

KEY RECOMMENDATION

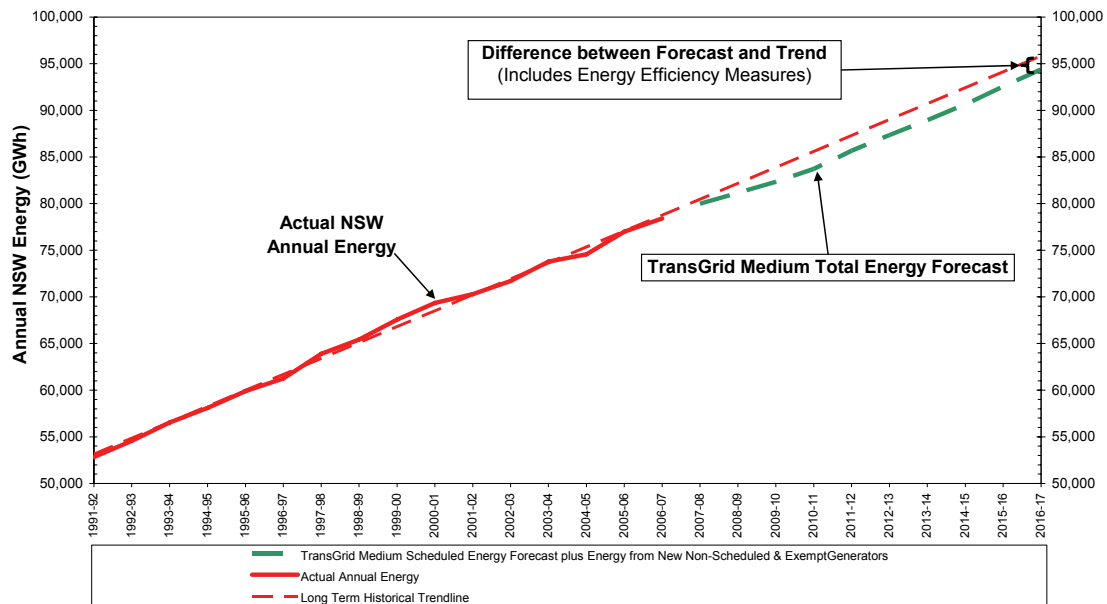
The terms of reference provided a logical sequence for the Inquiry to assess the future baseload electricity generation requirements of New South Wales, and the most efficient means for ensuring that the required investment funds would be forthcoming at the appropriate time. On the basis of submissions made to the Inquiry, together with expert consultant reports, I have determined that there is a need to be prepared for additional investment in baseload from 2013-14. Further, the most efficient means of providing for baseload is to improve the commercial and policy signals used by the private sector when investing in generation capacity in New South Wales. My key recommendation, therefore, is that the Government of New South Wales divests itself of all State ownership in both retail and generation. The process leading to this recommendation is outlined below, and covered in depth in the main body of this report.

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FINDINGS

New South Wales needs to prepare for baseload supply by 2013-14

Figure 1: Actual and Forecast Energy Consumption in NSW, 1991-92 to 2016-17



Source: TransGrid

- With a risk-averse approach, New South Wales needs to be in a position where new baseload generation can be operational by 2013-14 if necessary, in order to avoid potential energy shortfalls.
- Forecast growth in electricity use implies a need to provide around 91,000 GWh of electrical energy in New South Wales in 2013-14. This is around 10,500 GWh above current annual consumption - equivalent to the yearly output of the Mt Piper power station.
- Part of this gap will be filled by energy efficiency, new renewable energy generation and increased output from existing generators.
- New South Wales currently imports around ten per cent of its energy needs but growing energy consumption in other States may reduce the amount of energy available over interconnectors.

To be ready for 2013-14 baseload supply needs, preparation should start now

- Based on recent power station developments in Australia, it can typically take up to six years to reach the stage of letting a contract for a new power station. This can be broken down as follows:
 - feasibility, site selection and site purchase (up to two years)
 - environmental assessment, and development and planning approval (up to two years)
 - detailed design and letting of construction contracts - which can be undertaken in parallel with development and planning approval - (one to two years)
 - construction of a coal-fired power station can take up to four years inclusive of pre-commissioning works
 - construction time for gas-fired power stations can be around two years (plus pre-investment works).

Coal or gas will meet most of the new baseload generation needs

- Most of NSW extra baseload energy needs are likely to be met by coal-fired and/or gas-fired generation as other technologies can only contribute on a relatively small scale or will not mature until 2020 at the earliest.
- New renewable energy generation sources, mainly wind and biomass, are expected to supply 1,375GWh in 2013-14 and about 1,600GWh by 2016-17 (equivalent to replacing the current energy supplied by the Munmorah coal-fired power station).
- Technologies with minimal carbon emissions, such as Solar Thermal, and Geothermal Hot Rock could offer much as baseload generation in the future, but not for stations that are to be operational within the next ten years.
- Nuclear is not an option due to the NSW Government's policy position. In addition, establishing a nuclear energy regulatory framework and planning, building and commissioning a nuclear power plant in Australia is expected to take at least 10 to 20 years.

Ultra-supercritical pulverised fuel is the only coal-fired technology to efficiently meet emerging generation needs

- Three types of coal-fired generation technologies were identified by Connell Wagner:
 - Ultra-supercritical Pulverised Fuel coal generation
 - Integrated Gasification Combined Cycle (IGCC) coal generation
 - Ultra Clean Coal (UCC) generation
- As IGCC and UCC technologies are still at the demonstration stage, only Ultra-supercritical pulverised fuel coal generation will be capable of being operational by 2013-14.
- Ultra-supercritical pulverised fuel coal-fired generation has a carbon intensity lower than current plant and will displace less efficient and more carbon intensive coal-fired generation in the merit order of dispatch, thereby reducing the average carbon intensity in the NEM.
- NSW has ample resources of coal to supply new baseload coal-fired generation, with estimated recoverable reserves of around 10 billion tonnes. In 2004-05, the NSW coal industry produced 156 million tonnes of raw coal. Existing NSW power stations consume around 30 million tonnes of coal per annum.

Combined Cycle Gas Turbines may be able to meet emerging generation needs

- Combined cycle gas turbines (CCGTs) are capable of running efficiently at high capacity factors. They are cheaper to build than coal-fired generators, but have higher fuel costs, and it is this that reduces their attractiveness for baseload power.
- CCGT technology is amongst the most attractive for new intermediate plant.
- Adequate domestic gas is likely to be available for electricity generation until at least 2020 and possibly well beyond.
- As a number of pipeline projects are already progressed in their planning, there is adequate lead time for the projects to be completed by around 2013-14.

Investment in new baseload generation in New South Wales needs greater regulatory certainty about an emissions trading policy

- New investment in electricity generation will occur within a carbon-constrained environment. All States and Territories have committed to long-term emission reduction targets. The Commonwealth Government has promised to establish a long-term emission reduction target in 2008.
- To achieve the long-term target, significant change in the way we generate and use electricity may be required across the National Electricity Market.
- Australia inevitably will have a national emissions trading scheme, commencing no later than 2012. This will allow the market to determine the carbon price within the overall abatement targets.
- Uncertainty over the key design elements of a national emissions trading scheme is delaying necessary investment in new generation, including low emission technologies development.
- The Commonwealth Government should give regulatory certainty by bringing forward the timetable for establishing an emissions trading scheme. At a minimum it should resolve and announce the following key parameters:
 - the national greenhouse gas reduction target and short term caps and associated penalties
 - the basis for allocating emissions permits.

Emissions trading rules will influence the technology choice for new baseload generation

- Combined Cycle Gas Turbines have less than half the carbon emissions of new coal-fired power stations, and will benefit relative to coal from an emissions trading scheme. With a high enough carbon price, combined cycle gas turbines could potentially provide lower cost baseload than coal-fired generation.
- Renewable and low-emission target schemes, such as the NSW Renewable Energy Target will help to accelerate the use of technologies needed to meet long-term emission reduction goals, before and in the early years of an emissions trading scheme.
- Carbon Capture and Storage (CCS) is being actively researched but is unlikely to be developed at utility scale for incorporation in baseload plants until beyond 2020.
- Any new coal-fired generation should provide for retrofitting of Post Combustion Capture (PCC) to facilitate future CCS.
- Manufacturers are able to make generators PCC-ready by allowing space in their designs for carbon capture plants that will be required if PCC is to be retrofitted.
- The indicative costs provided by Alstom in their submission to the Inquiry suggest Ultra-supercritical pulverised fuel technology with PCC will have approximately the same capital cost and better technical performance (availability) than Integrated Gasification Combined Cycle with carbon capture.
- CCS technology is estimated to require up to 30 per cent of the energy generated to be used in the power station and carbon capture process plant. This compares with typically 5 per cent for a power station without CCS.

Energy efficiency measures will play a significant role in reducing electricity consumption

- Energy efficiency can and should play a significant role in helping to achieve the NSW Government's energy and climate change policy objectives.
- Enhanced energy efficiency can contribute to reducing electricity consumption. It is unlikely to offset the need for new investment in baseload generation in New South Wales in the short to medium term.
- The NSW Government should continue to explore options to enhance the role of energy efficiency and consider extra measures to tackle ongoing barriers to the uptake of cost-effective investment in energy efficiency.
- The Government should evaluate the case for replacing the Demand Side Abatement (DSA) Rule with an energy efficiency target and trading scheme in the switch from the existing NSW Greenhouse Gas Reduction Scheme to a national emissions trading scheme. This will help keep incentives for energy efficiency in place.

The National Electricity Market is working efficiently and effectively

- The energy market reforms of the 1990s have established a national and competitive energy market governed by a tested regulatory framework. The success of these reforms means the Government no longer needs to own electricity businesses to ensure security of supply.
- The National Electricity Market (NEM) provides a market that is efficient and protects consumers regarding price, quality, reliability and security of electricity supply.
- Government ownership of electricity businesses operating in the competitive sectors of the industry neither increases nor decreases the State's ability to ensure that price, social and environmental outcomes are achieved from the electricity industry.

Impact on State could be up to \$15 billion to ensure security of supply, compliance with regulatory requirements & commercial competitiveness

- Should the NSW Government choose to continue to own most of the State's electricity industry, the State will almost certainly have to both fund the next tranche of baseload generation in NSW and invest further in the State-owned energy corporations. There is no sustainable half-way house. If the State continues to own businesses operating in the competitive energy market, it needs to accept that these businesses will have to pursue business strategies and investments across the NEM that will allow them to be successful.
- Investment in baseload capacity is but one example of the type of investments that Government would need to fund. The cost of new investment in generation capacity in NSW over the next 10 to 15 years is expected to be in the vicinity of \$7 billion to \$8 billion.
- The Government-owned retail businesses will struggle to remain viable without significant additional capital to allow them to adopt a more vertically and horizontally integrated business model. The potential cost of doing so is in the range of \$2 billion to \$3 billion over the same period.
- Further, the Inquiry believes Government may be exposed to investing in the order of \$3 billion to \$4 billion over the next 15 years to retro-fit some existing power stations with carbon reduction technologies.
- While these investments may earn a return, the NSW Government would need to accept that it has less choice over how its limited capital is allocated to meet State Plan objectives & be prepared to make adjustments elsewhere in its capital program and State Budget to account for the increased business risk that such investment entails.
- Alternatively, divesting the retail and generation interests to the private sector would mitigate the need for public funding of the investment in these businesses and would realise proceeds otherwise unavailable to the Government.
- The combined impact of both the divestment of generation and retail and the avoidance of new generation investment means that total State net debt would be up to \$26 billion lower in 2020 compared to a 'retain and invest' scenario. This would significantly improve the State's fiscal position and the Government's ability to meet its State Plan objectives.
- The State's business profile and credit rating will benefit from the removal of 'high risk' generation and retail assets from its balance sheet.

The Private Sector will invest in baseload generation in NSW if a number of conditions are met

- The private sector has demonstrated it will invest in new generation in the NEM under the right conditions (including access to a stable revenue stream, to generation development sites and to fuel sources).
- The private sector can manage the commercial risks in developing a power station but has less capacity to handle policy and regulatory risks. Submissions to the Inquiry highlighted carbon uncertainty and Government ownership as impediments to investment.
- To secure on-going generation investment in NSW that is adequate, economic and timely, the NSW Government should transfer its retail and generation interests to the private sector.
- In transferring these interests, the Government will maximise the range of competing potential investors, quarantine risk to the State's fiscal position and AAA credit rating, and realise proceeds not otherwise available and likely to be eroded over time.
- This does not involve selling the 'poles and wires' of the State's electricity transmission and distribution networks.
- The Commonwealth Government should bring forward the timetable for establishing a national emissions trading scheme.

RECOMMENDATIONS

The Inquiry therefore recommends that the NSW Government:

1. Divest the State of the retail arms of EnergyAustralia, Integral Energy and Country Energy.
2. Divest the State of the generation businesses of Macquarie Generation, Delta Electricity and Eraring Energy.
3. In the event that the Government does not wish to sell generation, then it should implement an appropriately structured long-term leasing of current generation assets. The State would retain ownership of the assets, with operational and commercial control by the private sector.
4. Actively monitor the progress of reforms to NSW planning, development approval and environmental licensing process to ensure that proposals for new generation capacity, and associated fuel supplies, are considered expeditiously, and in a cost-effective and predictable manner, without compromising the quality of environmental assessment.
5. Support the planned review of the effectiveness of retail competition by the Australian Energy Market Commission in 2010, and consider the removal of regulated retail price caps at that time, should the review find effective competition in the NSW retail market.
6. Encourage the Commonwealth Government to bring forward the timetable for establishing a national emissions trading scheme. At a minimum the Commonwealth should resolve and announce:
 - the national greenhouse gas reduction target and short term caps and associated penalties
 - the basis for allocating emissions permits.
7. Develop and implement clear and timely transitional rules for existing State-based greenhouse gas and emission schemes to the national emissions trading scheme (in the event of its introduction).
8. Encourage and support energy efficiency initiatives where possible.