Hydro Tasmania
the renewable energy business

13 May 2010

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Sent online

Re: - Scale Efficient Network Extensions Rule proposal (ERC0100)

Attention Elizabeth Ross

Dear Elizabeth,

Thank you for the opportunity to comment on the consultation paper in relation to the Scale Efficient Network Extensions Rule proposal, (ERC0100), (SENE).

As a Generator in the NEM with considerable interest in renewable energy, Hydro Tasmania is keen to ensure that if the SENE proposal is implemented, it is done in an effective and efficient manner, with net long-term benefits for the market. We recognise that the SENE proposal is part of a wider package of transmission-related changes to the NEM, including a proposal for Inter-Regional TUOS and a future AEMC Transmission Frameworks Review.

In brief, Hydro Tasmania supports:

- Exploration of the extent to which some form of SENE may improve the efficiency of investment in transmission and generation;
- Preservation of the financial access rights of SENE-funding Generators, in the event that the SENE becomes part of the shared network; and
- Deferring the consideration of the interaction of SENE with the shared transmission network to the forthcoming Transmission Frameworks Review.

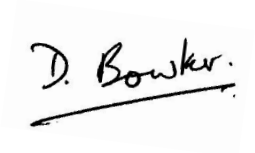
In our submission, we make suggestions in relation to the following aspects of SENE:

- Management of risk by auctioning not only financial access across a SENE but also options for access;
- Setting the hurdle for approval of SENE as a fixed percentage of either transfer capacity or capital requirement;
- Requiring NSPs to publish, in relation to each proposed SENE, the probable downstream congestion, (infeed capacity) under at least system-normal conditions;
- Allowing generation investors the option of up-front capital payments or other negotiated commercial arrangements, as an alternative to 5-year NSP review of SENE costs; and
- Consideration of high-level, fast-track environmental/planning approvals in relation to SENE developments.

Hydro Tasmania is also a party to separate submissions on the SENE proposal by the National Generators' Forum and the Clean Energy Council.

If you have enquiries on the attached submission, please call John Arneaud on 0408 589 513.

Yours sincerely,



David Bowker
Acting General Manager
Communications and External Relations

Hydro Tasmania's submission to AEMC's Consultation Paper on the Scale Efficient Network Extensions Rule proposal, (ERC0100)

Hydro Tasmania's submission addresses the following questions which were posed in the Consultation Paper :

1. Are SENE needed?
2. Will SENE improve efficiency?
3. Is risk allocated appropriately?
4. Should configurations other than hub & spoke be allowable?
5. How should transfer capacity be allocated?
6. How do SENE interact with shared network?

In addition, we discuss the role (if any) of NEM jurisdictions and compare the SENE proposal with developments in the North American Western Renewable Energy Zones[1] , (WREZ).

Need

Hydro Tasmania supports the intent to examine the extent to which some form of SENE may improve the efficiency of investment in transmission and generation. With the forecast substantial future growth in remote generation – in various forms – it is timely to reflect on the likely future challenges for Australia's electricity networks. It is essential however that any SENE proposal also consider the impact on existing and long lived generation investments, made in good faith and based on the existing network access arrangements.

Efficiency Improvement

In Section A.4.2 of Appendix A of the NTNDP Consultation Report, AEMO stated[2]:

> "The key hurdle for SENE acceptance is whether the extension's capacity is likely to become fully subscribed mindful of the connection charge that the generators will pay. This requires a view of the economics of prospective generation in a zone, the cost of building the extension and the value of electricity (inclusive of environmental incentives and the risk of congestion) at the point where the SENE connects to the existing grid."

[1] The Western Interconnection is the name of the electricity grid that includes the US states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming; the part of Texas near El Paso; the Canadian provinces of Alberta and British Columbia; and a small portion of northern Mexico in Baja California. It is overseen by the Western Electricity Coordinating Council (WECC).

[2] ***NTNDP CONSULTATION , January 2010, APPENDIX A , Section A.4.2*** ***http://www.aemo.com.au/planning/ntndp.html***

For the SENE to achieve efficiencies of scale, the three non-market-facing bodies who are tasked with developing SENE proposals must be able to accurately forecast:

1. General economic conditions driving the need for new generation,
2. Future Government policy in relation to renewable energy,
3. The scale of the recoverable energy at the candidate sites, and
4. New developments in technology, which may alter the priority ranking of generation options.

A forward-looking long-lived investment such as SENE is more dependent on forecasting these accurately, than the status quo. A key factor therefore is the flow of information between the market and the transmission network planners.

The structural problem of how to achieve the same (or better) level of information in relation to generation and transmission investment options, as that which was available under a vertically integrated centrally planned regime, is central to the issue of designing efficient SENE and is discussed below.

Risk Allocation

The proposed funding model allocates all the forecasting risk to Customers in the relevant NEM region[3], on the presumption that cost savings from optimisation of transmission costs will flow through to them, in the form of lower long-term energy prices. We have some concerns with this approach. Our concerns in relation to the interaction of SENE with the proposed Inter-regional TUOS scheme, will be raised in the context of the IRTUOS consultation.

Introducing a stronger market element into the SENE process may reduce the risk of inappropriate SENE, by improving the flow of information back to the transmission planners, so as to facilitate more efficient long-term transmission planning and investment[4]. We note that it is proposed that for SENE approval, "at least one connecting Generator" is required. It may be more appropriate to require a fixed percentage, (say 60%)[5] of the SENE cost to be backed, through the auction of a combination of fixed financial access rights across the SENE and tradeable options for the future purchase of such rights.

We strongly urge the Commission to review its proposal for variable/reviewable SENE charges. Generation investors may prefer to have

[3] With the possibility that some costs may flow through to adjacent regions via the inter-regional TuOS proposal, if implemented.

[4] This issue is discussed at length in the paper, "A Framework For Analysing Transmission Policies In The Light Of Climate Change Policies", Darryl Biggar, 16 June 2009, extracts from which are reproduced as Appendix 1.

[5] A '50% of capacity' hurdle was proposed in the Commission's earlier Market Frameworks Review paper. It is suggested that 60% of cost is suggested as a more appropriate risk balance. At least 40% of this should be in the form of an irrevocable commitment, the remaining 20% could be in the form of tradeable transfer capacity options.

the option of combining SENE financing with overall project finance, and making a single lump-sum to the NSP to cover all capital liability over the economic life of the SENE (variable O&M charges are acceptable).

Configurations

Restricting SENE to a simple hub and spoke model would limit the scope for achieving efficient network design. NSPs should be free to offer to the market a range of options, including SENE with tapered capacity and branched networks. In addition, there are circumstances where the appropriate technology to facilitate large-scale wind connection might be aggregated voltage control or inertia market services. The key aim is to design an appropriate configuration for the demonstrated need.

Again, the problem for the planner is the absence of reliable information about future network needs. If all the requirements were known *ex-ante*, then the appropriate configuration and cost allocation could be developed without difficulty. In the examples discussed in the Consultation Paper, the implication is that the SENE has been over-designed, in that the number of Generators wishing to use the full length of the SENE is less than that projected at the design stage.

If an interruptible generating unit connects to the transmission network, then it imposes zero marginal capital cost on the network. We do not see that it is economically efficient to include such units when sizing the SENE, assessing the hurdle level of SENE subscription or allocating SENE charges.

In the event that the planned-for generation fails to materialise, then the NSP should be free to limit the damage, by selling off the available (otherwise stranded) capacity for whatever price the market will bear.

Capacity Allocation

In the event that a planned (but not yet constructed) SENE has a transfer capacity less than that sought by Generators seeking to connect, it should be open to NSP to either (a) auction the available capacity or (b) modify the design to accommodate the required transfer.

This issue highlights the key problem posed by the staged nature of the timing of different generation developments – at an early stage, some parties may not be ready to commit. The proposal to allow the NSP to auction not only transfer capacity but also tradeable capacity options, is an attempt to improve this situation, by allowing intending Generators to manage their future transmission access risk in an appropriate manner. Even then, staggered and uncertain timing of projects will exist, but at least it will be up to participants to purchase access, (or options) to manage their risk as they see fit.

In the event that a Generator seeks to connect after the SENE has been constructed, and that the transfer capacity is less than required, then there are a number of options that should be considered for Generators:

1. Fund a post-construction augmentation (full or partial),
2. Agree on a (full or partial) run-back scheme, so as to avoid impacting on the original funding Generators,
3. Pay a negotiated compensation to funding Generators affected by its despatch[6], or
4. Locate elsewhere, where overall project costs (including access) are lower.

Shared Network

The relationship between SENE and the shared network will remain problematic as long as there is no mechanism for Generator-funded augmentation of the shared network.

In Section A.4.6 of Appendix A of the NTNDP Consultation Report, AEMO said,

> "The ability of the existing grid to accept capacity at the point of connection, or be efficiently expandable to do this, is a key part of the economics of a SENE. …… Expansion of the existing network to accommodate the capacity of a new SENE should be incorporated into the detailed economic analysis and costs for the SENE."

We seek clarity on the intent of the Commission, particularly in relation to the emphasised text.

1. To what extent will NSP be required to identify downstream congestion when SENE proposals are assessed and offered to the market?
2. What proportion, if any, of shared network augmentation costs will be passed through to the SENE participants?

We note that generation proponents do not generally have the technical capacity to perform the analysis required to assess the impact of planned SENE generation on the power system's future transfer capacity. Unless prospective generation investors have an assurance that they will not be materially constrained in despatch due to shared network congestion, they will be reluctant to invest in SENE, notwithstanding a financial access right across the SENE itself.

Ring fencing of SENE, (in the manner of gas market 15-year 'no coverage' arrangements) is one approach to the difficulty of integrating SENE with the shared network. However, it would be politically unrealistic to legislate so that a new load wishing to connect onto a SENE is prevented from using a sunk transmission investment. Similarly, if a case could be made for modifying a SENE, so that it formed a loop or new interconnector that was to the benefit of

[6] As envisaged by the original Chapter 5 of the Rules, this negotiation could include the relevant NSP as an intermediary, with back-to-back agreements.

Customers, it is difficult to see how prohibiting this would further the NEM objective[7].

It is difficult to set a sensible timeframe for any 'ring-fencing" arrangement. This is because from the point of view of a generation investor, a five to ten-year period would be the minimum period of certainty required for project financing (the asset life being considerably longer than this). However, the potential for Government policy, demand patterns or new generation technology evolving in that time, so that network changes are required, is very real.

Consequently, we do not support ring fencing as a solution. However, if provisions are made to allow SENE to become part of the shared network, as we believe they must, then a mechanism is required to preserve financial compensation for connected Generators. In the case of a radial load, this could be done by transferring part of the SENE costs to the load. However other network developments, such as loops, would require a more generalised congestion management arrangement, which included the shared network.

We agree with the view expressed in the Consultation Paper that ring fencing imposes a curb on efficient evolution of the network and, **"is unlikely to promote the NEO - and in fact could lead to significant inefficiencies by preventing network development through market interventions"**. However, we do not believe that it is impossible to **"envisage how generators could practically retain capacity rights on segments of the open access shared network".** Our proposal would be to focus on constraint equations and allocate financial capacity rights to all generators behind any binding constraint[8] (firm to those who have paid and non-firm to those who haven't).

Given the complexity of this issue, we believe that the best approach may be to consider the integration of SENEs with the shared network in the context of the proposed AEMC Transmission Frameworks Review. In the interim, the best approach is to:

1. Require NSP to publish [At the time of SENE design] -

    - the 'system-normal' (and possibly 'system-stressed') transfer capacity of the shared network downstream from the SENE connection point, and

    - the proportion, if any, of shared network augmentation costs which will be passed through to the SENE participants (See question above re AEMO interpretation).

[7] It is conceivable that two SENE, connected to the shared network in adjacent NEM regions, could be linked by a short regulated asset, to create improved interconnection between those NEM regions, thus facilitating inter-regional trading. This in not a near-term prospect.

[8] Administratively simple because it requires no pre-selection of which constraints are critical, does not interfere with dispatch, avoids the "race to the bottom' and requires no external funding.

2. Preserve financial access rights (or access options) for Generators who have funded the SENE, and

3. In the absence of resolution of the issue of shared network congestion/investment, to limit SENE to situations where network loops are avoided.

WREZ and the Role of Jurisdictions

The SENE proposal has some similarities to the North American WREZ project. In comparison with the WREZ, the SENE proposal is strong on market detail and weak on the role of jurisdictional and planning processes.

In our view, if SENE are to work well, there is a need to go beyond the consideration of energy market impacts and to consider the environmental and planning approvals processes as well.

We believe that generation investment will be facilitated if there is high-level, prior environmental and planning approval of SENE zones for specific types of generation. In addition, the WREZ concept of 'Environmental Exclude and Avoid Areas' may assist developers in knowing which areas must be avoided.

We recognise that any simplification or streamlining of the existing planning approvals process will require discussion and reform involving jurisdictions at both State and Commonwealth level. For example, for the WREZ project, each state and province participating in the WREZ initiative was given the chance to review and modify its maps of hubs in advance of the hub map's publication and inclusion in the WGA's WREZ Phase 1 report[9]. This additional layer may appear to add delay but in the long-term may be more efficient.

Closure

In closing, we'd like to thank the AEMC again for the opportunity to participate in this consultation and urge them to consider the suggestions made in this submission.

Throughout the preparation of this submission we have sought to ensure that when the SENE proposal is implemented, it is done in an effective and efficient manner that will further the Market Objective and be consistent with the wider package of transmission-related changes to the NEM.

In preparing our response, it has been useful to re-read the June 2009 Darryl Biggar paper quoted in Appendix 1 and we encourage others to do the same, particularly in relation to its treatment of the proposed 'hub and spoke' model and the challenge of overcoming the lack of information flow, which has resulted from the separation of the generation and transmission investment decisions.

[9] See "Western Renewable Energy Zones, Phase 1: QRA Identification Technical Report", October 2009 ***http://www.nrel.gov/docs/fy10osti/46877.pdf***

Finally, in Appendix 2, we suggest a mechanism for establishing SENE costs at the time of commitment. We believe that this proposal creates the right balance between risk and reward for both Customers and Generators.

Appendix 1

Extracts from "A Framework For Analysing Transmission Policies In The Light Of Climate Change Policies,

Darryl Biggar

16 June 2009

This paper provides an important context for the SENE proposal, because in the absence of proper information flow, SENE will fail to deliver efficiencies in generation and transmission investment., (Emphasis added where shown below)

Pg 5

"In a liberalised electricity market, such as the NEM, where generation and transmission are under separate ownership, coordination between transmission and generation must take place through other mechanisms – such as price signalling, contractual arrangements, and explicit coordination rules and processes."

Pg 30

"research suggests that in fact transmission planners should engage in a degree of "locational planning" and should not rely exclusively on "decentralised decision-making" by generators when it comes to location decisions.

However, in practice, this approach raises certain issues, particularly regarding access to information. In effect, the transmission planner must decide which generation locations will be exploited in the long-term efficient expansion path and which locations will not be socially beneficial to exploit. The transmission planner therefore must indirectly determine which potential generation resources will be exploited and which will not.

To do this task properly, of course, the transmission planner needs information. In fact the transmission planner needs information on the location, type, cost, and size of all possible future generation expansion opportunities. While this information may possibly have been available to a transmission planner in a vertically-integrated industry, vertical separation of transmission and generation limits the information the transmission planner has about future generation opportunities.

In fact, one of the primary benefits of vertical separation is that it creates strong incentives for private generation entrepreneurs to discover and make use of new information – including possible new generation locations, new technologies, or new ways of operating old technologies.

The problem is that this information must somehow be communicated back to the transmission planner so as to allow for efficient long-term transmission planning.

The next section of this paper discusses how the "clusters and hubs" proposal of the AEMC may be viewed as, in part, a mechanism for improving the flow of information to transmission planners."

Appendix 2
Determining SENE charges

In the absence of the SENE arrangements, the generation proponent would be faced with the stand-alone cost. With SENE, the costs may reduce to a proportional share of the larger-sized asset, with economies of scale producing the reduction. The key issue in determining the best way to assign SENE charges is how to reflect the way risk is carried under different scenarios.

At one theoretical extreme, (not a practical case) if the SENE were wholly speculative – "build it and they will come" , then Customers would be bearing all the risk and it would be entirely appropriate to charge at stand-alone cost, capturing ALL the eventual/(hoped-for) economies of scale for Customers.

However, in reality, the SENE will be at least partly subscribed – [currently a hurdle of '1 Generator' but earlier a 50% capacity take up was proposed for NERGs].

So, consider the other theoretical extreme, where the SENE transfer capacity is fully subscribed. In this case, it would be reasonable – zero risk to Customers – to capture all the benefit for the connecting Generators, ie the cost to an individual Generator should reflect a proportional share of the actual SENE capital cost.

In practice, the situation will be between the two extremes and perhaps the cost should be also. We propose a sliding scale, where the amount Generators actually pay is related to the percentage of SENE take up at the inception date, eg if at inception we have 50% subscription, then the cost is midway between stand-alone and proportional, spreading the risk and benefits between Customers and Generators, limiting distortion in the locational signals and providing for information flow between the market and transmission planners.