Australian Geothermal Energy Association

Response to Review of Energy Market Frameworks in light of Climate Change Policies 1st Interim Report

18 February 2008

Overview and Executive Summary:

AGEA believes that geothermal energy, together with a mix of other renewable technologies including wind, solar, wave and other emerging technologies, has the potential to represent a viable mitigation measure and major contributor to Australia's energy market and the environmental and economic challenges of climate change.

AGEA notes that the AEMC's 1st Interim Report has utilized and referenced various consultant reports relating to the impact of the CPRS and the RET. In relation to geothermal energy the key points from the Report can be summarized as follows;

- Recognition that existing new transmission investment NEM rules will not cope efficiently with multiple connections expected under geographically clustered areas of renewable energy development
- Recognition of the need to address the likelihood that congestion issues will arise within and between regions to enable efficient renewable investment
- Need to – as detailed in The Allen Consulting Group report - alter the approach to assessing and applying the Regulatory Test for Transmission Investment
- MMA Treasury, ACIL Tasman and ROAM Consulting modeling reports all show significant geothermal generation capacity coming on stream toward the end of the next decade.
- The capacity comes on stream under a business as usual case (using MMA Treasury modeling) where there are no new NEM rules, full cost of transmission is borne and wholesale and retail prices are around $70 to $80 MW/h and $160 to $180 MW/h, respectively.
- ACIL and ROAM expect the main source of geothermal to come from SA while ACIL also expects a large contribution from QLD.

AGEA concurs with the above findings of the AEMC's Interim Report and strongly supports the need for further work to address the network investment issues – connection, congestion and regulatory test. AGEA also supports the continued input of key stakeholders in that further work.

Work recently undertaken for AGEA by consultants McLennan Magasanik Associates (MMA) reinforces in an AGEA Report (on the

potential capacity of geothermal generation by 2020) the expectation that geothermal generation technology will provide a competitive and significant contribution to renewable energy production by 2020. The AGEA MMA report has been previously provided to the AEMC and is available on www.agea.org.au. A more recent comparative generation costing summary report undertaken by MMA for AGEA outlines the cost in $/MWh of geothermal and other forms of generation on a basis consistent with MMA's Treasury modeling work. Once finalized the MMA report - "Comparative Costs of Electricity Generation Projects" will be provided to the AEMC as supporting information.

Both AGEA Reports from MMA confirms the competitiveness of geothermal generation and its continued improvement as it reduces down the cost curve over time with "learning" and scale efficiencies. Importantly, this continues beyond 2020 when other existing conventional technologies are generally expected to increase in cost and should be included in decision-making relating to transmission investment.

AGEA supports the establishment of renewable generation connection "hubs" based on implementation of Option 4 involving the recovery of shared network costs by TUOS charges provided that augmentations pass the Regulatory Test.

These regulated generation connection "hubs" could be strategically located to facilitate the economic development of renewable generation technologies in defined areas or regions.

The "hub" locations and associated network connection capacity could be identified by undertaking public consultation and studies to confirm likely generation capacity and associated expansion plans. These arrangements would provide for future connection options where generation capacity can reasonably be expected to occur.

It is proposed that the connection assets required to facilitate connection to the "hubs" would continue to operate under existing bilateral negotiation frameworks. In effect these connecting branches would represent unregulated services.

A planned approach to developing regulated connection "hubs" would also ensure the most efficient utilisation of available network capacity. Network service providers would be able to more readily coordinate and plan development of these facilities and provide for timely network augmentations that may be required.

These constraint modelling studies proposed by the AEMC should also give consideration to the accelerated entry of renewable energy sources including geothermal generation technology together with the time taken to establish new regulated transmission infrastructure.

AGEA supports the need to review and improve existing inter-regional transmission pricing arrangements to facilitate efficient and equitable cost allocations across the market.

Consistent with above AGEA has begun developing potential solutions and approaches to the above challenges and has commenced with the issues facing geothermal development in the northern part of SA. A NEM Concept Paper No. 1 (refer attached) has been prepared for discussion with key stakeholders and is provided for the AEMC for its consideration. This is the first of a number of NEM papers with others to focus on Network Congestion, Connection in other States (Vic., Tas., Qld., W.A. and N.S.W.) and the proposed changes to Regulatory Test for Transmission Investment.

It should be noted that the AGEA Concept Paper has been prepared with a fundamental principle of seeking cooperation from all forms of renewable energy developments. This is designed order to facilitate large scale and efficient network investments that are capable of making material inroads into the CPRS and RET objectives while ensuring a secure, reliable and competitive NEM.

AGEA has focused its other specific comments on Issue A5 – Connecting new generators to energy markets and Issue A6 – Augmenting Networks and Managing Congestion. Refer to specific comments in the following sections.

Yours sincerely,

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Chairman, AGEA NEM Policy Committee

AGEA Representative to the AEMC's Stakeholder Committee - Review of Energy Market Frameworks in light of Climate Change policies

Issue A5:

Connecting new generators to energy networks

The expanded RET will stimulate investment in renewable generation capacity. This is likely to be clustered in certain geographic areas that are remote from customers and the existing transmission networks. Existing bilateral negotiations for new connection may be unlikely to cope with the large extensions to remote areas. There is significant risk of unnecessary costs and delays

Question 5.1
Do you agree that the connection of new generators to energy networks is a significant issue that should be further progressed under this Review? If not, what are your reasons for reconsidering this position?

The existing regulatory arrangements do not provide for the efficient development of renewable energy capacity and effective utilisation of limited network infrastructure. AGEA strongly supports the consideration of these issues as part of this Review.

Question 5.2
Would any of the models identified in this chapter ensure the more efficient delivery of network connection services? In particular, with relation to these models:

- **How should the risks of connection be most appropriately spread across new connection parties, network businesses and end use consumers?**
- **How do the connection charges change for connecting new generating plant and what benefits may arise?**
- **How do the costs for end use customers' change and what benefits may arise?**

Reference should be made to AGEA's NEM Concept Paper No. 1. The Concept Paper proposes two generic solutions that could be applied to the northern part of SA – namely a cooperative approach with all forms of renewable energy and the investment staging of transmission capacity, together with consideration of a new NEM region to be established in SA. The Concept Paper is provided for discussion and represents a generic approach to accommodating the numerous geothermal projects in SA and

recognizes ultimately that commitments will be required by proponents in cooperation amongst each other and with governments. (A full outline of SA geothermal tenements can be found on the PIRSA website www.pirsa.sa.gov.au)

The positions/potential solution in the Concept Paper can also be incorporated/accommodated within the Regulatory Test approach outlined in the Allen Consulting Group report.

AGEA strongly supports the establishment of renewable generation connection "hubs" based on implementation of Option 4 involving the recovery of shared network costs by TUOS charges provided that augmentations pass the Regulatory Test.

These arrangements will have potential to provide for the maximum utilisation of limited network transfer capacity and facilitate a coordinated response to large scale renewable generation technology.

These regulated generation connection "hubs" could be strategically in located to facilitate the economic development of renewable generation technologies in defined areas or regions.

The "hub" locations and associated network connection capacity could be identified by undertaking public consultation and studies to confirm likely generation capacity and associated expansion plans. These arrangements would provide for future connection options where generation capacity can reasonably be expected to occur.

Importantly, these arrangements would support projects having different development timelines.

The connection assets to connect generation capacity to the "hubs" would continue to operate under existing bilateral negotiation frameworks. In effect these connecting branches would represent unregulated services.

A planned approach to developing regulated connection "hubs" would also ensure the most efficient utilisation of available network capacity. Network service providers would be able to more readily coordinate and plan development of these facilities and provide for timely network augmentations that may be required.

The proposed arrangements would provide for a coordinated approach to large scale generation renewable generation rather than the fragmented development outcomes that would otherwise occur.
The above outcome could be achieved by developing a clear and practical economic test involving changes to the existing Regulatory Test

(cost/benefit) that is currently used by Network Service Providers to assess the viability of regulated augmentations.

AGEA would support revision of the existing Regulatory Test based on the value of RECs being excluded from the cost/benefit assessments of transmission upgrades. It is proposed that the pattern of generation should be projected "without" and "with" the transmission upgrade, taking account of the impact of renewable obligations. AGEA supports the views expressed in "The Allen Consulting Group" report titled "Climate change policies and the application of the Regulatory Investment Test for Transmission" dated December 2008.

Generally, these arrangements would better support the establishment of renewable generation capacity remote from existing networks. However the details process and rules behind such an approach need careful consideration and AGEA would welcome a continued opportunity to provide input to the changes to the Regulatory test.

The cost of acquiring carbon permits under the CPRS should be treated as a generation operating cost. Therefore transmission projects that facilitate the connection of renewable generation technologies may potentially reduce the cost to consumers.

In effect, the Regulatory Test could readily be amended to take account of the ERET scheme and CPRS and provide for the effective assessment of transmission upgrades.

While the development model proposed by AGEA will see end use customers carry these development risks, it should be acknowledged that the risks associated with a fragmented approach would have potential to see greater costs being carried by customers in the longer term.

It is worth noting that the MMA Treasury work shows an expectation of remote geothermal in SA coming on stream late in the next decade under business-as-usual. This suggests that any acceleration of geothermal generation by capital grants (eg Renewable Energy Fund) and/ or by transmission expenditure (eg Infrastructure Fund) would result in a significant and positive impact across the NEM placing downward pressure on NEM wholesale prices. This is an area for further analysis by AGEA and should be assessed also by the AEMC.

As a variation on this theme, development of remote generation connection "hubs" could be funded by other external sources (as suggested earlier), including the Infrastructure Australia Fund.

The AGEA supports the proposal to make appropriate inclusions in the existing "Contingent Projects" regime that may provide for the development of remote generation connection "hubs".

It should also be recognised that, in some cases, the coordinated development of generation connection "hubs" by Network Service Providers or the National Planner may also have potential to influence power flows in the network and can therefore be used to facilitate the management of network congestion. This issue is considered in our response to Question A6.

Issue A6:
Augmenting networks and managing congestion

Consideration has been given to the ability of existing frameworks to promote efficient use of and investment in the electricity network through decentralised decision making by individual market participants. While the expanded RET, under some scenarios may increase network congestion within and between regions, particularly due to the new and different mix of generation, the analysis currently available to the AEMC is inconclusive as to whether this will lead to the materiality of this problem. However, there are a number of factors that imply the potential for a problem with the existing market frameworks, specifically whether the current signals for "self-management" of network congestion are clear enough and strong enough in the new environment where congestion may be more material.

Question A6.1
Do you agree that the issue of network congestion and related costs requires further examination in this Review to determine its materiality? This includes considering whether the existing frameworks provide signals that are clear enough and strong enough in the new environment where congestion may be more material. If not, what are your reasons for reconsidering this position?

The AEGA strongly supports the AEMC in undertaking studies to identify the materiality of network congestion caused by the entry of additional wind generation technology. However, these studies should also give consideration to the entry of other forms renewable generation technologies including geothermal generation – giving particular attention to the base load nature of its generation.

Studies undertaken by the AGEA consultants McLennan Magasanik Associates (MMA), indicate the geothermal generation technology represents an economic long term renewable energy source that will provide significant contribution to renewable energy production well before the year 2020.

These constraint modelling studies should also give consideration to the accelerated entry of renewable energy sources and the time taken to develop new regulated transmission infrastructure. The typical time frame to establish new transmission infrastructure is between 5 and 10 years. It

should also be acknowledged that in the case of some large augmentations involving overhead transmission lines, the Development Application process may create additional delays, increased development costs and combine to produce uncertain outcomes.

AGEA supports the urgent need to review and improve existing inter-regional transmission pricing arrangements to facilitate efficient and equitable cost allocations across the market.

As mentioned in our response to the questions raised in A5, AGEA believes that consideration should be given to the strategic planning of renewable generation connection "hubs". The coordinated development of these "hubs" will have potential to maximise use of available transmission infrastructure.

The planning of these "hubs" would also facilitate the long term strategic planning of transmission and distribution infrastructure by Network Service Providers.

The existing "fragmented" approach does not allow Network Service Providers to plan the development of network assets in a cohesive way, rather they are required to respond to a series of isolated development proposals and manage the escalating complexity of generation dispatch limitations. The situation is further compounded by the accelerated entry of renewable generation technology.

A particular issue for consideration by the AEMC should be the efficient use of transmission capacity and its effects on congestion and the need for augmentation and/or new investment in networks. For example base load geothermal generation utilizes the same amount of transmission capacity more efficiently and economically that intermittent wind generation. The substantial difference in capacity factors 90% to 95% for geothermal and 30% to 35% for wind demonstrates this issue. Congestion will be a major issue for consideration immediately, as expected by the MMA, ACIL and ROAM consultants, a large number of wind projects will be proceed to development in the next few years. AGEA believes that there is a need for predictable generator access in order to facilitate investment decisions. Without such predictability there will be a major barrier to the NEM's ability to deliver on the Government's CPRS and RET objectives at least cost.

In summary, AGEA would support the AEMC in undertaking studies to evaluate the impact of inter-regional and intra-regional network constraints based on the connection of additional renewable generation capacity including geothermal generation.