12 November 2010

Mr John Pierce
Australian Energy Market Commission
Level 5, 201 Elizabeth Street
Sydney NSW 2000

By electronic submission: www.aemc.gov.au

Dear Mr Pierce

Origin Energy Limited (Origin) welcomes the opportunity to contribute to the Australian Energy Market Commission's (AEMC) consultation on the Scale Efficient Network Extension (SENE) Rule change proposal. We commend the AEMC on its decision to broaden the consultation's scope by publishing an Options Paper that sets out a number of possible SENE designs. This, along with the recent Public Forum in Adelaide has helped to inform the debate on the SENE which increases the prospects of the creation of a Rule that is in the best interest of the market.

Origin remains committed to the SENE and considers that the adoption of an appropriately designed mechanism is critical to the efficient operation of the market in keeping with the national electricity objective (NEO).

The attached submission reinforces the above sentiment and outlines our recommended SENE design.

If you wish to discuss any issues further please do not hesitate to contact me on (02) 8345 5250 or Steve Reid on (02) 8345 5132.

Yours Sincerely,

Tim O'Grady
Head of Public Policy

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Summary of key points

- The detailed design of the SENE has not been previously articulated; this, along with a number of misconceptions about the mechanism has led to a perception of complexity and a shift in support away from the SENE.
- The popularity of the proposed Rule amongst market participants should not be the determining factor in assessing its appropriateness, but rather its contribution to the NEO.
- The impetus toward a low carbon economy is an enduring trend that will continue to drive new patterns of generation, including the unlocking of remote generation.
- By accounting for the market failures inherent in the current framework, the SENE will facilitate the connection of remote generation in much the same way the current regime allows for the connection of generation closer to the grid.
- The net benefits of the SENE and whether the mechanism satisfies the NEO are largely dependent on how the risk of stranding to be borne by consumers is managed.
- Therefore a key focus of this consultation should be to ensure that the SENE design minimises the stranding risk by optimally sizing the over-sized portion of the transmission line. An appropriately designed efficiency test or decision making framework would achieve this goal – Origin sheds some light on what form such a framework could take, in the outline of our recommended SENE model.
- Origin's recommended SENE design:

Box 1

Design feature	Proposed Origin Option
Trigger for SENE consideration	- AEMO identifies potential SENE zone in NTNDP - At least one generator connection enquiry
Investment test	- Signed connection Agreement with first generator - Efficiency test applied to determine optimal size of the SENE in order to minimise stranding risk
Cost Allocation and charging methodology	- Generators pay proportionate cost of SENE - Customers underwrite over-sized capacity, which is recouped as subsequent generators connect
Access provisions	- As per shared network, i.e. no firm access rights
Regulatory Oversight	- AER reviews application of investment test - AEMO reviews generator forecasts

1. Public sentiment toward the SENE

The AEMC notes in the Options Paper that there has been a shift in public sentiment away from the SENE particularly as the various design and implementation issues are taken into consideration. Notwithstanding this, the popularity of the proposed Rule should not be the determining factor in assessing its appropriateness. The AEMC has pointed out in previous consultations that it is a prospective Rules' contribution to the NEO that is paramount and not necessarily its popularity amongst market participants.

Whilst Origin acknowledges the apparent shift in support for the SENE and the seeming lack of consensus for the Rule change, there are a number of practical reasons for this that should be taken into consideration:

Lack of detail. The detailed design of the SENE has not been previously articulated, which adds to the perception of complexity. At a high level the SENE concept is logical and straight forward – it solves the coordination and first mover issues associated with connecting generation clusters (particularly remote generation) by facilitating the building of a larger transmission asset to reap economies of scales, improving efficiency. However, whilst the concept itself is simple, it is new and differs from current market arrangements. Previous work on the SENE has focused on refining the general concept as opposed to the specific design elements. The net result of this has been many unanswered questions surrounding the SENE's workability and practical application which lends itself to the perception that the mechanism is cumbersome and complex. The publication of the Options Paper should help in this regard as it has focused the discussion on the key design issues and how the mechanism will work in practise.

The SENE and the RET. There is a perception that the implementation of the SENE is being contemplated merely as a means of meeting the renewable energy target (RET). Added to this, the RET is perceived to be inefficient in some circles which suggests that the SENE too is inefficient by association. The AEMC states in the Options Paper that its role is not to ensure that the RET is met, but that the behavioural changes associated with the RET are as efficient as possible. Origin agrees with this view and considers that the SENE should not be judged on the perceived efficiency or lack thereof of the RET. One of the main purposes of the SENE is that it will give prospective investors increased optionality in meeting obligations under the RET, which allows decisions to be made on the basis of least cost. This in our view can only result in net positive benefits to the market.

SENE benefits are realised in the longer term. One of the difficulties of 'selling' the SENE is that ultimately the benefits of over-building now in advance of future market developments are not easily quantifiable and will only be realised some time into the future. What is certain, however, is that the market is undergoing a significant change, with the existing policy framework driving the entry of new types of generation. Given the long lead times needed to effect transmission build, the market frameworks must adapt now if there is to be a smooth transition. This will require a more strategic and forward looking approach to transmission planning and investment. This can present a number of challenges in that it involves a greater level of uncertainty and differs from the current approach which has a more short/medium term focus. The inherent difficulties associated with this new strategic approach though challenging, are not sufficient to promote inaction - to which there is also an associated cost.

Misconception about the SENE. There seems to be a misconception that the SENE is a central planning mechanism that will automatically result in all remote generation projects progressing to development. This is not the case given that investment decisions will still be market driven with a SENE being unable to proceed without sufficient market interest. Additionally, just as the current framework allows for connection for projects closer to the grid, the mere existence of the SENE will not automatically equate to a favourable final investment decision. Remote generation proponents will still have to take into consideration higher loss factors and concerns regarding congestion risk and the ability to get output to market (which is inherent under the NEM's open access regime), when making investment decisions. The SENE does not dampen the market's current locational signals, including that of the cost of the connection asset.

2. Why the SENE is needed

Origin remains steadfast in the view that the adoption of the SENE will result in a net positive benefit to the market. The rationale for this is based on the following premise:

2.1 Changing market dynamics

The impetus toward a low carbon economy is an enduring trend that will continue to drive outcomes in energy markets. Policy makers have made it increasingly clear that the achievement of carbon abatement objectives will continue to be a priority in the foreseeable future. This is evidenced by a number of initiatives such as the Renewable Energy Target (RET) and the continuing debate surrounding the implementation of a carbon price/tax. These policies have a direct impact on investment decisions in that they improve the economics of less emissions intensive plant (such as renewables) relative to more conventional (e.g. fossil fuel) generation. Given this, it is inevitable that over time there will be increasing levels of lower/zero emissions generation looking to enter the market.

The reality is that some of the best renewable resources (both in terms of quality and scale) are located in clusters remote to the existing network. It therefore seems logical that investors should have the ability to bring these resources to market where efficient. As a major investor in the market, it is our contention that the current market framework - i.e. the status quo – gives rise to a number of market failures that does not allow for this to occur effectively. The first mover and coordination issues have been well documented throughout this consultation process so we will not revisit them here except to say that they are a major impediment to investment in remote generation.

By accounting for the market failures inherent in the current framework the SENE will facilitate the connection of remote generation in much the same way the current regime allows for the connection of generation closer to the grid. The SENE levels the playing field for remote generation, allowing investors to effectively compare all generation projects and make decisions on which ones progress to development on the basis of least cost and overall efficiency. For example, investors could weigh up factors such as the higher transmission costs and yields (capacity factor) associated with remote build compared to lower transmission costs and in some instances increasing development costs[1] associated with projects closer to the network.

[1] For example increasing community activism i.e. the 'not in my backyard sentiment' has led to increases in development costs of generation projects closer to the network.

It is important to note that while from a practical stand point the most compelling rationale for adopting the SENE is to enable the connection of remote generation (many of which are renewables), the mechanism maintains competitive neutrality. That means it is technology and location neutral and would essentially allow for the efficient connection of all generation clusters.

3. Does the SENE satisfy the NEO?

Origin notes that some critics of the SENE have questioned whether its implementation is in-keeping with the NEO given that there has not been an explicit quantitative assessment of the associated costs and benefits. This in our view is unreasonable given that the costs and benefits of individual SENE connections are likely to differ, rendering such an assessment practically impossible. In any case, if we were to attempt to assess the net benefits of an indicative SENE location it may not be representative of the efficiency of the SENE mechanism overall.

In our view the benefits of the SENE to the market are clear:

- Avoidance of potentially inefficient duplication of transmission assets by allowing for the building of larger transmission assets to reap economies of scales.
- Levels the playing field for remote generation (by enabling connection) which facilitates decision making by investors on the basis of least cost, i.e. more efficient and cost effective projects are undertaken.
- Above efficiency gains results in lower cost of generation which is reflected in lower contract / spot prices, which lowers the wholesale cost of energy (WCE), which in turn lowers retail prices to consumers; the WCE is approximately 40 percent of the overall retail cost.
- There might also be a reliability benefit to the extent that there is the existence or potential for load along the path of the SENE. For example in the case of the Eyre Peninsula incremental load associated with proposed mining activity and other developments represents incremental demand of over 380MW by 2020, which could be serviced by the grid if transmission infrastructure in the region was suitably upgraded.

An examination of the potential benefits is only one aspect in determining if the SENE satisfies the NEO, the other key consideration is the cost associated with the mechanism. The potential cost to the market of the SENE is the stranding risk that is underwritten by consumers. In theory if all generators connect to the SENE as forecasted (i.e. no stranding occurs) the mechanism would have provided a net benefit to the market - in keeping with the NEO. Therefore a key focus of this consultation should be to ensure that the SENE design allows for the minimisation of the stranding risk by optimally sizing the over-sized portion of the transmission line. An appropriately designed efficiency test or decision making framework would achieve this goal – Origin sheds some light on what form such a framework could take in the outline of our recommended SENE model.

4. Recommended SENE Model

4.1 Trigger for SENE

i) AEMO identifies potential SENE zone in the NTNDP

ii) Generator connection enquiry

The trigger for a SENE should constitute two key steps. Firstly, AEMO should identify SENE zones in the NTNDP. This is important as it will allow for a clear distinction to be made between a regular connection and one that would be subject to the SENE arrangements. If potential SENE zones are not clearly identified, it is likely to create confusion as to which set of connection arrangements should apply.

As the independent market operator charged with publication of the national transmission plan and other significant market documents such as the Statement of Opportunities (SOO), AEMO is well placed to identify potential SENE zones. Origin notes that some critics have likened this aspect of the SENE's design to central planning. In our view, this criticism is not justified given that AEMO's identification of SENE zones will be guided by consultation with the market. The identification of a prospective SENE zone does not necessarily mean that it will progress to development as ultimately a SENE cannot proceed without sufficient market interest. This requirement links into the next criteria for triggering the SENE i.e. a generator connection enquiry. The satisfying of these two criteria should be sufficient for a NSP to commence indicative planning activities associated with developing the SENE such as seeking interest from other potential generators and investigating line routing.

4.2 Investment Test

i) Signed connection agreement with first generator

ii) Economic/efficiency test applied to incremental portion of the SENE.

A number of the options set out in the AEMC's Options Paper advocate the use of the Regulatory Investment Test Transmission (RIT-T) as a means of justifying the SENE. Origin, however, has serious doubts regarding the applicability and suitability of the RIT-T for this purpose. This view has been reinforced by Grid Australia's supplementary submission and attached NERA case study to the AEMC's SENE Consultation Paper, which highlights a number of practical issues associated with applying the RIT-T to the SENE. Some of our concerns with the use of the RIT-T are as follows:

- Historically the RIT-T has not been successful in justifying transmission augmentations on the basis of market benefits given the inherent complexities involved, these include:
    - The need to establish a base case scenario where the SENE extension does not exist. This will be highly dependent on assumptions regarding a number of highly uncertain variables such as generator dispatch patterns and fuel cost.
    - As noted by Grid Australia the application of the RIT-T would require the assessment of a range of alternative options, which under the SENE

framework is likely to prove challenging given that there is no clear means of limiting the number of options to be considered[2]. The RIT-T results are highly dependent on the alternative options that are chosen for consideration, which means that this issue is likely to be contentious.

- The application of the RIT-T will not assist in ensuring that the transmission line is efficiently sized, which in our view is a key issue in ensuring that the SENE delivers a net benefit.
- While the application of the RIT-T might be a valid approach to transmission investment that is to be wholly and continually funded by consumers; it is too cumbersome, complex and time consuming to be usefully applied to SENE's, where the fundamental premise is that the investment is to be funded, over time, by generators.
- The RIT-T was never intended to be a means of justifying an individual project (e.g. the efficiency of a particular SENE) but rather to rank a range of possible projects to meet a specific need such as a projected shortfall in demand. Currently it is the ranking of projects under the RIT-T which is important, rather than the actual NPV outcome. Basing the generator contribution on the RIT-T outcome would therefore be using the RIT-T for a purpose for which it is not well suited[3].

The greatest risk under the SENE is that the forecasted generation will not materialise as anticipated, resulting in consumers bearing the cost of a stranded asset. Given this, any investment test should have the minimisation of this stranding risk as a primary focus; this would involve the optimal sizing of the transmission line. The precise details of any such test should be prescribed in guidelines that would accompany the SENE Rule; however, conceptually we consider that the following could form the basis:

Box 2

SENE Decision making framework

Objective:
- To decide on the appropriate/efficient size of the SENE transmission line

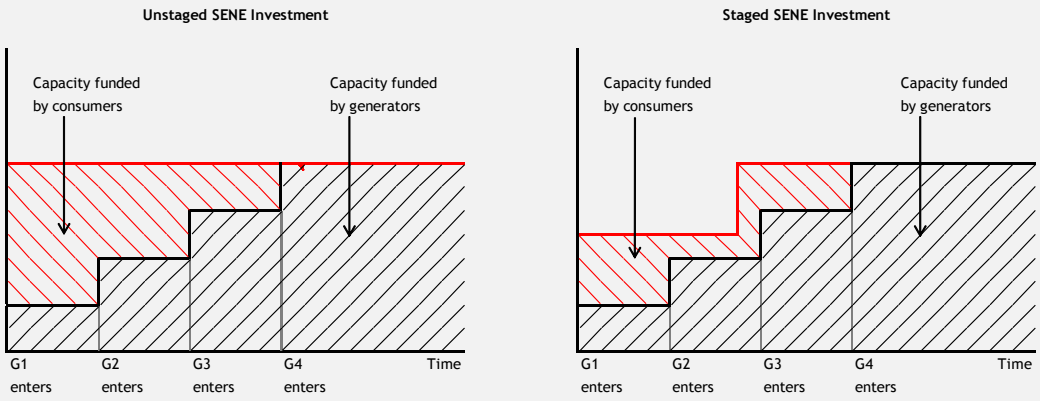
Principles:
- Minimisation of stranding risk to customers.
- Achievement of economies of scale
- Prevention of inefficient duplication

Criteria to be considered:
- Size of generation resource
- Generator interest
- Expected timing of generator connection

[2] Grid Australia supplementary submission to AEMC Options Paper, pg 12
[3] Ibid

How it would work:

- Magnitude of generation resource as identified by AEMO in NTNDP acts as the upper limit of SENE line length.
- At least 25 percent of SENE must be committed, maintaining the basic principle that a SENE cannot proceed without some firm level of generator commitment.
- NSPs would take into account the average capacity factor of the resource in sizing of the SENE line. For example in the case of a 500 MW wind resource, a 500 MW transmission line may not be required given wind's capacity factor (25-45%). In this case spatial diversity issues and the correlation of the wind output within the SENE zone would have to be taken into consideration to appropriately adjust the line length.
- As they are currently obligated to do when connecting loads, NSPs would investigate where a staged approach to building an over-sized portion of a transmission line may be appropriate. This would help to minimise any stranding risk. By way of illustration, the following diagram compares the Option 1 representation published by the AEMC, on the left, to a similar representation assuming a portion of the SENE investment could be deferred until the third generator connects, on the right.



- NSPS would take into consideration prospects for future load/generation development once the SENE line is in place. This would help to capture the 'build it and they will come' effect which is not unprecedented in the NEM given the experience of Victorian 500 kV line and the Braemar terminal station in Queensland which were both initially over-sized.
- NSPS would take into consideration the positioning of prospective generators along the project development pipeline. This is in our view could act as a reasonable estimation of the likelihood and timing of connection. These projects would then be assigned probabilities, e.g. a committed project that is ready to connect could be given a weighting of 1 (maximum), whereas a project at the preliminary stage e.g. has only leased land would be given a much lower weighting. These respective probabilities would then be used by the NSP to weight each generator's line capacity requirement.

The AEMO generator assessment criteria could be used to distinguish generator projects:

- **Site** - The project proponent has leased or acquired, or commenced legal proceedings to lease or acquire, land for the construction of the project.
- **Major Components** - Contracts for the supply and construction of major plant or equipment (generators, turbines, boilers, transmission towers and conductors), including contract provisions for project cancellation payments, have been executed.
- **Planning Consents** - The project proponent has obtained all required planning and construction approvals and licences, including completed and approved environmental impact statements (which include planning and environmental approvals from duly

authorised planning bodies at both State and Federal Government levels).

- **Finance** - Financing arrangements for the proposal, including debt plans, have been finalised and contracts executed.
- **Construction Date** - Construction has either commenced or a firm date has been set for it to commence.
- **Committed** – Has satisfied all five criteria

4.3 Cost allocation and charging methodology

Both Options 3 and 4 propose that the first generator pays its stand alone cost. Origin, however, has strong reservations about this. One of the main rationales of the SENE concept is that generators would reap the efficiency gains of the economies of scales associated with the building of a larger transmission asset. The magnitude and significance of these scale economies is illustrated in the NERA study. If the first generator is compelled to pay its stand alone cost with subsequent generators able to pay their proportionate (average) cost of the SENE, it will disincentivise generators from wanting to be the first mover. Essentially this is one of the main problems which the SENE is intended to solve.

Origin notes that advocates for the use of the stand alone cost have asserted that if generators connecting to the SENE were to pay their proportionate cost of the transmission line it would amount to a subsidy that would skew locational signals. Origin disagrees with this premise given that the proportionate cost of the line represents the value of the transmission asset to the connecting party. The SENE is a mechanism that facilitates coordination allowing for the building of an optimal/more efficient sized asset, it is perfectly reasonable that the cost to connecting generators is reflective of this.

4.4 Access provisions

Origin considers it reasonable that the access rights on the SENE are similar to those on the shared network. Though there have been calls for a greater level of access whereby generators on the SENE could be potentially compensated for being constrained off. This in our view adds an increased level of complexity to the model. This will particularly be the case as the SENE becomes a part of the shared network. Broader questions surrounding an increased level of access should be dealt with under the wider Transmissions Frameworks Review.

4.5 Regulatory Oversight

Origin is supportive of a model where AEMO and the AER reviews NSP generator forecasts and the application of the investment test respectively.