14 September 2012

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Climate Change Authority Review of the Renewable Energy Target Scheme

Thank you for the opportunity to make a submission to the Climate Change Authority (CCA) review of the Renewable Energy Target (RET) scheme.

The Australian Energy Market Operator (AEMO) operates the National Electricity Market (NEM), the Victorian Declared Wholesale Gas Market (DWGM) in Victoria and the Short Term Trading Markets (STTM) for gas at hubs in Adelaide, Sydney and Brisbane. AEMO is also responsible for the procurement and planning of the shared network and connections of electricity transmission in Victoria and has a range of national planning functions for electricity and gas transmission.

AEMO does not participate nor invest in any market itself, but its role in supporting Australian energy markets in a technology-neutral manner provides it a wide perspective that is relevant to the RET review. The attached submission outlines AEMO's key operational and planning responsibilities, and AEMO's perspectives on areas of overlap between the RET review and AEMO's functions. I draw your attention in particular to our work on the National Transmission Network Development Plan and the Gas Statement of Opportunities both of which are now well advanced and will be published prior to the end of 2012. Given the degree of interaction between the work being carried out by AEMO and the CCA in its RET review, AEMO would be pleased to provide assistance to the Authority.

If you would like to further discuss any matters raised in this submission, please contact Mr Murray Chapman, Group Manager Market Policy Development on (03) 9609 8486 or by email: murray.chapman@aemo.com.au.

Yours sincerely

David Swift
Acting Chief Executive Officer

Attachments: AEMO submission to Climate Change Authority review of the Renewable Energy Target scheme

AEMO Submission to Climate Change Authority review of the Renewable Energy Target scheme

1. Role of AEMO

AEMO is an independent, member based organisation (60 per cent government, 40 per cent industry) working in the long-term interests of Australian consumers by ensuring that energy markets operate to balance issues of price, quality, safety, reliability and security of energy supply.

AEMO also delivers an array of gas and electricity market operational and planning functions. It operates in eastern and south-eastern Australia, but not in Western Australia or the Northern Territory.

AEMO does not invest or participate in the markets, but its responsibilities include:

- Day to day management of wholesale and retail energy market operations and emergency management protocols.
- Ongoing market development required to incorporate new rules, infrastructure and participants.
- Long term market planning through demand forecasting data and scenario analysis.

1.1. Markets

AEMO operates the retail and wholesale energy markets of eastern and south eastern Australia, including:

- National Electricity Market (NEM)
- Victorian Declared Wholesale Gas Market (DWGM)
- Short Term Trading Market (STTM) – wholesale gas in NSW, SA and Qld

Each of these markets operates under its own set of rules and involves different sets of participants.

1.2. Operations

AEMO oversees the vital system operations and security of the NEM and the Victorian gas transmission network. Market operation includes a range of functions from systems operation, maintenance of system security, metering and settlements through to market performance reporting, incident analysis and emergency management. Those operations cover:

- Power system operator (Queensland, NSW, ACT, Victoria, SA and Tasmania)
- National gas bulletin board (Publishes current information on supply, demand and capacity across the interconnected gas transmission pipelines: Covers Qld, NSW and the ACT, SA, Victoria and Tasmania)
- Victorian designated transmission system (gas) operator
- Emergency management (electricity and gas)

It is important to note that AEMO's role as the operator of the Victorian gas transmission arrangements is unique and does not apply in other jurisdictions.

1.3. Planning

In its role as the National Transmission Planner, AEMO delivers strategic gas and electricity planning advice and forecasting to guide long term investment in Australia's energy network infrastructure and resource management. This includes independent modelling of possible future scenarios and advice on how our markets might develop under those scenarios. AEMO provides advice on how generation and transmission might develop to meet forecast energy requirements.

AEMO recently published the first independent demand forecast for all NEM regions over the next 10 years, providing a consistent basis for our planning activities.

Planning and forecasting information is delivered annually through a suite of interrelated documents:

National Electricity Forecasting Report (NEFR)	• Provides an independent demand forecast for all NEM regions for the following 10 years • Explores a range of scenarios with varying economic outlook, embedded generation and demand-side reduction.
National Transmission Network Development Plan (NTNDP)	• A strategic plan and comprehensive information source for the NEM transmission network • Explores a range of scenarios to determine their potential future electricity transmission impacts
Electricity Statement of Opportunities (ESOO)	• Provides information about demand forecasts, generation capacities, and NEM supply adequacy for the following 10 years. • Supported by the annual Power System Adequacy report which considers security matters in the following 2 years and the Generator Information Page providing ongoing information on existing, committed and future projects.
Gas Statement of Opportunities (GSOO)	• Examines the interconnected Australian gas transmission network, consolidating demand and reserve forecasts and opportunities • Explores a range of scenarios to determine potential future impacts on gas reserves, processing and storage, transmission pipelines and customer demand
South Australian Advisory Functions	• A series of reports that present information on the current and future state of the SA electricity market, including demand forecasts, supply capability and fuel supply as well as analyses of historical trends and the behaviour of wind generation.
Victorian Annual Planning Report (VAPR)	• Provides forecasts for energy demand and supply in Victoria and identifies future development needs for both the electricity shared transmission network and the Victorian Declared Transmission System

These reports and the associated information perform an important market disclosure process for intending commercial investors. In turn, they rely upon quality input information, much of which is derived from those investors. There are challenges in obtaining high quality information, especially regarding new supply. The RET is an important consideration for new investors, and also for AEMO's planning processes, as the technology of new investment in generation is materially influenced by the RET.

1.4. AEMO's role in the Victorian Electricity Transmission Network

In NSW, Queensland and Tasmania, the local Transmission Network Service Provider (TNSP) plans (with reference to AEMO's NTNDP), constructs and operates (in conjunction with AEMO operations) the transmission systems and arranges connections to it. These TNSPs are government owned, for-profit monopolies, regulated by the Australian Energy Regulator (AER).

In South Australia the arrangement is similar, but the TNSP is privately owned and AEMO provides a level of independent oversight and review.

In Victoria, AEMO is the electricity transmission network planner and procurer and arranges network connections. Most existing network assets are physically owned by the regulated for-profit SPAusNet under a Use of System Agreement with AEMO. Where AEMO determines a Victorian augmentation to be justified and contestable, AEMO is able to put the project construction and on-going management out to competitive tender.

As part of this role, AEMO arranges transmission network connection projects in Victoria, which gives it detailed experience in the challenges of connecting new generation technologies to the grid.

2. AEMO perspectives on the RET scheme

AEMO does not participate in any of the energy markets, nor does it invest directly in the markets or the industry. Consequently AEMO does not take a position on the RET itself or the commercial impacts of the RET on the energy markets.

However the functions that AEMO performs do interact with the RET and the review being undertaken, and these areas are discussed in the following sections.

2.1. Impact on electricity network security

As discussed in the Issues Paper[1], larger levels of intermittent generation may have implications for maintaining electricity system security.

One of the most likely renewable generation sources at current costs is wind generation. There has been ongoing investment by a range of participants in wind generation and in identifying and developing potential future wind generation projects. A key challenge of wind and a number of emerging renewable generation sources like wave, tidal and solar generation technologies is its intermittency of production unless some form of energy storage is employed.

AEMO is presently studying the impacts of the expected continued growth of intermittent generation on the security of the NEM. Whilst it creates technical challenges, AEMO feels

[1] Issues Paper – Renewable Energy Target Review, CCA August 2012. http://climatechangeauthority.gov.au/sites/climatechangeauthority.gov.au/files/RET-Review-20120820.pdf

the NEM design is well placed to deal with them. This includes some existing beneficial features, such as:

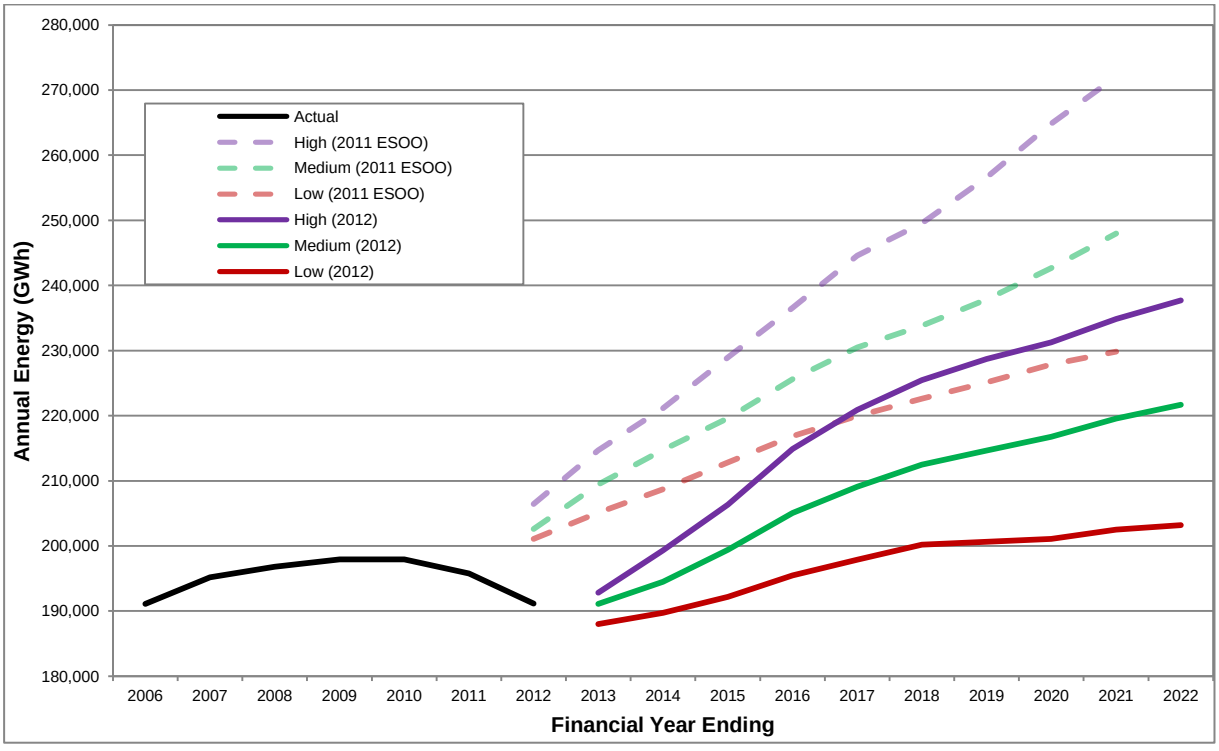
- Five-minute security constrained economic dispatch and pricing.
- The Australian Wind Energy Forecasting System (AWEFS) which is forecasting variations in output and thereby assisting non-intermittent plant to predict dispatch. It is intended to expand this system to also forecast the output of large solar plants.
- The semi-scheduled generator provisions in the National Electricity Rules (NER) that requires intermittent generators such as wind generators to respond to AEMO dispatch signals to reduce output when network security is threatened.

South Australia demonstrates the success of the NEM in integrating wind generation given that it has one of the world's highest wind penetrations. Wind generation there contributes just over 20% of total supply on average and over 60% on occasion. While wind generation in South Australia is being well managed operationally by the market, the market prices obtained reflect the high concentration of wind generation which is not correlated to demand. Other things being equal, investment in wind generation in regions with lower existing penetration is expected to become relatively more attractive in the future.

2.2. Demand forecasts

A significant development in the NEM in 2012 was the publication of the first National Electricity Forecasting Report (NEFR). This report provides an independent energy and maximum demand forecast for all NEM regions for the following 10 years, and provides a consistent basis for AEMO and industry planning functions.

The NEFR shows that the expected growth in energy demand over the next ten years is much slower than previously assumed. The diagram below provides a comparison between the 2012 NEFR and the previous 2011 Electricity Statement of Opportunities:



Sustained demand growth has been an important factor in accommodating investment in renewable energy, supported by the RET. The reduction in demand in recent years, and the lower levels of energy growth are expected to materially change the way the RET impacts the market.

2.3. Planning scenarios

AEMO notes the timeframes of the review as currently defined by the CCA:

Date	Event
14 September 2012	Issues paper submissions due
October 2012	Discussion paper released
December 2012	Final report released

The release of the final report in December 2012 will coincide with AEMO's annual publication of the NTNDP for 2012. The NTNDP provides information to the industry on the technical issues arising from the integration of large-scale intermittent generation in the national transmission system, and includes modelling of the expected levels of investment flowing from the RET.

Given the degree of interaction between the work being carried out by AEMO and the CCA in its RET review, AEMO would be pleased to provide assistance to the Authority.