development of a sustainable energy infrastructure. They enable the market to respond progressively, avoiding reliance on large and cumbersome blocks of generation, and provide maximum flexibility to meet the greenhouse targets which NSW has set.

The alternative, more coal-fired power, brings with it the financial and environmental risks of creating an expensive over-supply, destruction of incentives for energy efficiency, the creation of future carbon liabilities and the likelihood of stranded assets as emissions limits are introduced.

9. Water

Water availability will be an increasingly important issue for power generators. Electricity prices in the NEM have recently increased dramatically partly in response to the drought. The inquiry must examine the availability of water in comparing different forms of new generation capacity options to meet NSW energy services.

Demand management and energy efficiency are the best solution to this issue with negligible needs for water. Renewable technologies also have very low water needs. For example, wind power needs only 0.004 litres per kWh and solar PV 0.110 litres per kWh compared to 1 to 2 litres per kWh for coal fired power[21].

Air cooled technology is immature, expensive and unlikely to be utilised without being a mandatory requirement. An air cooled plant is also likely to have lower efficiency and hence higher emissions per unit of energy generated. Thus an air cooled plant would have a high greenhouse impact and be unacceptable.

Inland coal-fired power stations in NSW consume more than 70 gigalitres of fresh water each year, most of which goes up in steam, with the remaining contributing to thermal pollution in inland water bodies.[22] Coal-fired generation will be increasingly unacceptable on this basis, with climate change and population growth reducing water availability across NSW.

[21] AWEA 2007, How Much Water Do Wind Turbines Use Compared with Conventional Power Plants?, American Wind Energy Association, viewed 6 June 2007, http://www.awea.org/faq/water.html.
[22] DEC 2006, NSW State of the Environment 2006, Department of Environment and Conservation NSW. Viewed 6 June 2007, http://www.epa.nsw.gov.au/soe/soe2006/chapter2/chp_2.3.htm

10. Health Impacts and Costs of Air Pollution

The health impacts of local air pollution from coal and gas fired power stations are well documented in environmental and economic literature.[23] Despite small pollution charges in NSW these costs are largely external to the operators of generation plant. The inquiry must examine the impacts and health costs of pollutants on people in the local and regional area for different energy options.

Coal-fired power stations in the greater metropolitan area already contribute 46% of the NSW total of NOx, 87% of total SOx, and 20% of total mercury, as well as fine particles, fluoride and other pollutants.[24] Encouraging further development of coal fired power plants would have harmful impacts on human health. Demand management and renewable energy again present themselves as better options than coal-fired generation.

23 For example see the NSW Legislative Council Inquiry into the Health impacts of air pollution in the Sydney Basin
http://www.parliament.nsw.gov.au/prod/PARLMENT/Committee.nsf/0/0E5CDC94A080D074CA2572280001
2331
24 Ibid, http://www.epa.nsw.gov.au/soe/soe2006/chapter2/chp_2.3.htm.

11. NSW's Greenhouse Gas Abatement Scheme

NSW's answer to greenhouse emissions from the electricity sector has been the Greenhouse Gas Abatement Scheme (GGAS). The GGAS scheme has, however, been strongly criticised by a number of credible investigations. In essence it cannot be relied upon to deliver the greenhouse emissions reductions that it claims. For this reason, it should not be used validate any increase in emissions from the electricity sector.

In the latest report from the University of New South Wales', *The NSW Greenhouse Gas Abatement Scheme: An analysis of the NGAC Registry for the 2003, 2004 and 2005 Compliance Periods*, concludes that:

> *It is entirely possible for the Scheme to be apparently delivering emissions reductions while physical emissions continue to rise.*[25]

One of the key problems with GGAS is that actual emissions are not incorporated into the Scheme's target. Actual emissions are also not measured against the target. Another key problem with GGAS is questionable additionality, where claimed reductions in emissions would have happened without GGAS and therefore should not be claimed as reductions.[26] The report shows, for example, how 83% of NSW Greenhouse Abatement Certificates from 2003 to 2005 were created by plant built before the start of the scheme. These continue to generate certificates and these are used by the Scheme Administrator to represent greenhouse emissions reductions.

A perverse aspect of GGAS that should be eliminated is the potential for new coal-fired power to be able to financially benefit from the ability to create NSW Greenhouse Abatement Credits under the scheme, on the rationale that they are replacing older plant with a higher emissions intensity. A proposed new coal-fired plant in NSW, if run at the capacity needed to secure a return on the investment, would increase total emissions.

[25] Centre for Energy and Environmental Markets, University of New South Wales, *The NSW Greenhouse Gas Abatement Scheme: An analysis of the NGAC Registry for the 2003, 2004 and 2005 Compliance Periods*, May 2007, p. 9.
[26] Centre for Energy and Environmental Markets, University of New South Wales, *The NSW Greenhouse Gas Abatement Scheme: An analysis of the NGAC Registry for the 2003, 2004 and 2005 Compliance Periods*, May 2007. pp. 19-27.

12. Privatisation

There are serious concerns about the feasibility, impacts of and rationale behind the proposal to sell-off NSW Government owned electricity retail businesses to the private sector. The sale could result in massive incentives for increased electricity sales and, therefore, greenhouse emissions. Any risks of increasing consumption and greenhouse emissions must be fully investigated.

Electricity retailing is a high-risk business, and as has been the experience with previous sales of State-owned businesses with high risk factors, private entities will not accept high risks and will use all means to protect themselves from these.[27] If the contracts for the sale of these entities do not directly force such risks back on the Government, retailers will search for other ways to mitigate risk, for example, by encouraging consumption at times when pool prices are low, or through pricing practices.

Currently, electricity retailers have massive incentives to sell more electricity, making consumption more inefficient and creating more greenhouse pollution. Selling off these entities to the private sector would only increase this incentive. In addition, the private sector would more strongly resist the successful implementation of renewable energy, demand management and energy efficiency policies.

Publicly owned retailers can be a strong asset in efforts to reduce demand and reduce greenhouse gas emissions.

Appendix 1: New Coal or Energy Savings: The True Costs for NSW Consumers.
Appendix 2: The Great Opportunity – 25% Renewable Energy for NSW
Appendix 3: The Real Solutions for NSW's Energy

[27] For example, the sale of the State Bank to Colonial, where the Government eventually had to shoulder the burden of bad debts in order for the sale to be completed.