A response to the Owen Inquiry
NSW Energy Summit, 19 November 2007

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Owen Inquiry documentation #1 (www.nsw.gov.au)

New South Wales now needs to focus on securing future baseload supply of electricity. Consequently, an inquiry, undertaken by Anthony Owen, Professor of Energy Economics at Curtin University of Technology, has been established with the following terms of reference:

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.

In establishing this Inquiry the Government is seeking advice on the actions required to ensure timely investment in generation capacity that addresses greenhouse gas emissions while retaining the State’s fiscal position.
Owen Inquiry documentation #2 (www.nsw.gov.au)

New South Wales has had surplus capacity in electricity generation over the last 20 years. Economic and population growth has progressively reduced the extent of that surplus capacity.

In 1998 New South Wales joined Victoria in establishing the National Electricity Market (NEM). The NEM now includes all Australian States and Territories (apart from the Northern Territory and Western Australia). The NEM allows electricity produced in one State to be sent across the transmission network to other States that need generation capacity. This means that NSW generators can trade electricity across the NEM.

This reduction in excess capacity due to increasing demand for electricity and economic growth raises the question as to when the next major investment in baseload generation should occur in New South Wales.

• Didn’t we establish the NEM to determine when, where & what type of generation to build because centralised, State-based planning caused the surplus capacity?
• Didn’t we strengthen interconnectors between States so that we could fully utilise supply & demand-side resources anywhere in the NEM?

NEMMCO’s submission to the Owen Inquiry:

The National Electricity Market Management Company (NEMMCO) in its annual assessment of the NEM has indicated that New South Wales needs future investment in generation capacity to maintain the State’s electricity supply.

This assessment identified that an additional capacity of 327MW would be required in NSW by the 2010/11 summer to ensure sufficient capacity to maintain reliability. The following factors should be considered when interpreting this result:

• It may be uneconomic to meet this additional capacity requirement using baseload plant. By its nature, baseload plant is expected to run with a high capacity factor in order to be commercially viable. If the additional capacity is only required under peak demand conditions in summer it may be more economic to meet this requirement using peaking or intermediate plant.
• Because of the interconnected nature of the NEM, the additional capacity may be delivered through a combination of generation located in other regions and strengthened interconnection between adjacent regions; and
• The additional capacity could be delivered by reduced demand in the form of demand side participation as described in Chapter 3 of the SOO.

A response to the Owen Inquiry © CEEM 2007
Owen inquiry findings & recommendations

- Require 10,500 GWh new resources by 2013-14:
  - Coal or gas CCGT + energy efficiency & renewables
  - NSW government policy rules out Nuclear in NSW
- Sell retail arms of EnergyAustralia, Integral Energy & Country Energy
- Sell (or lease) Macquarie Generation, Delta Electricity and Eraring Energy
- Support review of retail competition & consider removing regulated retail price caps by 2010
- Bring forward national emission trading scheme & implement transition from existing schemes
- Encourage & support energy efficiency initiatives

Comments on the Owen Inquiry process & outcomes

- Inquiry TOR in the context of the NEM
- Climate change & its implications
- Supply security & cost of electricity
- Sale of retailers & generators
- Conclusions
Inquiry TOR in the context of the NEM

- “The NSW Government is working together with the Commonwealth and other State governments to improve the national electricity market and also to build upon the significant gains achieved since the establishment of the National Electricity Market in 1998” (www.deus.nsw.gov.au)

- COAG National Transmission Network Development Plan: “The NTNDP will provide information on the longer term efficient development of the power system to guide network investment decisions & provide signals for efficient generation investment” (COAG, April 2007)

- The Owen Inquiry TOR return to the discarded central planning paradigm for baseload generation: is it surprising that the report didn’t directly answer them?

Global emission paths to stabilise CO$_2$e & average temp rise (Holdren, 01/07, www.aaas.org)

The path to avoid $\Delta T_{avg} >2^\circ$C (gold) requires much earlier, more drastic action than path to avoid $>3^\circ$C (green): start falling by 2010
Actual emissions increasing at or above highest scenario (Raupach et al, PNAS, April 2007)

Radical action now required to prevent dangerous climate change
Implications of 5m sea level rise (Greenland or West Antarctica ice sheet melt) (http://geogrid.geo.arizona.edu/arcims/website/slrworld/viewer.htm)

"The Treasurer is a great supporter of climate change [sic] and has created a $310 million climate change fund," Mr Iemma said (SMH, 29/6/07)

Trends in rainfall (Power & Whetton, 2007)

Rainfall now declining in east as well as west
Streamflow declining faster than rainfall
(Power & Whetton, 2007)

- 2007 Sept rainfall in Murray-Darling Basin lowest on record & Jan-Sept ave temp highest on record

Variation of Rainfall and Streamflow in south-west Australia

Drought & electricity generation (hydro & thermal)

Droughts affect hydro & thermal power stations

www.bom.gov.au
Risks of prolonged dry periods appear to be growing with climate change:
- Agriculture in Murray-Darling Basin
- More than 50% of Australia’s electricity generation

Higher electricity prices plus lower reliability & load growth?

### NEMMCO Drought Scenarios Investigation, August 07

#### Capacity Reductions – Low rainfall Scenario

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<th>Region</th>
<th>2007</th>
<th>2008</th>
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### NEMMCO Drought Scenarios Investigation, August 07

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(NEMMCO to provide quarterly updates)
Condensing steam in a thermal power station (EPRI, 2007)

- Once-through cheap but heats water source with ecological impacts (sea, lake, river)
- Wet-cooling costs more & requires make-up water to replace evaporative water loss
- Dry-cooling uses least water but costs most & has greatest efficiency penalty

CO2 sequestration options in Aust.

(Owen Inquiry Report, App. 3, 2007)
Drought influencing CFD price? (D-Cypha)

Australian Calendar Power Strip
(average price NSW, VIC, SA & QLD)

Preferred generation now low-emission & low-water:
"You've got to find a supply of water to set aside for power generation, but there is already a shortage of water for agriculture. So this is going to become more of a problem”
(SMH, 19/5/07, attributed to Paul Holper, CSIRO)

Sale of generators & retailers

Sale of generators:
- $10 billion from sale?
- Market power issues?
- Govt. guaranteed emission rights?
- Uncertainty about future gas prices?
- Lost opportunity for rapid, government-led move to low-emission generation?
  - A good idea but not now?

Sale of retailers:
- New owners would want to:
  - Increase energy sales, not encourage greater frugality & end-use efficiency
  - Avoid dealing with CSOs - eg rural drought-related hardship
  - Create barriers to entry
- Lost opportunity for rapid, government-led move to frugality & enhanced end-use efficiency?
  - A good idea but not now?
Conclusions

- NSW already affected by climate change impacts
- Prudent NSW energy policy would promote:
  1. End-use options: frugality, enhanced efficiency, CHP, fuel-switching, embedded renewables
  2. Currently available low-emission supply-side options:
     - Gas CCGT, large-scale renewables
  3. Demolition of old coal-fired power stations to sell sites for re-use (as done at Tallawarra)
  4. Direct policies to drive emission reduction now:
     - Emission trading too slow to get right & take effect
     - Not the right time for the distraction & delay of asset sales
     - Convert retailer profit incentive from energy sales to energy conservation

Many of our publications are available at:
www.ceem.unsw.edu.au