



**AER Submission**

**Review of Energy Market Frameworks in light of Climate  
Change Policies**

**Response to AEMC Scoping Paper**

**14 November 2008**

## **Introduction**

The Australian Energy Regulator (AER) welcomes the opportunity to respond to the AEMC's scoping paper for its review of the impacts of the Australian Government's Carbon Pollution Reduction Scheme (CPRS) and expanded Renewable Energy Target (RET) on existing energy market frameworks. This submission provides high level initial thoughts on the issues raised and the AER looks forward to participating in further discussions with the AEMC as the review progresses.

The AER monitors the wholesale electricity markets and is responsible for compliance with and enforcement of the National Electricity Rules and National Gas Rules. The AER is also responsible for the economic regulation of electricity transmission and distribution services as well as gas transportation services. These roles leave the AER well placed to comment on the performance of Australia's energy markets and also on network issues raised by the introduction of the CPRS and expanded RET.

At the outset, the AER would strongly caution against any fundamental changes to the energy market framework that has been established in Australia, such as the introduction of a capacity market. Australia's energy market reforms of the past 15 years have been internationally recognised as a major success, delivering significant investment and continued high reliability. While there has been some recent deferral of investment in new generation, this has been due to the uncertainty surrounding CPRS and RET policies rather than any failings with the energy only framework of the National Electricity Market (NEM).

There are, however, issues associated with the introduction of the CPRS and expanded RET that may need to be addressed through changes in the energy market framework. The AER agrees with the scoping paper in identifying issues such as network implications and those the retailers would face should they not be allowed to pass on increased costs to consumers.

This submission first outlines the strong performance of Australia's energy markets in recent years, noting the significant gains that have been made. This history highlights that fundamental change to the energy market framework is not required. Fundamental changes have the potential to introduce significant uncertainty and have the potential to unwind the gains that have been made to date.

The second part of this submission focuses on some potential network issues associated with the introduction of a CPRS and expanded RET. The submission draws out a number of the network issues raised in the scoping paper that need to be considered in this review. In particular, the review should consider whether the current regime encourages investment in efficient locations and whether the arrangements for connection of new generators are sufficient. The AEMC should also consider the implications of the expected change in generation patterns on network pricing in and between NEM regions.

The third part of this submission sets out the AER's agreement with the retail issues raised in the AEMC's scoping paper, and notes that addressing these issues may require a broader strategy than amendments to the national framework.

## Performance of Australia's energy markets

The scoping paper makes the following comment on the performance of the NEM and Western Australian Wholesale Electricity Market (WEM):

*The NEM and the WEM are relatively new markets. Both started with spare generation capacity. Hence, there is limited experience of large scale investment in new generation plant.<sup>1</sup>*

The AER disagrees with this assessment of the investment performance of the NEM. While the NEM is a relatively new market, there is ample evidence that to date the energy-only arrangements of the NEM have proven very successful in attracting required new investment. Over six thousand megawatts of electricity generation capacity was installed in the NEM between 1999 and July 2008—enough to meet peak electricity demand for the whole of South Australia and Tasmania.

The scoping paper suggests that the NEM started with spare generation capacity. A state by state assessment indicates, however, that while some states had spare generation capacity others, in particular Queensland and South Australia, initially had tight supply–demand balances. These states have had strong growth in generation capacity, with capacity expanding by over 30 per cent since 1999.

The scoping paper notes that uncertainty on future climate change policy settings has delayed generation investment. While the AER agrees that uncertainty about the form of the CPRS and the RET has had a dampening impact on generation investment, significant investment has still been occurring in new generation plant. The recently released 2008 Statement of Opportunities (SOO)<sup>2</sup> details the following new generation plant, including a number of projects announced since last year's SOO:

- Darling Downs power station, Queensland (on the Roma to Brisbane gas pipeline) – 630 MW combined cycle gas-fired power station - construction began in August 2007 with full commercial operation in the first quarter of 2010 (***proposed but not committed in previous SOO***)
- Braemar 2 power station, Queensland (on the Roma to Brisbane gas pipeline) – 450 MW (three 150 MW open cycle gas turbines) – announced in February 2008 for completion in May 2009 (***not included in previous SOO***)
- Condamine power station, Queensland (on the Roma to Brisbane gas pipeline) – 135 MW combined cycle gas-fired power station – initially (from February 2009) operating as open cycle gas turbines – first announced in July 2006 (***not included in previous SOO***)
- Mt Stuart power station near Townsville, Queensland – additional 126MW open cycle gas turbine – announced in February 2008 for completion by mid-2009. It

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<sup>1</sup> AEMC 2008, *Review of Energy Markets in light of Climate Change policies: Scoping Paper*, October 2008, p.19.

<sup>2</sup> NEMMCO 2008, *Australia's National Electricity Market: Statement of Opportunities 2008*, October 2008.

will be fuelled with jet fuel (kerosene) – as is the existing plant – but can be converted to gas in the future.

- Colongra power station, near the Hunter Valley in New South Wales – 660 MW open cycle gas turbine power station (four 160 MW open cycle gas turbines) – announced in July 2007 for completion by summer 2009/10
- Uranquinty power station near Wagga Wagga, New South Wales – 640 MW open cycle gas turbine power station (four 160 MW open cycle gas turbines) – announced in September 2006 for completion in November 2008
- Tallawarra power station near Wollongong, New South Wales – 420 MW combined cycle gas-fired power station (260MW gas turbine and a 160 MW steam turbine) – construction commenced in November 2006 and it is due for completion by summer 2008/09
- Bogong near Mount Beauty, Victoria – 140 MW underground hydroelectric station due to be commissioned in late 2009.

This strong investment performance suggests that once the uncertainty surrounding climate change policies is addressed, the current energy-only framework will be well placed to deliver timely investment into the future.

In addition, the AER notes that governments are also considering measures to support the overall investment climate. Notably, the Federal Government's Carbon Pollution Reduction Scheme Green Paper<sup>3</sup> canvasses providing comprehensive support to underpin investor confidence in the electricity generation sector and ensure security of energy supply. The measures outlined in the Green Paper include support for the development and deployment of carbon capture and storage technologies and direct assistance to coal-fired generators through direct payments or free carbon pollution permit allocations.

These features suggest that fundamental changes to the energy market framework established over the past 15 years are not required. The AER notes that the scoping paper questions whether a capacity market is required in the NEM.

*The NEM does not provide capacity payments. This exposes investors to risks if their generation is not dispatched.*<sup>4</sup>

*Under the energy-only pricing arrangements in the NEM, revenue from energy sales needs to be sufficient in periods of high prices to recover capital costs and earn a return on new generation investment. If this is not expected to be the case, private investment is unlikely to proceed. This differs to the WEM where generators also receive revenue for providing available capacity.*<sup>5</sup>

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<sup>3</sup> Australian Government 2008, *Carbon Pollution Reduction Scheme Green Paper*, July 2008

<sup>4</sup> AEMC 2008, *Review of Energy Markets in light of Climate Change policies: Scoping Paper*, October 2008, p.36.

<sup>5</sup> AEMC 2008, *Review of Energy Markets in light of Climate Change policies: Scoping Paper*, October 2008, p.19.

There is no evidence or suggestion that the existing energy only market is not adequate to address any concerns about the timeliness of new investment. Further, there is a high risk that changes in market design would bring such uncertainty that the change itself would be an impediment to the necessary investment.

The NEM design has been stable since market start. Other markets have seen major changes in design, with high direct and indirect costs. For example, the introduction of new trading arrangements in England and Wales were estimated to create industry costs of up to 580 million pounds.

The scoping paper notes that uncertainty surrounding climate change policies has had a negative impact on generation investment. The AER considers that questioning the basic energy market design risks extending this uncertainty well into the future. This issue was discussed in the Energy Reform Implementation Group (ERIG) report published in January 2007.

In rejecting calls for the introduction of a capacity market ERIG noted that:

*The concern that investment will not come forward in the energy only market has not been substantiated ... and therefore ERIG can see no reason to further investigate the merits of an alternative market design at this stage. ... Further, any consideration of a change in the design of the market would have a material impact on investment decisions, and the uncertainty created may adversely impact investment until the matter had been finalised.<sup>6</sup>*

The AER similarly believes that there has been no evidence of concerns with the current energy only market design that would justify the high costs and risks associated with the introduction of a capacity market. Specifically, the AER believes there is no evidence to suggest the current NEM design will not deliver the capacity response required by the introduction of the CPRS.

## **Networks issues**

While the current energy market and regulatory frameworks will largely be effective in responding to climate change policies, there are a number of electricity network issues which require further consideration.

Efficient transmission access for new generation will be essential for the efficient delivery of the CPRS policy objective and the additional renewable generation required to meet the expanded RET. This issue is considered in the AEMC's scoping paper and should be given further attention during the review. In particular the review should consider whether the current regime provides:

- adequate signals to encourage new generation in economically efficient locations
- effective mechanisms to coordinate connection of new generation

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<sup>6</sup> Energy Reform Implementation Group 2007, *Energy reform – the way forward for Australia*, a report to the Council of Australian Governments by the Energy Reform Implementation Group, January 2007, pp.226-27.

- adequate arrangements for recovering the costs of network upgrades in and between NEM regions.

These issues have been the subject of numerous reviews around the world. The experiences of international energy regulators and their responses to climate change policies may be useful in informing the AEMC's review.

### *Location and pricing signals*

Electricity networks in most regions of the NEM were developed and configured around existing large coal-fired generators and there are significant network assets associated with the transport of electricity from these generators to the load centres. In the long term, the implementation of climate change policies should lead to the retirement of coal-fired generation in favour of less emission-intensive forms of generation such as gas-fired and renewable plant.

The review should consider whether the current regime, and in particular pricing signals and arrangements for connection, provide strong signals for investors to locate new generation in the most economically efficient areas, taking into account both the location of fuel sources and the current electricity network configuration. In the event of retirement of existing plant, there should be strong incentives to locate near underutilised electricity network assets.

Under the current market arrangements, new generators connecting to the shared network are required to pay for costs which are directly attributable to the services they use. Currently, generators do not pay for 'deep connection' costs for any downstream augmentations that are required as a result of the connection. In light of the expected change in the nature of generation in the NEM following the introduction of climate change policies, the review should consider whether this regime will continue to provide sufficient incentive for generation investment in efficient locations.

The AER recognises that to some extent the existing regime may encourage new generators to locate near existing network assets where there is available capacity. A generator that locates in a remote location risks not being able to transport their electricity to customers as it may be 'constrained off' due to network limitations. However, further analysis is required to determine whether this incentive is sufficient to ensure generation investment in efficient locations following the introduction of climate change policies.

If the network pricing regime fails to provide sufficient incentives for efficient location decisions, there will be substantial costs to customers in the NEM. If large generators are retired and new generators are not located near underutilised regulated network assets, significant network assets may become redundant. Under the current regulatory arrangements, customers in the NEM will continue to pay for redundant network assets as these assets cannot be removed from a network owner's regulated asset base. In addition, electricity customers will fund reinforcements to the shared network required as a result of the connection of new generation in inefficient locations.

While the AER is not suggesting that redundant network assets should be removed from a network business's regulated asset base, it is imperative that the review consider whether the current framework provides economically efficient location pricing signals. This will ensure that the risk of future large scale network redundancy is minimised and

new network investment reflects efficient generation location decision-making, which will lead to lower costs for electricity consumers.

### ***Access and coordination of connection of new generation***

As noted by the AEMC, climate change policies, in particular the expanded RET, are likely to stimulate increased investment in renewables such as wind generation. The AER agrees that the review should consider whether the current arrangements effectively accommodate the connection of these new forms of generation. Set out below is the AER's initial thoughts on this issue which may be helpful for the AEMC's review.

The regulatory regime should be designed to achieve the most efficient connection and transmission access to meet the expected increase in generation capacity. Due to the nature of the conditions required for effective wind generation (strong and consistent wind), it is likely that significant investment in wind generation may occur in the more remote locations of the NEM. In addition, in the longer term other forms of generation, such as geothermal and solar, are likely to be located in remote areas. Significant network investment will be required to transport electricity from these remote sites to customers in the NEM.

Currently, connection of new generation capacity to the shared network is negotiated between generators (acting individually) and the network service provider. As noted by the AEMC, this approach encourages the development of the network at the lowest level necessary to connect the projected output from each individual generator.

The AER recognises that this approach has generally delivered an efficient level of network investment for the connection of individual generators. However, there is a risk that the existing arrangements will not deliver the most economically efficient outcome for connecting a large number of discrete wind generation sites in more remote parts of the network. A more coordinated and strategic approach to negotiating connection may be warranted following the introduction of climate change policies.

International experience on the implementation of carbon pollution reduction policies may inform the development of arrangements for transmission access for renewable generation in Australia. For example, in Ireland, the Commission for Energy Regulation has directed network operators to adopt a group processing approach where more than one renewable generator has applied for connection in a particular area. The group processing approach was introduced in response to the large volume of outstanding wind generation connection applications and allows for connection costs to be shared among connection applicants within a group.<sup>7</sup> The Office of Gas and Electricity Markets in the United Kingdom, Texas and California have also reviewed arrangements for transmission access for renewable generation.

### ***Inter-regional network investment***

Climate change policies, in particular the expanded RET, are likely to lead to increased investment in wind generation. The review should consider the likely location of this investment and the implications for network pricing in and between NEM regions.

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<sup>7</sup> Commission for Energy Regulation, *Group Processing Approach for Renewable Generator Connection Applications—Connection and Pricing Rules*, 6 April 2005.

South Australia is considered to have the best locations for wind generation (in terms of wind speed and consistency).<sup>8</sup> The delivery of energy generated from new wind developments in South Australia to customers across the NEM will require significant investment in the transmission network. This investment will include network augmentation to connect wind generators and further reinforcement and investment in the shared network to allow this generation to meet the needs of other NEM regions.

As noted by the AEMC in its scoping paper, there is a risk associated with how the costs of investing in the shared network will be recovered. Under the current regulatory arrangements, a TNSP will need to satisfy itself that the investment in the shared network to transport electricity from wind generators to customers in the NEM meets the requirements of the Regulatory Test.

If the investment meets the requirements of the Regulatory Test, the TNSP will recover the cost of the network investment from all customers in the region through transmission use of system (TUOS) charges. If, for example, new renewable generation is primarily located in one NEM region, customers in that region will fund the necessary network investment (through increased TUOS charges). This is the case even where the primary purpose of an augmentation is to deliver renewable generation to other regions to meet the national expanded RET. This has the potential to substantially increase the TUOS charges paid by electricity consumers in that region.

The arrangements for recovering costs associated with connecting renewable generation will potentially act as an impediment to efficient network investment. There is no compulsion for a transmission network business to augment its network to meet market needs. Network businesses may become reluctant to invest in projects intended to transport renewable generation to other NEM regions (even where there are clear market benefits) as this investment may not directly benefit its customers. Given the expected change in the patterns of generation investment following the introduction of climate change policies, this will be a key issue for the AEMC to consider during the review.

## **Retail issues**

The scoping paper identified a number of risks faced by retailers following the introduction of climate change policies. These are important and relevant issues for the review and the AER considers that the AEMC has effectively described the risks faced by retailers.

It is likely that retailers will face increases in wholesale electricity purchase costs and increased spot price volatility following the introduction of climate change policies. To avoid financial stress and prevent market exit, retailers will need to be able to pass through increased costs.

The AER agrees that the forms of price regulation applying to host retailers in some states may prevent the efficient pass through of increased costs. Similarly inflexible contractual arrangements or competitive constraints from host retailers with artificially low (capped) retail prices may prevent new entrant retailers from passing through significant increases in wholesale electricity purchasing costs.

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<sup>8</sup> Clean Energy Council, *All about wind energy*, 2007.



It would appear that any strategy designed to address these risks will need to be outside the National Electricity Rules. These issues will need to be considered and addressed by each of the states and territories when reviewing and/or amending arrangements for retail price regulation.