RECOMMENDATIONS ON ENERGY ECONOMICS AND SECURITY IN NSW

SYDNEY CITIZENS' POLICY JURY

August 2012

Submission to the New South Wales Parliament Legislative Assembly Public Accounts Committee

Opening Statement

The Sydney Citizens' Policy Jury members wish to express their thanks to the NSW Parliament Legislative Assembly Public Accounts Committee for the opportunity to present our recommendations for your consideration and evaluation.

Remit

The Public Accounts Committee tasked the Sydney Citizens' Policy Jury with the following remit:

Agree on an order of preference, barriers to adoption (including financial aspects and public perception issues) and recommended course of action with regard to alternative forms of energy generation in NSW.

Executive Summary

As part of the extensive research and evaluation process undertaken, which included presenters from various fields of expertise and industry, careful consideration of the Remit was undertaken by the Sydney Citizens' Policy Jury.

The Sydney Citizens' Policy Jury unanimously concluded that the challenge is not to agree an order of preference, but instead to create certainty so that all renewable technologies have a chance to compete on merit. The biggest barrier is location and the connection to the grid. We offer five recommendations which we hope the NSW Government will adopt to address this, and are confident that this would secure the future energy requirements for the State.

Priority Recommendations

Underpinning our recommendation is one key fact and the Jury's unanimous belief.

Approximately 90% of the energy generation in New South Wales relies on the burning of fossil fuels which is the primary cause of increased greenhouse gases.

There needs to be an increased utilisation of renewable energy beyond current Federal targets.

Develop Resource Zones

- The grid is currently not structured to incorporate the rich renewable resources throughout regional NSW. (Reference: The CSIRO submission maps NSW's energy opportunity).
- Many of these sources of renewable energy are a long distance from the existing grid, making them currently uneconomic to develop.
- The Jury **recommends** that the current grid be extended to these sources of renewable energy when required and should be funded by the Federal Government's Renewable Energy Fund.
- The NSW Government would foster economic development in regional areas to promote growth and investment, by pursuing this recommendation.

Facilitate Demand Management

- Demand Management will allow efficient handling of peak loads by prioritised load shedding.
- This is an achievable short term objective that will be facilitated by a Smart Grid.
- The Jury **recommends** that the NSW Government urgently prioritise development of a Smart Grid.

Encourage Decentralised Generation

- The Jury **recommends** legislative change to support and enable decentralised energy production. This is an 'on the grid' or 'off the grid' option, as appropriate.

Funding, Pricing and Regulation

The Jury **recommends** that the NSW Government:

- Provide long term legislative certainty for investment in renewables.
- Legislate to ensure transparency in billing, i.e., the specifics of what do we pay for.
- Legislate to allow 'time of day' and other flexible tariff options.
- Legislate equitable access to the grid for all renewable energy providers.
- Initiate discussion to include pricing and environment in the national energy objectives.

Nuclear debate

- The Jury recommends that the NSW Government initiate informed public discussion regarding emerging nuclear technologies, e.g., Thorium, as an energy source.

Salient facts and Assumptions to Support Recommendations

The recommendations are supported by the following Salient Facts and Assumptions.

Key Facts

- Approximately 90% of power produced in NSW today comes from fossil fuel sources. This was noted by a broad range of expert witnesses.
- Federal Government regulations require that 20% of our energy must be supplied by renewable, with the additional requirement of reducing greenhouse gas emissions by 5% on 2000 levels.
- Transmission and additional generation infrastructure is responsible for around half of a residential household power bill, as noted by CSIRO and AGL speakers.

Resource Zones

- From mapping of available renewable resources, it is possible to identify renewable resource zones.[1] [2] [3]
- Establishment of resource zones will help to minimise the cost of extending the grid to remote areas, to minimise the cost to the renewable energy investor.

The Grid

▪ *Demand Management (Peak Loads)*

- Peak loads are caused by increased utilisation of equipment such as air conditioners and heaters.
- The Jury was positively disposed to the submission from the Total Environment Centre, which stated demand side participation can be particularly effective. [Reference: Submission 11 – page 3, note 4]
- Technology exists to control load, by turning on and off thermostatically controlled household, industrial and commercial equipment.
- The King Island submission and presentation was favourably received by the Jury.
- Time of day charging and load shedding are enabled by the installation of smart meters and a smart grid (Reference: Submission 14 by AGL - page 4 and 113).

[1] CSIRO 'Unlocking Australia's energy potential'

[2] Grenatec- PAEI-Aust East Timor Report

[3] University of Melbourne 'Zero Carbon Australia Stationary Energy Plan'

- The Smart Grid is necessary to enable individual households, industrial and commercial users to be able to generate power from a variety of renewable sources and that power can be sold back to the grid.
- Further incentives should be established to encourage the installation of renewable energy generators once the Smart Grid is operational.
- Encourage the use of storage facilities to store excess renewable energy generated in individual households and commercial and industrial facilities (e.g. Electric Car & Lithium Ion batteries).
- The peak load demand is driven by high utilisation of certain appliances during approximately only 10 days per annum.
- The implementation of all these initiatives requires a process of dialogue, education and communication with consumers.

▪ *Decentralised Generation*

- Tasmania Hydro has implemented the King Island Renewable Energy Integration Project (KIREIP)[4], a decentralised generation program to support the energy requirements of the island's approximately 2000 inhabitants.

- The KIREIP project balances a mix of existing renewable energy resources with the inclusion of Bio Diesel, Vanadium Redox Battery (VRB), Wind farm expansion, Uninterruptible Power Supply Class Diesel Engine (D-UPS) and an Energy Storage System.

- As outlined in the project overview, 'the project…is aiming to develop a world leading power system on King Island. KIREIP will result in the use of renewable energy for over 65% of the island's energy needs, and will reduce CO^2 emission by more than 95%'.

- The King Island Model is a good example of a decentralised power supply for small communities and has the potential to be explored in NSW. In addition to the clever use of new technology, a feature of this model was the strong community consultation used as part of the process.

[4] www.kingislandrenewableenergy.com.au

Funding, Pricing and Regulation

- Market forces will drive where money and capital are needed to make profit.
- Government can encourage and facilitate direction for the market.
- The rooftop solar PV program resulted in a glut of renewable energy certificates which may take two years to clear, which has an impact on large scale renewable investment, as noted by Pacific Hydro speaker.
- There is no conclusive proof that the corporate sector run power generators better than the government, as noted by the speaker from AGL.
- Retailers are prohibited from offering innovative or flexible tariff options which encourage reduced consumption.
- State Governments earn royalty on income from fossil fuels.
- Energy zones can reduce transmission investment costs.
- Peak prices can justify investment in energy storage.

Nuclear

- The unanimous view of the Jury was that the proposed issue of nuclear power generation should not be dismissed. A minority view (10%) supported starting deployment in the immediate future. While this view was not shared, the Jury was in agreement that the topic should be discussed in greater detail with the Australian public.

- The Jury recommends that the NSW Government initiate informed public discussion into the viability of emerging nuclear technologies, e.g., Thorium, as an energy source for future power stations.

- This would be on a medium to long term timeframe and would be in conjunction with the development of education programs, dependent on the outcomes of the public discussions.

Why did the Jury reach this decision?

- Australia is uniquely situated from a geological and political stability perspective, to utilise its substantial existing resources of thorium deposits for the development of future power stations. These power stations, in comparison to the more established nuclear technologies, would be more cost effective, have a lower carbon footprint, and safer processes that produce minimal waste with significant reduction in the risk of development of weapons.

- Smaller modular plants have the potential for ease of installation and site flexibility, with lower capital construction costs.

Environmental / General

- The importance of the environment is lost in most discussion about energy, in particular with national energy objectives.
- By 2020, 20% of our energy must be supplied by renewable, with the additional requirement of reducing Greenhouse Gas emissions by 5% on 2000 levels.
- Environmental and emission concerns will continue to drive the requirement for a greater share of renewable energy increases but they have not resulted in increased productivity (IPART).
- Reducing emissions while continuing to burn coal will necessarily encourage newer technologies and further research into carbon capture and storage.
- Public anxiety about coal seam gas exploration and production requires strict regulatory controls to limit damage to prime agricultural land and aquifers, and more heavily populated areas, i.e. Sydney basin region.
- As NSW is part of the National Energy Market (NEM), it is understood that any future changes to NSW's energy supply and distribution will affect the NEM.
- Coal and Gas will continue to provide base load and intermediate power for the short term future, but aging coal plants should not be replaced.
- Decoupling providers and networks will help eliminate the incentive for networks to increase profit by increasing usage.
- Short and longer term energy targets will need to be established to provide market certainty.
- Government regulation is the best way of rapidly introducing new energy technologies.
- Reference: CSIRO 'Unlocking Australia's Resource Potential' fully lists capital, OEM and Recurrent costs for each energy type.

Conclusion

The Jury concluded that the challenge is not to agree an order of preference, but instead to create certainty so that all renewable technologies have a chance to compete on merit. The biggest barrier is location and the connection to the grid, regulation which inhibits innovative technologies connecting to the grid and inflexible pricing models which stop incentive based plans being offered.

We offered five key recommendations which will:

- ✓ create investment certainty across all renewables through an expansion of the grid to a CSIRO identified 'Resource Zone'
- ✓ allow for the innovative practice of Demand Management to be applied
- ✓ regulate to allow decentralised generation
- ✓ reform pricing to allow for time of day and flexible tariff options
- ✓ start a discussion about advanced nuclear technology

We thank the Committee for the opportunity to explore this topic in depth and with access to a wide range of expertise. We appreciate the chance to be heard and look forward to your response.

Thank you

Sydney Citizens' Policy Jury