Suite 201
18 Kavanagh Street
Southbank VIC 3006
Australia

T: + 61 3 9929 4100
F: + 61 3 9929 4101
E: info@cleanenergycouncil.org.au
www.cleanenergycouncil.org.au
ABN: 84 127 102 443

Clean Energy Council

29 September 2010

John Pierce
Chairman
AEMC
PO Box A2449
Sydney South NSW 1235

Dear Mr Pierce,

Re: EPR0019 Transmission Frameworks Review Issues Paper

The Clean Energy Council (CEC) welcomes this AEMC review into Transmission Frameworks and believes it is critical to addressing impediments in achieving the Australian Government's commitment of 20 percent of renewable energy by 2020. The CEC supports the purpose of this review to consider the appropriate future role of transmission in providing services to the competitive sectors of the NEM (chapter 3.2 Issues Paper). This review gives the AEMC the excellent opportunity to explore and explicitly consider the extent to which the current transmission network and framework will support the achievement of the 20 percent Renewable Energy Target (RET).

The CEC is the peak body representing Australia's clean energy and energy efficiency industries.

Its priorities are to:

- create the optimal conditions in Australia to stimulate investment in the development and deployment of world's best clean energy technologies;
- develop effective legislation and regulation to improve energy efficiency; and
- work to reduce costs and remove all other barriers to accessing clean energy.

The CEC works with members and the government to identify and address the barriers to efficient industry development in the energy efficiency and stationary energy sector.

The clean energy industry contributes to the generation of electricity using wind, hydro, solar, biomass, geothermal and ocean energy as well as the emerging technologies and service providers in the energy efficiency sector including solar hot water and cogeneration.

Our submission provides some high level comments (Section 1) and then specific reference to some of the key questions posed in the issues paper (Section 2). We have also attached a copy of the CEC commissioned report from consultants McLennan Magasinak Associates (MMA) on *Transmission Issues for Remote Renewable Energy Generation*, March 2010. While this report is now slightly dated, much of the analysis remains relevant to the Australian Energy Market Commission's (AEMC) current deliberations.

The CEC has also commissioned ROAM Consulting to undertake modelling to investigate where, why and when existing transmission congestion occurs in the current and then the predicted (by 2020 following the achievement of the 20 percent Renewable Energy Target) transmission network. The work is also reviewing options for placement and locations of renewable energy generators in terms of the operational impacts and implications for congestion on the network, in order to assess levels of efficiency. As this modelling work progresses justification and options for augmentation of the transmission network are being investigated. Efficient outcomes in terms of least cost and areas with location congestion will be reviewed. The CEC looks forward to sharing these findings with the AEMC as it is completed.

The CEC is also very pleased to be on the Transmission Frameworks Review Consultative Committee and is keen to continue to work with the AEMC to achieve a strong outcome from this review.

If you would like to discuss any of this submission, please contact Nicole Nsair on 03 99294100.

Yours sincerely

[Original Signed]

Kane Thornton

Director of Strategy

Section 1: High Level comments

Consideration of climate change policies in future recommendations

The CEC understands that the AEMC operates under the National Electricity Law (NEL) legislative framework. The CEC is concerned that this law does not specifically recognise broader objectives including the reduction of climate change impacts from the energy sector and by assessing objectives "in support for government policies on the environment and climate change". The CEC believes the AEMC (and other relevant agencies) should specifically consider climate change issues when making recommendations that satisfy the achievement of the National Electricity Objective (NEO). This is even more critical given the minimal attention given to planning the backbone of the Australian transmission grid over past decades.

Bringing electricity generation from areas with renewable energy resources

Transmission connection and operation poses one of the most significant risks facing large renewable energy generation developments in Australia. Excellent renewable energy resources are located in often rural and remote areas including along Australia's coastlines and in the outback[1].

The bulk of the transmission networks in Australia were developed by previous state government owned monopoly electricity commissions. Historically, generation was generally developed in locations with the best energy resources, and often therefore remote from load sources. Over time, in an attempt to share resources and reserve capacity, a number of relatively light interregional connections have been developed[2]. Due to the changes within the electricity industry in the 1990s, and the establishment of the National Electricity Market (NEM) in 1998, competition between generators and large customers facilitated increased electricity transfer across state borders, and provided for the competitive purchase of electricity in the wholesale market. A key challenge for transmission investment in this review is to provide for an efficient pattern of infrastructure investment, with respect to time, location and with regard to trade-offs between alternative investment options[3].

In order for the RET to be met by 2020 the renewable energy industry has two choices; to build renewable energy projects at greater capacity installed in lower resource areas in order to minimise the constraints on the system and be close to transmission access; or, to build renewable energy projects in locations where there may well be the best resource but which will require a significant amount of transmission investment, both in the shared network and connection assets. The latter will require strong market signals for new investment in transmission infrastructure. Currently, the NEM structure does not incentivise either the TNSP or the prospective wind farm developer to take such a holistic approach. The current mechanism favours lower grade locations (closer to existing network infrastructure) to enable a smooth transition into the NEM. Therefore there are inefficient outcomes.

The gradual bilateral planning processes of the past will not necessarily lead to efficient outcomes. There are a number of requirements that generators setting up in remote locations

[1] MMA, *Transmission Issues for Remote Renewable Energy Generation,* March 2010
[2] Ibid
[3] Ibid

need to be able to connect to the transmission network. These include sharing deep connection costs and obtaining firm access for their financial commitment to transmission capacity. Additional measures are also needed to provide better information for planning purposes on the long-run marginal cost of transmission capacity related to the transmission projects that are forthcoming.[4]

To achieve a paradigm shift in transmission planning that facilitates the transition from high emission generation to lower emission and more distributed sources of generation and to achieve the RET is likely to require substantial new transmission capacity. This may include numerous long-haul transmission extensions to new remote renewable generation regions.[5]

Such investment may be justified where it can be demonstrated to support delivery of the 20 percent RET and maximise the efficiency and therefore minimise the full cost of new renewable energy generation.

[4] MMA, *Transmission Issues for Remote Renewable Energy Generation,* March 2010
[5] Ibid

Section 2: Specific Transmission Review Issues Paper comments

(2.3) Impacts on climate change policies on energy markets.

The CEC believes that the RET should be a critical consideration in the planning of the transmission networks for AEMC and other agencies. To ensure climate change policies are considered, planning must be considerate not only of reliability objectives, but also to the legislated RET policy objectives. It is possible that remote transmission extensions may not be justifiable on economic or reliability ground alone, and instead may therefore require the explicit accommodation of environmental policy objectives to ensure desired investment occurs. This assumption follows that transmission investment that may be needed to deliver environmental policy constraints is a social good, therefore perhaps warranting cost recovery on this basis.

Policy developments such as that surrounding the proposed SENEs must consider that for remote area renewable generators, the ability to recover some of the transmission costs from customers could prove to be the critical factor in determining the viability of developing remote renewable energy generation projects.

(2.4) Potential impacts of extreme weather events: notably hydro generators ability to generate electricity will be impacted.

Notwithstanding the issues of climate change and in Australia's rainfall patterns, most work being undertaken by Australian hydro power asset owners are either in developing mini hydro plant or in refurbishing, upgrading and modernising Australia's current fleet of hydro power stations.

However, there remain further opportunities for improving existing plant and for small scale projects, for example mini hydro power schemes on existing and planned water pipelines and dams. Hydro electricity will remain a vital generation source in Australia because of its critical role in providing baseload and peak supply throughout the NEM[6]. It will be in situations of extreme and prolonged drought events that hydro generators ability to generate electricity will be impacted.

As with other technologies, the barriers for further development arise from the regulatory environment including connecting to the grid, uncertain price incentives, price volatility, together with tight finance markets for investment capital[7].

(3.1) Application of the NEO

As stated above, the CEC believes that the NEO goes some way to consider the needs of the transmission frameworks. The term climate change, environment or carbon emissions are not currently referenced in this review of transmission frameworks, due to their absence also from the NEO. However the CEC believes that the transmission frameworks need to consider the full implications of climate change policies as renewable energy generators strive to meet the RET by 2020. To do this, the CEC recommends there needs to be a statement in the NEO

[6] Joule Logi, Report to Clean Energy Council Hydro Electricity in Australia September 2010
[7] Ibid

ensuring that the objectives are satisfied by considering them in light of "support for government policies on the environment and climate change". Additionally, locational signals for generation investment and retirement and augmentation requirements are limited in their forecast ability and their assessment of the long term impacts of existing constraint or congestion issues. The dispatch efficiency in the presence of congestion is also an issue as the risk of being constrained off causes a lack of dispatched volume.

The current frameworks governing electricity transmission have been effective in minimising total system costs to the extent that no significant network expansions have been delivered. While more generation connections occur into the future, little or no congestion risk is laid on the network service providers allowing the connections. As a consequence, both intra-regional and inter-regional congestion remains a problem and a risk dealt placed largely on generators.

(3.2) Role of transmission frameworks

Transmission can be considered as the enabling infrastructure (similar to roads or pipelines) that delivers the energy to where it is needed. It is important that the fundamental role of transmission in transporting the energy resource from where it is located to the load centre where it is used, is recognised. Generators locate where the resource is, for example the LaTrobe Valley and the Hunter Valley. The transmission to supply the energy from these regions has been delivered over decades of development, driven by a long term view of the value of the energy.

In the current environment, transmission costs can be treated by some crucial stakeholders as an overarching hurdle. The current frameworks have failed to deliver any significant futuristic planned transmission development since the beginning of the NEM. The projects that have been delivered have been projects that were planned prior to the market starting.

To achieve the transition to a low emissions energy sector, the CEC believes that significant transitional transmission work will be required.

(4.3) Transmission Investment

The current AEMO Network Transmission National Development Plan (NTNDP) is welcomed by the industry. It is premature to assess the effectiveness of this reform. The CEC believes it is important that further work be undertaken to consider the merits of a range of proposals for providing access on the shared network, for example firm access.

The CEC considers that appropriate consideration could be made in the rules to assess these various issues that can arise out of connecting to certain problematic places in the network. As identified above, if congestion signals are not clearly recognised the industry runs the risk of building renewable energy generation in locations where there may be the best renewable resources but which will require much more transmission investment.

(4.3.2) Promoting efficient transmission investment

There remain concerns that existing frameworks, including the recently introduced RIT-T, is unlikely to provide for efficient and timely investment in the shared transmission network. A

transmission investment, once approved, can take several years to complete (including planning stages). In situations where the proposed generators can be built faster than the transmission lines can be, a lack of forward planned transmission infrastructure can make it difficult for generators to receive financial commitment knowing there will be a delay in being able to connect to the grid. Within this regulated service, the RIT-T may be unlikely to deliver long term benefits (decades of value) in preference for short term cost savings. Under the consultation for SENE rule change, a fast tracking mechanism to enable transmission infrastructure for such generation is also required in order for the RET to be met by 2020.

(4.4.3) Connection arrangements

The CEC believes that there are improvements that can be made to connection arrangements. One such arrangement , as the CEC has previously submitted to the AEMC, and discussed above, was one of the AEMC's Review of Energy Market Frameworks in light of Climate Change Policies conclusions; to consider "the introduction of measures to promote the efficient connection of clusters of new generation to the electricity networks as new generation connects over time". This proposed rule change is part of these measures and one which the clean energy industry broadly supports. We note that in a separate review the AEMC is considering the proposed Scale Efficient Network Extensions (SENE), a concept that sets out to address issues relating to possible duplication of costs and risk allocation between market participants. We are however unsure how these two reviews will be consulted in parallel.

The SENE Rule change could provide for new radial connection at a regulated price that could be shared by a number of generators committing to new power projects in an area where the grid capacity is otherwise inadequate or non-existent[8].

It is important to note that the SENEs review has now decided to publish an Options Paper before proceeding to a draft decision on the rule change proposal. As the AEMC is working on a number of potential solutions with stakeholders to assist the rule change, the CEC looks forward to assisting in determining which will best address the identified gaps in the existing framework, consistent with the NEO and climate change policies.

However it is important to recognise that failure to resolve the intra-regional congestion, as discussed above, associated with the location of the SENE could commit this rule change to fail. The proposal will require the energy to be connected to robust backbones, ones that have sufficient capacity to carry the power to load centres of equivalent size in an efficient manner.

Additionally, significant inter-regional interconnection is also required to shift the supply of clean energy from remote locations to load centres. This is a priority in order to achieve clean energy developments that will meet our national target of 20% by 2020.

(5.2) Objectives and challenges for efficient network operation and market dispatch.

The limitation in the ability of competitive pricing outcomes to fully fund efficient new investment is a feature of most organised electricity markets around the world, and an

[8] MMA, *Transmission Issues for Remote Renewable Energy Generation,* March 2010

important factor in the complimentary use of non-market institutional arrangements, including regulatory processes, to assist investment decision-making and project funding.

Identifying signals such as congestion in the existing network provides opportunities for the development of the networks so as to optimise capability and minimise inefficiencies associated with congestion. It is important that TNSPs are obliged to remove congestion, rather than allowing the connection of new generation which will later be constrained and have detrimental impacts on the projects financial returns. Additionally, to achieve the RET, the TNSPs should be incentivised to correct congestion and alleviate it.

Attachment: MMA, *Transmission Issues for Remote Renewable Energy Generation*, March 2010