Introduction

Electricity is essential to our lives. It drives our economy, creates jobs and ensures that we are competitive on a world scale.

The people of NSW expect and are entitled to safe, reliable and affordable electricity.

We have 99.96 per cent network reliability in NSW — a world class level of performance. Not only do we have a reliable electricity supply, but we have relatively inexpensive power with NSW’s electricity prices some of the lowest in the world.

The NSW Government is committed to improving electricity reliability for NSW, to at least 99.98 per cent by 2016, as outlined in the State Plan.

In addition, 15 per cent of electricity consumed in NSW will be from renewable sources such as wind and solar by 2020 under the NSW Renewable Energy Target.

With investment of $14.4 billion in capital infrastructure over the next four years by the State owned electricity businesses, the NSW Government is committed to maintaining a reliable electricity supply to households and industry.

The National Electricity Market Management Company (NEMMCO) forecasts show that NSW could need investment in electricity generation as early as 2010 for peak generation. The NSW Government is taking the responsible path and planning for a number of different scenarios so that the people of NSW have confidence that their electricity supply will continue to be reliable.

But with our population set to reach 8.7 million people by 2051, an increase of almost 2.0 million people (or 30 per cent) from our 2006 population, it is timely for the community to consider the electricity needs for future generations. In the 1980s and 1990s NSW had surplus generation capacity as several large baseload power stations were built. This surplus continued with the establishment of the National Electricity Market (the NEM) in December 1998, and with the commissioning of the Queensland — New South Wales Transmission Interconnector (QNI) in 2001.

But with a growing economy and increased use of electricity, particularly at peak times in winter and summer, we have seen the gap between supply and demand progressively close.

New South Wales consumes over three megawatt hours of electricity per person each year. That is up by 13.8 per cent over the past 10 years when compared to the 2.6 megawatt hours consumed in 1995.

The Government recognises that demand management plays a critical role in ensuring ongoing reliability. New South Wales also has one of the most effective greenhouse reduction management policies in the country in the NSW Greenhouse Gas Reduction Scheme (GGAS). GGAS is a trading scheme that requires electricity retailers to reduce their emissions on a per capita basis. Retailers can meet their targets either by investing in demand management strategies or by purchasing energy generated from new, low emission sources. This has been a very effective policy in achieving real reductions in energy consumption and reducing greenhouse gas emissions.

The NSW Government has also been encouraging investment in a range of fuel types and technologies such as combined cycle gas turbines, open cycle gas turbines, clean coal, and renewable generation such as solar and wind, providing a multi-faceted approach to the twin problems of energy supply and greenhouse gas reduction.

Given the lead time taken to construct baseload power plants is up to seven years including planning approval times, it is timely that we look at our future generation needs, and if necessary how to drive more investment dollars in generation to ensure we are able to meet the needs of our growing population from 2010 onwards.

How electricity is generated in NSW

Baseload generation provides for the bulk of our electricity needs, running throughout the day and night. This is very different to the energy required to meet fluctuations at different times of day or different times of the year.

The type of power stations needed to meet peak demand need to be relatively flexible and be able to ramp electricity supply up and down easily. Peaking plants need to be able to come on line very quickly to feed extra electricity into the system to satisfy “peaks” of demand. Hot summer afternoons, when air conditioners place a large additional load on the system, and early on cold winter evenings when heating, lighting and cooking loads coincide are the times of greatest demand spikes.

Baseload on the other hand, does not necessarily provide a high level of flexibility, as it can usually only operate within an output band and can take a significant amount of time to start up.

Below is a graph showing NSW’s electricity generation by fuel source (coal, gas, hydro and other renewable sources like biomass, wind and solar).

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1 ABS Population Projections, Australia 2004-2101
Coal

There are seven major Government owned coal-fired power stations in NSW.

Coal-fired power stations have a high capital cost but low operating costs (that is, they are expensive to build but cheap to run). They are not easily able to switch on and off and this means that coal-fired generation is not able to fully meet the flexibility requirements of highly variable daily load cycles. However, coal is well suited to running consistently as a baseload generator.

Gas

Gas on the other hand is relatively flexible being able to come on line fairly quickly.

Open cycle gas-fired power plants are cheap to build but expensive to run and therefore are the most economic in providing peak demand (intermittent electricity generation). Combined cycle gas-fired power plants are more economic to run for longer periods, that is more suited to intermediate and baseload type operation, but cost more than open cycle plants and are less flexible. The more gas fired generation that is used to meet the State’s electricity demand, the higher the cost of electricity as compared to coal.

There are currently a number of gas-fired power stations being planned or under construction, including the combined cycle 400 megawatt privately funded gas-fired combined cycle plant at Tallawarra on the State’s South Coast, and the 660 megawatt open cycle plant being built by Delta Electricity at Lake Munmorah on the State’s Central Coast.

Hydro

The Snowy Hydro Scheme uses water to generate electricity more often in peak demands.

In the main, however, hydro generation plants are expensive to build and, due to the limited water available, are more suited to peaking or intermediate output. New large-scale hydro generation plants can also present a number of environmental issues that need to be taken into account when assessing a new investment.

These environmental issues mean that small scale hydro generation plants are more appropriate for new developments. There are a number of mini hydros under development, however, due to their small scale and sole reliance on availability of water, they are unlikely to be a realistic baseload option.

Renewable energy (wind and solar)

The NSW Government is committed to increasing investment in the renewable energy sector and has introduced the New South Wales Renewable Energy Target (NRET).

Renewables meet about seven per cent of Australia’s electricity generation (including hydro) and just over eight per
cent of NSW’s electricity generation. Clearly renewable electricity generation is a growing sector — one that the NSW Government is keen to encourage — however it is still a relatively small proportion of the total mix.

As an emerging and growing technology, renewables are a relatively high cost way of meeting electricity demand. Wind is approximately twice the cost of coal, and solar approximately three times more expensive.

**Nuclear power**

According to the Federal Government’s recent report *Uranium Mining, Processing and Nuclear Energy — Opportunities for Australia?*, the earliest nuclear electricity could be delivered to the grid would be 10 years, with 15 years more probable.

However, the NSW Government has legislation in place that makes nuclear electricity generation illegal.

**What new generation is needed?**

NEMMCO prepares an annual statement of electricity supply and demand for all NEM jurisdictions. NEMMCO’s annual statement, the Statement of Opportunities (the SOO), provides an assessment of the generation needs for the short to medium term.

NEMMCO’s most recent forecasts indicate that NSW needs ongoing investment in peak and intermediate generation starting in 2010–11 in order to meet growing demand. NEMMCO also found that new baseload generation investment could be required at the earliest by 2012–13.

The Government is keen to review NEMMCO’s forecasts to determine whether new baseload generation is required.

This requirement is being addressed with the planned investments in several gas fired power plants in 2008 and the commissioning of the 660 megawatt peaking plant at Lake Munmorah in 2009.

**How to drive private investment?**

The State owned generators are investing close to $500 million in their generation assets in 2007–08.

But the NSW Government has a strong preference for new investment in electricity generation capacity to come from the private sector wherever possible.

With significant Government ownership of all segments of the electricity market in NSW, the objective of any future investment must be to ensure an even playing field.

The NSW Government wants to ensure that it provides that level playing field.

The NSW Government recognises that the private sector requires a number of conditions to be met in order to commit significant capital to a new generation project. That is why the Owen Inquiry into Electricity Supply in NSW (Owen Inquiry) needs to examine what conditions the private sector requires for investment.

**Where to next**

The Government, through the Owen Inquiry, wants to address the following issues:

1. Review the need and timing for new baseload generation that maintains both security of supply and competitively priced electricity.

2. Examine the baseload options available to efficiently meet any emerging generation needs.

3. Review the timing and feasibility of technologies and/or measures available both nationally and internationally that reduce greenhouse gas emissions.

4. Determine the conditions needed to ensure investment in any emerging generation, consistent with maintaining the NSW AAA Credit Rating.

The Owen Inquiry will seek a broad range of views from stakeholders, including industry, user groups, environmental groups and the community to ensure any decision taken to move the industry forward is in the best interest of the people of NSW.

For more information visit the Owen Inquiry website at www.nsw.gov.au

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