Australian Energy Market Commission

RULE CHANGE

DRAFT RULE DETERMINATION

National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011

Commissioners
Pierce
Henderson
Spalding

10 March 2011

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For and on behalf of the Australian Energy Market Commission

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About the AEMC

The Council of Australian Governments, through its Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. The AEMC has two principal functions. To make and amend the national electricity and gas rules - and to conduct independent reviews of the energy markets for the MCE.

Executive summary

The Australian Energy Market Commission (AEMC or Commission) has decided to make a draft Rule in response to the Ministerial Council on Energy's (MCE's) Rule Change Request regarding scale efficient network extensions (SENEs).

The Commission's draft determination is to make a more preferable Rule which differs from the proposed Rule as well as the options presented in the AEMC's Options Paper. The draft Rule seeks to allocate risk and cost to market participants or investors, rather than to consumers. The Commission has made this draft determination after carefully considering the arguments and evidence put forward in submissions and undertaking further analysis.

The draft Rule creates a new obligation on transmission businesses to undertake, on request, specific locational studies to reveal to the market the potential opportunities for efficiency gains from the coordinated connection of expected new generators in a particular area. A study will assist potential investors to make an informed, commercial decision to fund a SENE having regard to potential gains from coordinated, efficient generator connection arrangements and the potential costs of assets not being fully used and therefore 'stranded'.

Efficiency gains will be realised where opportunities for the coordinated connection of expected new generators in an area are provided, and the expected new generators in that area materialise and participate in the coordinated solution as forecast.

Once a study is published, the decisions to fund, construct, operate and connect to a SENE will be made by market participants and investors within the existing framework for connections in the Rules.

In making its draft determination, the Commission has considered what mechanisms are likely to contribute to minimising expected total system costs over time. The Commission considers that this will occur where an appropriate trade-off is made between: (1) building spare capacity in anticipation of future generation so as to capture the scale economies associated with transmission investment; and (2) the risk that the expected additional generation investment does not occur, thereby stranding that spare capacity. This decision is best made by market participants or investors with the appropriate information, ability and incentive to manage the asset stranding risk.

The Commission considers that this is an appropriate and proportionate response to the issues raised in this Rule Change Request and is satisfied that this more preferable Rule is likely to better contribute to the achievement of the National Electricity Objective (NEO) than the alternatives considered, including the proposed Rule.

Summary of the Rule Change Request

On 15 February 2010, the MCE submitted a Rule Change Request to the AEMC in relation to the efficient connection of multiple generators in the same geographic areas that seek connection to the network over time. The key issue identified in the Rule

Change Request was that, without some change to the connections framework, there is a risk of inefficient duplication in network assets and potential delays in connection where connections cannot be coordinated or built to an efficient scale.

The challenge to building speculative capacity in anticipation of future connections is the risk of being unable to recover the potentially significant costs incurred if the additional capacity is not used.

The Rule Change Request sought to provide a framework that would address this challenge and facilitate spare capacity being built in anticipation of future generation, thereby reducing both the cost of, and potential delays in, connection. The proposed Rule required consumers to underwrite the cost (and risk) of spare capacity, to be paid back through generator charges if all generation were to connect as forecast. A regulatory oversight mechanism was included to reduce asset stranding risk to consumers.

The Commission's draft determination

The Commission's draft decision is to make a more preferable Rule. The draft Rule is intended to promote the more efficient connection of multiple generators in the same area through commercial arrangements, so as to minimise expected total system costs. The key advantage of this approach compared to the proposed Rule is that it does not compel anyone to bear the risk and cost of stranded assets. Instead, it provides a framework under which opportunities to capture scale efficiencies can be made transparent. A SENE may then be funded by any entity that considers the opportunity for capturing scale economies and earning a risk-adjusted return outweighs the risk of generation not materialising.

Consideration of a SENE would be triggered by a generator, or any other entity, requesting that a Transmission Network Service Provider (TNSP) undertake a study to examine the potential scale economies from constructing a SENE in a given area. If requested and funded either by the proponent of the study or any other person, a TNSP would be obliged to publish a SENE design and costing study detailing possible SENE designs, their associated costs and the likely efficiency gains compared to connecting the anticipated generation on a stand alone basis. The draft Rule does not impose obligations to conduct SENE studies on distribution businesses.

Any willing entity (or consortium), such as a TNSP, a generator, government or any other third party then has an opportunity to fund a SENE. While the SENE could be built by any party, under the Rules, generally only a TNSP could own, operate and control a SENE once built. The terms and conditions of the funding arrangements would be subject to commercial negotiation between the funder, builder and operator of the SENE. The SENE funder would not be entitled to influence who may or may not access the SENE. If built, the SENE would form part of the transmission network and the relevant TNSP would be required to facilitate access to the SENE on a fair and reasonable basis, consistent with existing arrangements.

The draft Rule does not regulate charges for use of the SENE or compel generators to connect to a SENE. Instead, if a SENE is built, the terms and conditions of connection to

the transmission network (as augmented by the SENE) would be negotiated between the TNSP and the generator, subject to the existing Rules governing connections. For example, the parties may agree that the relevant generating systems should be connected to the SENE or to another part of the transmission network. The outcome of these negotiations is likely to be influenced by a number of factors, including the cost of the connection at different locations and required environmental and planning approvals.

Broader issues around access rights and connection that were raised in consideration of this Rule Change Request will be considered holistically as part of the Transmission Frameworks Review (TFR).

Reasons for the Commission's draft determination

The Commission is satisfied that the draft Rule is likely to contribute to the achievement of the NEO. Moreover, the Commission is satisfied that the draft Rule is likely to better contribute to the achievement of the NEO than the proposed Rule. In coming to this view, the Commission considers that the draft Rule:

- provides a mechanism to identify the potential benefits of building efficiently sized transmission assets for the purposes of connection. In doing so, the new mechanism will facilitate efficient coordination amongst generators to identify and exploit opportunities for scale efficiencies, more so than the proposed Rule. The savings to generators from lower connection costs should translate into lower prices for consumers over time;

- allows risk to be allocated to those parties that are best able and willing to manage that risk through a process of commercial negotiation. This should lead to more efficient risk allocation outcomes, and so more efficient investment decisions and lower costs associated with risk management, than the proposed Rule;

- provides additional transparency to the market by providing a mechanism for publishing potential efficiency gains from coordinated connections. In doing so, it overcomes any information asymmetry between TNSPs and the market on the likely magnitude of benefits that could potentially be gained. The draft Rule should also promote interest in third party funding, thereby promoting competition in funding. In addition, the draft Rule maintains the existing approach to connections and does not affect generators' rights to seek access to the network; and

- provides a change to the existing framework that is proportionate to the identified issues. The draft Rule does not introduce significant complexity or the potential for inconsistencies with existing frameworks. Further, it does not impose unrecoverable costs or unreasonable requirements on market participants or consumers.

Further, the draft Rule may assist in overcoming the first mover disadvantage where the first generator is able to negotiate a charge that is lower than the amount it would

be charged to connect to the network in the absence of a SENE. This might occur where there is considerable likelihood of other generators connecting soon after and so the risk of asset stranding is considered to be relatively low. This negotiated approach to charging for connection to the SENE is consistent with the existing arrangements.

The Commission is bound to make Rules that it is satisfied will, or are likely to, contribute to the achievement of the NEO. In the context of this Rule Change Request, this implies that any change to the Rules should promote efficient investment in electricity services in the long term interest of consumers, in particular with respect to price. The Commission's role is therefore to make Rules that it considers will promote efficient investment outcomes within the legislative and policy environment within which the market operates.

Consultation on the Rule Change Request

The Commission has consulted extensively throughout its consideration of this Rule Change Request and has found highly divergent views amongst stakeholders.

Twenty-eight submissions and two supplementary submissions were received in response to the staff Consultation Paper, published on 1 April 2010. These responses generally (although not unanimously) suggested a shift in support away from the more complex SENE Rule as set out in the Rule Change Request. While there was still some support for change, this was tempered by the complex nature of the proposed Rule and the implementation difficulties it poses.

In recognition of the high level of interest in this Rule Change Request, the Commission considered it appropriate to test a number of alternative solutions with stakeholders. The Commission published an Options Paper on 30 September 2010 which outlined five possible alternative options. The Commission also held a public forum on 20 October 2010 to provide an opportunity to discuss the issues and options presented in the Options Paper.

A further twenty-one submissions and one supplementary submission were received in response to the Options Paper. These responses continued to demonstrate the divergence in opinion not only on whether a change to the framework is required, but if so, what the appropriate solution is.

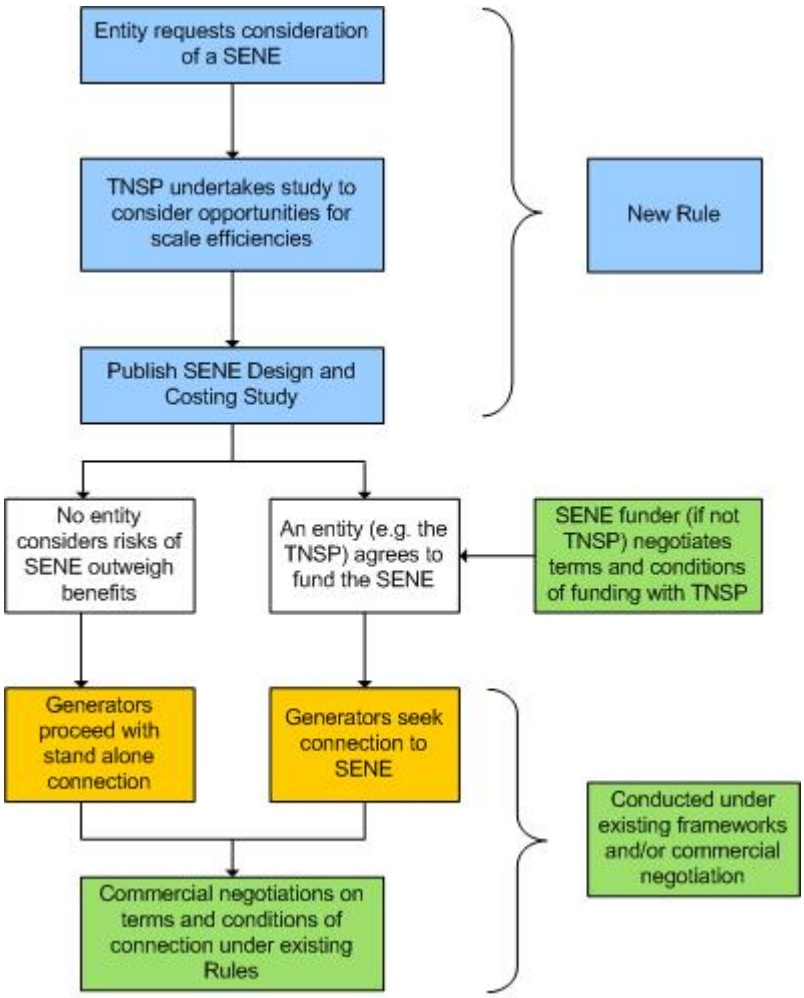
Invitation for public submissions and final Rule determination

Submissions are now invited on this draft Rule determination. All submissions should be made to the Commission by 5 May 2011. Further details about making submissions on this draft Rule determination can be found in section 1.8. The Commission will consider submissions on the draft Rule determination and publish its final Rule determination by 30 June 2011.

Summary of draft Rule

The following diagram sets out a summary of the draft Rule, which is described in more detail below. The blue boxes indicate matters governed by the draft Rule; the green boxes indicate where commercial negotiations, as per the existing Rules (National Electricity Rules or NER) where applicable, take place.

Figure 1



Trigger for considering a SENE

Consideration of a SENE would be triggered by a generator, or any other entity, requesting that a TNSP undertake a study to examine the potential scale economies available from constructing a SENE in a particular area. The TNSP would not be required to bear the costs of the SENE study. Rather, the entity that requests the study would also need to arrange for its funding, thereby discouraging spurious requests for SENE studies.

TNSPs would generally be obliged to undertake the study if requested and funded by the study proponent or another person. There is no such obligation on Distribution Network Service Providers (DNSPs). In Victoria, the relevant TNSP to undertake the

study is the Australian Energy Market Operator (AEMO). This is consistent with AEMO's declared network functions under section 50C of the National Electricity Law (NEL).

Scope of the SENE design and costing study

The purpose of the SENE design and costing study is to examine the extent of the scale efficiencies that may be gained from more efficiently connecting current and likely future generators in the same geographic area to the transmission network, compared to those same generators connecting on a stand alone basis. The study would therefore need to consider the total cost of providing stand alone connections to anticipated new generation, compared to the cost of connecting those generators in more efficient (lower cost) configurations. The difference between these costs would highlight the potential savings from constructing a SENE. Note that the SENE could be an extension to the network or an increase in the capacity of a terminal station.

The study would also need to consider the risk that not all anticipated generation assumed for the purpose of estimating costs will necessarily materialise. This is a key issue and as such, TNSPs would be expected to perform some sensitivity analysis based on different probabilities of generation entry.

The exact scope and timeframe for undertaking the SENE design and costing study would be subject to negotiation between the TNSP and the study proponent. However, the draft Rule requires the TNSP to consider certain matters when negotiating the scope of the study.

It may be the case that the most efficient stand alone connection for a connecting generator may be directly to a distribution network, rather than to a transmission network. In this instance, the study would require input from the local DNSP as well as the TNSP to assist in determining the stand alone cost of connection.

Trigger for building the SENE

The draft Rule does not compel any generator to either postpone their investment until a SENE is built or to fund the SENE itself. Similarly, there is no requirement for future connecting generators to connect to the SENE. If a SENE is built, the terms and conditions of connection to the transmission network (as augmented by the SENE) would be negotiated between the TNSP and the generator, subject to the existing Rules governing connections. For example, the parties may agree that the relevant generating systems should be connected to the SENE or to another part of the transmission network.

The investment test is passed where an entity is willing to fund the SENE and bear the asset stranding risk. Possible entities could include:

- a TNSP (either the TNSP that undertakes the study or another TNSP);
- a generator;

- a government; or
- another third party.

Once an entity commits to funding a SENE, negotiations for its construction, operation (where relevant) and connections can commence. Where no entity is prepared to fund the SENE, this may simply reflect that the risks outweigh the expected benefits. In this instance, not constructing the SENE may be the efficient outcome.

Funding would likely be repaid through generator charges for use of the SENE. If the SENE funder, and potentially SENE builder, is an entity other than the TNSP, the terms and conditions for the repayments, and the way in which risk is allocated between the relevant parties, would be subject to commercial negotiation between the SENE operator, the SENE builder and the SENE funder.

It is envisaged that the SENE funder would be entitled, through contractual arrangements with the TNSP that operates the SENE, to a stream of future revenues derived from charges for use of the SENE, should connections occur. The SENE funder would not be entitled to influence who may or may not access the SENE, which should be granted on a fair and reasonable basis as per the existing arrangements.

Contents

1 Ministerial Council on Energy's Rule Change Request

1.1 The Rule Change Request

On 15 February 2010, the MCE (Rule change proponent) made a request to the AEMC seeking to introduce a new framework to facilitate the connection of clusters of new generation that are expected to seek to connect to the network over time (Rule Change Request).

The purpose of the proposed arrangements for SENEs was to allow the efficient connection to the network of multiple generators over a period of time in proximate locations so as to minimise expected network costs. The Rule Change Request sets out a framework for planning, charging and revenue recovery of SENEs and adjustments to the process for connections.

1.2 Rationale for Rule Change Request

The expanded Renewable Energy Target (RET) is expected to drive extensive new investment in renewable generation, particularly wind-powered generation, over the next decade. A mechanism which places a price on carbon would be likely to further stimulate increased investment in renewable – as well as lower carbon intensive – generation.

The characteristics of the new generation likely to connect over the next decade differ in a number of respects from traditional generation sources in that:

- some of the lowest cost sources of generation are located remote from the existing networks; and
- much of the new generation that is likely to seek connection is relatively small compared to the "lumpy" network investment required to connect it.

This implies that there are likely to be efficiencies from coordinating such connections, particularly where new generation clusters around an energy resource such as wind or gas. Connecting generators in a way that will minimise expected total system costs will require investment that is more forward looking than has historically been required.

However, the MCE considers that the existing market framework is unlikely to promote the efficient connection of multiple generators in the same location over a period of time.[1]

There are three key issues that may challenge the efficiency of the existing framework, which is based on bilateral negotiations between generators and Network Service Providers (NSPs) for connection services. These are:

1 Ministerial Council on Energy 2010, *Rule Change Request - Scale Efficient Network Extensions*, February 2010, p.4.

- the connection of multiple generators in the same area;
- the time period over which generators might seek connection; and
- a lack of incentives on NSPs to build scale efficient network extensions for connections.

Difficulties in coordinating the connection of multiple generators have been lessened to some extent through a Rule change that reduced restrictions on NSPs from releasing any information received as a result of a connection enquiry or application.[2] However, while improved information release provisions may better facilitate the coordination of multiple generators seeking to connect at a single point in time, challenges still exist as it is unlikely that generators will be ready to commit to connect at precisely the same time.

The Rule Change Request states that NSPs currently have no commercial incentive to build network connections to an efficient scale in anticipation of future connection.[3] NSPs currently receive no benefit from, and will potentially incur significant costs, if they oversize their network assets in anticipation of future connections that do not eventuate. Consequently, NSPs are unlikely to consider the possible scale efficiencies that could be achieved by sizing new assets to enable the more efficient connection of potential future entrants.

It is also unlikely that the initial connecting party would be willing to pay for the excess connection capacity given it is likely to facilitate the future connection of a competitor.

This could lead to the unnecessary duplication of connection assets and delays in connection as each new generator connects, potentially resulting in significantly higher costs to consumers.

1.3 Solution proposed in the Rule Change Request

The Rule change proponent seeks to resolve these issues by proposing a new Rule which would allow capacity to be built in anticipation of future connection so as to enable consumers to benefit from scale economies associated with a larger network asset. It does this by requiring consumers to underwrite the cost of spare capacity; however this would be paid back through generator charges if all generation connects as forecast. A regulatory oversight mechanism was included to minimise asset stranding risk to consumers.

2 AEMC 2009, *Confidentiality Provisions for Network Connections, Rule Determination*, 12 November 2009, Sydney.

3 Ministerial Council on Energy 2010, *Rule Change Request - Scale Efficient Network Extensions*, February 2010, p.4.

The proposed Rule sets out a framework for the planning, charging and revenue recovery of SENEs and adjustments to the process for connections, and includes the following key elements:

- AEMO to identify possible SENE zones as part of the National Transmission Network Development Plan (NTNDP);
- NSPs to identify credible connection asset options and undertake preliminary planning, to be reported in their Annual Planning Report (APR);
- NSPs to publish a planning report and connection offer, including technical design issues and annual charges payable by generators based on a forecast generation profile;
- AEMO and the Australian Energy Regulator (AER) to have regulatory oversight roles, including a requirement that AEMO reviews the relevant NSP's forecast generation profile and an opportunity for the AER to disallow the project;
- the connection offer to contain an agreed power transfer capability, including compensation arrangements where a generator is constrained off below its agreed capability;
- construction of the SENE to be triggered by agreement on the connection offer by at least one generator;
- a charging framework that requires connecting generators to pay for the share of the SENE they use. Consumers would pay for any revenue requirement not recovered from generators, where fewer generators connect or connect later than was planned for; and
- a review of the policy, to be undertaken by the AEMC and provided to the MCE, after five years to ensure the anticipated benefits are being achieved.

A draft Rule for the implementation of SENEs was initially set out in the Commission's Final Report for the Review of Energy Market Frameworks in light of Climate Change Policies (Climate Change Review).[4] In addition, the MCE considered that the Rule should contain:

- provisions that give NSPs an internal incentive to prudently size SENEs to ensure appropriate discipline is applied to develop accurately sized proposals;
- an obligation on NSPs to consider explicitly any benefits that may accrue to consumers as a result of a SENE. Where such benefits exist, part (or all) of a SENE may be permanently funded by consumers; and

4 AEMC 2009, *Review of Energy Market Frameworks in light of Climate Change Policies: Final Report, September 2009*, Sydney. See section 1.4 for further details.

- a requirement for a favourable assessment by AEMO of the profile of new generation assumed by NSPs as a prerequisite for further consideration by the AER.

1.4 Relevant Background

The development of a framework to address the connection of clusters of new generation that are expected to seek to connect over time was first considered by the Commission as part of the Review of Energy Market Frameworks in light of Climate Change Policies.

In August 2008, the MCE directed the AEMC to review the existing energy market frameworks to assess whether they were resilient to the changes in behaviour that were likely to result from the planned introduction of the expanded RET and the Carbon Pollution Reduction Scheme (CPRS).

The AEMC submitted its Final Report on the Climate Change Review to the MCE on 30 September 2009. The Final Report concluded that the energy market frameworks, supported by a number of recommended changes, are capable of accommodating the impacts of the expanded RET and CPRS.

The AEMC made a number of recommendations that sought to strengthen energy market frameworks and ensure they would be resilient to the changes in behaviour expected as a result of climate change policies. One of the key recommended framework changes was the introduction of measures to promote the efficient connection of clusters of new generation to the electricity networks as new generation connects over time.

The MCE supported the AEMC's findings and recommendations in its response to the Final Report.[5] In particular, the MCE endorsed the recommendation regarding the efficient connection of clusters of generation, noting that the SENE framework will deliver benefits to the market by providing greater flexibility for the National Electricity Market (NEM) to respond to the challenges posed by climate change policies.[6] The MCE therefore requested that the AEMC progress consideration of the Rule change proposal, having regard to the MCE's response.

1.5 Commencement of Rule making process

Although the Rule Change Request stems from the Commission's previous work in the context of the Climate Change Review, the Commission is nonetheless required to follow the standard Rule making process, including undertaking further public consultation.

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5 Ministerial Council on Energy 2009, *Review of Energy Market Frameworks in light of Climate Change Policies: Response to Australian Energy Market Commission's Final Report*, December 2009.

6 Ibid, p.5.

On 1 April 2010, the Commission published a notice under section 95 of the NEL advising of its intention to commence the Rule change process and the first round of consultation in respect of the Rule Change Request. A Consultation Paper prepared by AEMC staff identifying specific issues or questions for consultation was also published with the Rule Change Request. Submissions closed on 13 May 2010.

The Commission received twenty-eight submissions and two supplementary submissions on the Rule Change Request as part of the first round of consultation.

On 16 August 2010, the Commission announced that it would publish an Options Paper before proceeding to a draft Rule determination. The Commission decided that an additional step was necessary due to the complex nature of the proposed Rule, the divergent views expressed across the industry and the emergence of possible alternative solutions. A brief overview of the Options Paper, published on 30 September 2010, is provided in section 1.7 below. Submissions to the Options Paper closed on 5 November 2010.

The Commission received twenty-one submissions and one supplementary submission on the Options Paper as part of the additional round of consultation.

The submissions and supplementary submissions received to both the Consultation Paper and the Options Paper are available on the AEMC website.[7] A summary of the issues raised in submissions, and the Commission's response to each issue, is contained in appendix A.

On 20 October 2010, the AEMC held a Public Forum in Adelaide. The Forum provided an opportunity to discuss the issues and options presented in the Options Paper.

1.6 Extension of time

On 1 July 2010, 19 August 2010 and 3 February 2011 the Commission published notices under section 107 of the NEL extending the periods for publishing the draft and final Rule determinations for this Rule Change Request. The Commission considered that the proposed Rule change raised issues of sufficient complexity and difficulty such that additional time was necessary.

1.7 Alternative solutions proposed in the Options Paper

On 30 September 2010, the AEMC published an Options Paper. The purpose of the Options Paper was to test a number of alternative solutions with stakeholders to: (1) assist the Commission in determining the best way to address the issues the Rule Change Request identified; and (2) ensure that any changes to the existing frameworks are proportionate to the problems identified and will, or are likely to, contribute to the achievement of the NEO.

7 www.aemc.gov.au.

Options 1 and 2 were based on the SENEs framework proposed in the Rule Change Request, with some revisions to strengthen the risk mitigation mechanisms and simplify the proposal. The key differences between these options and the Rule Change Request were:

- Option 1 introduced a cost threshold trigger such that a SENE would only be built once 25 per cent of the capital costs of the investment were underwritten by firm connection agreements with generators; and

- Option 2 also included a cost threshold trigger, but further strengthened the risk mitigation measures through explicit application of an economic test. In addition, the proposed framework was simplified by removing the prescribed compensation arrangements, leaving those to be negotiated between NSPs and generators.

Option 3 required the application of the Regulatory Investment Test for Transmission (RIT-T) to incremental capacity above that required to connect a first generator (or group of generators). The first generator(s) would pay the stand alone costs of its connection to the network in the absence of a scale efficient connection. Subsequent connecting generators would contribute to the stand alone cost of the first generator(s). The cost of any incremental capacity justified by the RIT-T would be met by consumers.

Option 4 was a variation on this approach with different cost recovery arrangements such that generators would be expected to pay for the SENE over time, provided that generation materialises as forecast. Consumers would continue to underwrite the cost of any spare capacity, but with a simplified charging framework.

Option 5 maintained the principle that generators should face the costs incurred in connecting them to the network. However, instead of recovering this as a negotiated service, a new type of prescribed service would be introduced that would be paid for by generators. Consumers would still underwrite the cost of any spare capacity, but with a simplified charging framework.

1.8 Consultation on draft Rule determination

In accordance with the notice published under section 99 of the NEL, the Commission invites submissions on this draft Rule determination, including the draft Rule, by 5 May 2011.

In accordance with section 101(1a) of the NEL, any person or body may request that the Commission hold a hearing in relation to this draft Rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than 17 March 2011.

Submissions and requests for a hearing should quote project number "ERC0100" and may be lodged online at www.aemc.gov.au or by mail to:

Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

2 Draft Rule Determination

Note that for the remainder of this document the following terms will have the meanings described below:

- "proposed Rule" - the Rule initiated by the MCE and set out in the Rule Change Request;
- "draft Rule" (or "more preferable Rule") - the Rule proposed by the AEMC and attached to and published with this draft Rule determination; and
- "Options 1 to 5" - the five options presented by the AEMC in the Options Paper and described in section 1.7.

2.1 Draft Rule

Overview

The draft Rule is intended to promote the more efficient connection of multiple generators in the same geographic area compared to the existing arrangements, through commercial arrangements with minimal regulatory intervention. It does so by placing a new obligation on transmission businesses to undertake, on request, specific locational studies to reveal to the market the potential opportunities for efficiency gains from coordinated connections. Once a study is published, the decisions to fund, construct, operate and connect to a SENE will be made by market participants and investors within the existing framework for connections in the Rules.

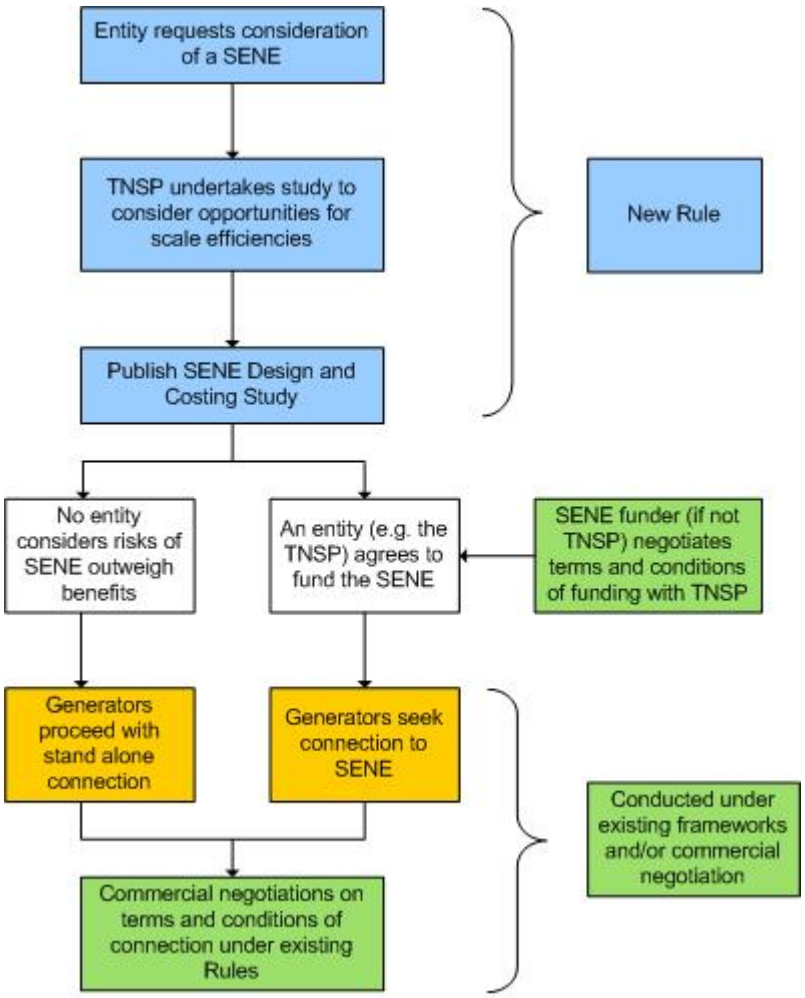
The key advantage of the draft Rule is that it does not compel any entity, including consumers, to bear the risk of stranded assets. Instead, it provides a framework under which opportunities to capture scale efficiencies are made transparent and any entity that chooses to do so can underwrite a SENE.

Consideration of a SENE would be triggered by a generator, or any other entity, requesting that a TNSP undertake a study to examine the potential scale economies available from constructing a SENE in a particular geographic area. The TNSP would then be required to publish the study detailing possible designs and their associated costs, compared with connecting forecast generation on a stand alone basis.

Any willing entity (or consortium), such as the TNSP, a generator, government or any other third party would then have an opportunity to fund a SENE. The terms and conditions of the funding arrangements between the funder, builder and TNSP operating the SENE would be subject to commercial negotiation between the relevant entities. Once the SENE is built, it would become part of the TNSP's network and generators would be able to seek access on a fair and reasonable basis, consistent with existing arrangements.

The following diagram sets out a summary of the draft Rule. The blue boxes indicate matters governed by the draft Rule; the green boxes indicate where commercial negotiations, as per the existing Rules if applicable, take place.

Figure 2.1



Trigger for considering a SENE

Consideration of a SENE would be triggered by a generator, or any other entity, requesting that a TNSP undertake a study to examine the potential scale economies from constructing a SENE in a particular geographic area. A generator seeking connection to the network could:

- make a standard connection enquiry. In this instance, the existing procedures set out in the Rules would be followed; and/or
- request a TNSP to undertake a study. The "SENE design and costing study" would consider opportunities for a scale efficient network extension that would provide a more efficient connection arrangement for both the enquiring generator, and other anticipated generation in the area.

The TNSP would not be required to bear the costs of the SENE study. Instead, the entity that requests the study would also need to arrange for its funding, thereby discouraging spurious requests for SENE studies. A generator seeking connection may be willing to fund the study on the basis that its overall cost of connection to the shared network may be lower if a SENE is built. However, the generator (or any other interested entity) could request contributions to the cost of the study from other generators proposing to locate in the same area.

TNSPs would generally be obliged to undertake the study if requested and funded by the study proponent or another person. There is no such obligation on DNSPs. In Victoria, the relevant TNSP to undertake the study is AEMO. This is consistent with AEMO's declared network functions under section 50C of the NEL and, in particular, its function of providing information and other services to facilitate decisions for investment and the use of resources in the adoptive jurisdiction's electricity industry.

The TNSP would also be required to publish a notice on its website indicating commencement of a SENE study. The notice must specify the area that is being considered, the dates agreed between the study proponent and the TNSP for completion of the study, and any interim milestones.

Scope of the SENE design and costing study

The purpose of the SENE design and costing study is to examine the extent of the scale efficiencies that may be gained from more efficiently connecting generators in the same geographic area to the transmission network, compared to those same generators connecting on an individual stand alone basis.

The study would therefore need to compare the cost of forecast generation in the same geographic area connecting to the transmission network as augmented by a SENE with the cost of the forecast generation otherwise connecting to the national grid. The difference between these costs would highlight the potential savings from building a SENE.

The study would likely also need to consider the risk that not all generation assumed for the purpose of estimating costs will necessarily materialise. This is a key issue and the Commission would expect the TNSP to perform some sensitivity analysis based on different probabilities of generation entry. For example, the Commission would expect the study to encompass a number of different forecast generation scenarios and different assumptions about the probability of the forecast generation materialising.

The cost of connecting to the transmission network as augmented by a SENE will likely always be less than the total cost of providing stand alone connections to the existing network. However, the costs included in the study would likely only represent the total project costs - they would not be expected to take into account the risks associated with undertaking the investment. Once the risk of asset stranding is reflected in a risk adjusted return, the stand alone connection outcome may actually minimise expected total system costs relative to the SENE outcome.

The exact scope and timeframe for undertaking the SENE design and costing study would be subject to negotiation between the TNSP and the person requesting the study. However, the draft Rule requires the TNSP to consider certain matters when negotiating the scope of the study, including:

- potential benefits of capturing scale economies;
- the future generation capacity in a defined area that is considered likely to connect to a SENE;
- the location of the point(s) of connection of the SENE to the present transmission network;
- the configuration of the SENE including the point at which individual future generators may connect to the SENE;
- the capacity and technical specifications of the SENE;
- indicative development, operating and other costs for the SENE, based on an indicative timetable for development of the SENE;
- opportunities for staged and modular development. This may be based on different scenarios reflecting different assumptions about forecast generation. For example, one scenario could include generators that have been classified as committed, a second scenario could include both committed and anticipated generation, etc. Each scenario could indicate opportunities for staged development, as well as providing additional information on the likelihood of various generators connecting to the SENE; and
- the impact of the SENE (under each scenario) on the present transmission network, including any requirement for augmentation.

The study should take account of the most recent NTNDP, published by AEMO. While AEMO would not be required to identify potential "SENE zones" as under the proposed Rule, the Commission would encourage AEMO to continue to identify clusters of generation in its NTNDP, as it did in the 2010 NTNDP.[8]

The proposed design of the SENE should also take into account environmental and planning considerations, particularly in defining the route of the SENE. However, we recognise that environmental and planning approvals would most likely be sought after a possible source of funding had been identified for the SENE.

The TNSP may, but would not be required to, consider calling for expressions of interest from potential connecting generators to inform their study.

Once complete, the study must be published on the TNSP's website.

8 See AEMO, *2010 National Transmission Network Development Plan*, 15 December 2010, Chapter 7.

Confidentiality

The process of connecting a generator to the network requires generators to submit commercially sensitive information to a TNSP for the purpose of conducting the necessary impact studies. The draft Rule would not allow a TNSP to use this confidential connection information for a SENE study without a generator's consent.

To ensure that a TNSP has sufficient information to conduct the SENE design and costing study, the draft Rule enables TNSPs to use (for the purpose of the SENE study) and disclose (in the study report) information provided to it by the enquiring generator and other interested generators for the purposes of the study.

The draft Rule requires TNSPs to invite persons who wish to provide data or information for the study to register their interest in doing so. Information provided by parties who have registered their interest may be used and disclosed by TNSPs in the SENE study report.

Where generators have concerns regarding potential use and disclosure of commercially sensitive information and therefore choose to withhold information from TNSPs, TNSPs may not receive the best or most accurate information for the SENE study. However, generators that consent to take part in the study should have an incentive to provide accurate information. These arrangements ensure the transparency of inputs into the study.

When the SENE study is published, the information it contains may be used by any entity. In other words, no proprietary rights are bestowed upon the funder of the study in terms of the use of the information presented. This implies that, although a generator may ultimately opt to proceed with a stand alone connection, the study may still be used as the basis for constructing, or at least further exploring possibilities for, a SENE.

Interaction with DNSPs

The most efficient stand alone connection for a connecting generator may be directly to the distribution network rather than to the transmission network. In this instance, the study would require input from the relevant DNSP as well as the TNSP to assist in determining the stand alone cost of connection. The draft Rule therefore:

1. requires DNSPs to cooperate with TNSPs that request information for the purposes of the SENE study; and

2. allows the DNSP to recover from the relevant TNSP its reasonable costs incurred in contributing to the study.

Trigger for building the SENE

In publishing a SENE design and costing study, additional information is provided to the market on potential opportunities for capturing scale economies in connections through a SENE. This enhances the possibility of any entity funding a SENE where

they are willing to take on the risk of asset stranding, in light of the potential to capture scale economies.

The investment test is passed where an entity (or consortium) is willing to fund the SENE and bear the asset stranding risk. Possible entities could include:

- a TNSP (either the TNSP that undertakes the study, or another TNSP), noting that the TNSP would not be able to recover those costs from consumers;
- a generator;
- a government; or
- another third party.

While a decision to invest would be informed by the SENE design and costing study, this would be supplemented with additional information, including the rate of return required by the investing entity and any private information they might hold to further inform their decision. For example, the investing entity may have different views on the likely profile of future connecting generation. The investing entity may also consider calling for firm interest from connecting generators, for example by requiring a capital contribution, to inform the investment decision.

Deciding on whether to invest would also require finalising the plans for the design of the SENE. This includes details such as the capacity and technical design features of the SENE, as well as the location of the SENE hub. These details depend critically on the assumptions of future generation entry and so would also require these assumptions to be clearly established. During this process, environmental and planning approvals would also need to be obtained as they may influence the ultimate design of the SENE.

These design features could potentially be influenced by the entity funding the SENE. For example, if a generator who was intending to connect to the SENE was funding the additional capacity, it may do so on the basis that the hub is located as close as possible to its own generating facilities. In contrast, the most efficient location for the hub is where it minimises the connection costs of all connecting generators.

Any entity that chooses to fund a SENE would be entitled to a revenue stream where generators choose to connect to the SENE. The SENE funder bears the risk that anticipated generation does not materialise. The return to the SENE funder would therefore be expected to be commensurate with this risk. This also applies where the SENE funder is a TNSP, noting that this may imply a return to the TNSP that is different from that which it receives for its regulated assets.

The terms and conditions of repayments to the SENE funder, and the way in which risk is allocated between the relevant parties, would be subject to commercial negotiation between the SENE funder, the SENE builder, the SENE operator and, potentially, connecting generators.

Once an entity commits to funding a SENE and a final design has been decided, negotiations for its construction, operation (where relevant) and connections can commence. While a SENE could be funded and/or constructed by a number of entities, the party that owns, controls or operates the SENE would be required to register with AEMO as a TNSP, unless that party has been exempted by the AER from such registration.[9] Alternatively, a party could arrange for an existing registered TNSP to undertake this function on its behalf.

The TNSP that owns, operates and controls the SENE would be required to negotiate directly with generators that seek connection to the network. Arrangements for connection to the SENE, including charges for use of the SENE, are discussed further below.

The SENE funder would not be entitled to influence who may or may not access the SENE. The TNSP will be required to facilitate access to its transmission network (as augmented by the SENE) on a fair and reasonable basis as per the existing arrangements.

Negotiating connection to the SENE

The draft Rule does not change the existing connections framework. Therefore, where a SENE proceeds, generators would negotiate with the relevant TNSP on the commercial and technical terms and conditions with respect to its proposed connection, including for use of the network as augmented by the SENE.

The framework under which negotiations between the generator and the TNSP take place (i.e. under the Rules or outside of the Rules) will depend on the classification of the services provided by means of the SENE. Under the Rules, transmission services are classified by reference to definitions of those services set out in Chapter 10 of the Rules.[10] A transmission service may be a prescribed transmission service, a negotiated transmission service, or neither, in which case it will be a non-regulated service.

In practice, the service classification may depend to some extent on the approach of individual TNSPs. Consequently, there may be some debate about what type of transmission service a SENE asset provides. Generally, these matters will be resolved during the commercial negotiation of connection agreements.[11]

Therefore, given that the classification of services will be determined on a case by case basis, and, in practice, may be influenced by individual TNSP practices, it is difficult to be prescriptive on the classification of services provided by SENEs and consequently the framework under which negotiations will take place. An example of one possible outcome is provided in appendix B.

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9 NER clause 2.5.1(a) requires that only a licensed NSP own, control or operate a transmission or distribution system unless exempted under clause 2.5.1(d).

10 Appendix C reproduces the relevant definitions.

11 A more detailed discussion of the existing connections framework is available in Chapter 5 of the Options Paper for this Rule change request. See AEMC 2010, *Scale Efficient Network Extensions, Options Paper*, 30 September 2010, Sydney, pp.18-32.

If a service is classified as a non-regulated transmission service, this means that service is not subject to economic regulation under the Rules. In contrast, if a service is classified as a negotiated transmission service, discussions between the TNSP and the generator take place under the TNSP's approved negotiating framework.[12] The generator also has recourse to the dispute resolution process.[13]

For clarity, the services provided by SENE assets are not intended to provide prescribed transmission services and therefore the costs should not be recovered from consumers, even where funded by the TNSP. However, the Commission notes that the characteristics of a transmission service may change over time such that some or all of the services provided by means of a SENE fall within the definition of a prescribed transmission service. In this instance, the Commission anticipates that the AER would carefully consider any application by a TNSP to include in its Regulatory Asset Base (RAB) the costs of the SENE. The Commission also anticipates that the AER would be cognisant that the TNSP funded the SENE based on calculated risks regarding its likely return on investment.

In other words, if a TNSP chooses to fund a SENE and so bear the asset utilisation and funding risk, any costs associated with the SENE that are not recovered from generators should not be recovered from consumers.

Following negotiations, the TNSP would develop a connection offer for the enquiring generator, including the terms and conditions for use of the SENE based on its final design, funding arrangements and negotiations between the TNSP and generator. This should also include provisions for how the generator's charges will change as other generators connect.

Distribution

The Commission has determined to make a more preferable Rule that does not contemplate SENEs on a distribution network.

The Commission considers the scope for efficiency gains at the distribution level is likely to be less than those available in transmission due to the nature of the assets and the likely location of clusters of generation. In addition, there are a number of challenging issues that are unique to distribution. These issues, including those raised in submissions to previous consultations on this Rule Change Request, have been considered by the AEMC in developing this draft Rule.

For example, distribution networks are most likely to connect embedded generators located close to load and therefore long extensions to connect generators are typically not required. As noted by Energex, this means "…there are limited opportunities for large scale renewable generation within the distribution networks."[14]

12 Under Chapter 6A Part D of the Rules.

13 Under Part K of Chapter 6A of the Rules.

14 Energex, Consultation Paper submission, p.1.

In addition, the highly integrated nature of the distribution network implies that providing assets that are dedicated to generator connections is likely to be impractical and potentially inefficient given the greater potential for load to connect to the SENE in the future. In NSW, this issue is dealt with by arrangements which provide for any extensions or augmentations required to connect a generator's facilities to the shared network, which are built and paid for by the generator, to be gifted to the DNSP upon connection. This principle is intended to reflect the highly meshed nature of the distribution network and the fact that load can be expected to locate around the embedded generator.

It is important that arrangements on the distribution network recognise and support these characteristics. As noted by Citipower/Powercor, ring fencing a SENE "…could result in very inefficient duplication of assets to separately serve load and generation requirement."[15]

Finally, distribution is currently undergoing a series of reforms in a number of key areas covering issues relating to SENEs such as planning, connections and capital contributions. The Commission is mindful of introducing changes to existing frameworks which are subject to change as a result of these reforms.[16]

2.2 Commission's draft determination

In accordance with section 99 of the NEL, the Commission has made this draft Rule determination in relation to the Rule proposed by the MCE.

The Commission has determined not to make the MCE's proposed Rule but rather to make a more preferable Rule.[17]

The Commission's reasons for making this draft Rule determination are set out in section 2.5.

A draft of the more preferable Rule (draft Rule) is attached to, and published with, this draft Rule determination. Its key features were described in section 2.1.

15 Citipower/Powercor, Consultation Paper submission, p.2.

16 These reforms stem from work undertaken by the Ministerial Council on Energy Standing Committee of Officials (MCE SCO) to develop a national framework for electricity distribution network expansion and planning, connection charges and capital contributions. For further information on these reforms see: www.ret.gov.au.

17 Under section 91A of the NEL, the AEMC may make a Rule that is different (including materially different) from a market initiated proposed Rule (a more preferable Rule) if the AEMC is satisfied that having regard to the issue or issues that were raised by the market initiated proposed Rule (to which the more preferable Rule relates), the more preferable Rule will or is likely to better contribute to the achievement of the NEO.

2.3 Commission's considerations

In assessing the Rule Change Request, the Commission considered:

- the Commission's powers under the NEL to make the draft Rule determination and draft Rule;
- the Rule Change Request;
- the fact that there is no relevant MCE Statement of Policy Principles;[18]
- the MCE's policy response to the AEMC's Review of Energy Market Frameworks in light of Climate Change Policies Final Report;[19]
- submissions and supplementary submissions received during first round consultation;
- submissions and supplementary submissions received on the Options Paper;
- stakeholder views at the SENEs Public Forum held in Adelaide; and
- the Commission's analysis as to the ways in which the proposed Rule and the five options presented in the Options Paper will, or are likely to, contribute to the NEO.

2.4 Commission's power to make the Rule

The Commission is satisfied that the draft Rule falls within the subject matter about which the Commission may make Rules. The draft Rule falls within the matters set out in section 34 of the NEL as it relates to the activities of persons (including Registered Participants) participating in the NEM or involved in the operation of the national electricity system. In particular, it relates to obligations imposed on TNSPs to undertake SENE studies. Further, the proposed Rule falls within the matters set out in schedule 1 to the NEL as it relates to:

- Item 12, which relates to the augmentation of transmission systems and distribution systems;
- Item 30F, which relates to the application (with or without modification) of Rules, applicable to NSPs, to regulated transmission system operators, or to AEMO in its capacity as a provider of transmission services; and
- Item 35, which relates to confidential information held by Registered Participants, the AER, the AEMC, AEMO and other persons or bodies conferred

18 Under section 33 of the NEL, the AEMC must have regard to any relevant MCE Statement of Policy Principles in making a Rule.

19 Ministerial Council on Energy 2009, *Review of Energy Market Frameworks in light of Climate Change Policies: Response to the Australian Energy Market Commission's Final Report*, December 2009.

a function, or exercising a power or right, or on whom an obligation is imposed, under the Rules, and the manner and circumstances in which that information may be disclosed.

2.5 Rule making test

National Electricity Objective

Under section 88(1) of the NEL, the Commission may only make a Rule if it is satisfied that the Rule will, or is likely to, contribute to the achievement of the NEO. This is the decision making framework that the Commission must apply.

The NEO is set out in section 7 of the NEL as follows:

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system."

For the Rule Change Request, the Commission considers that the relevant aspect of the NEO is:[20]

- efficient investment in electricity services.

Achieving efficient investment in electricity services, in particular connections, should result in lower expected total system costs which, over time, will lead to more efficient prices and higher quality and service for consumers. The Commission considers that efficient investment outcomes are likely to occur where risk is allocated efficiently.

The Commission is satisfied that the draft Rule will, or is likely to, contribute to the achievement of the NEO by providing a mechanism which promotes more efficient connection outcomes than under existing arrangements, thereby promoting the long term interests of consumers in respect of the price of electricity. The draft Rule promotes efficiency in the following ways:

- provides a new mechanism to identify the potential benefits of building efficiently sized transmission assets for the purposes of connection, so as to take advantage of scale economies. In doing so, the new mechanism will facilitate more efficient coordination amongst generators. Where lower connection costs reduce total system costs, it is likely that some benefits will be passed on to consumers;

20 Under section 88(2), for the purposes of section 88(1) the AEMC may give such weight to any aspect of the NEO as it considers appropriate in all the circumstances, having regard to any relevant MCE statement of policy principles.

- provides an approach that allows stranded asset risk to be allocated to those parties that are best able and willing to manage that risk through a process of commercial negotiation. This is consistent with existing frameworks;

- provides additional transparency to the market by publishing potential efficiency gains from coordinated connections. In doing so, it overcomes any information asymmetry between TNSPs and the market on the likely magnitude of benefits that could potentially be gained from efficient connection outcomes. The draft Rule should also promote interest in funding by third parties thereby promoting competition in funding. In addition, the draft Rule maintains the existing approach to connections and does not affect generators' rights to seek access to the network; and

- provides a change to the existing framework that is proportionate to the identified issues. It does not introduce significant complexity or the potential for inconsistencies with existing frameworks. Further, it does not impose unrecoverable costs or unreasonable requirements on market participants or consumers.

Compatibility with AEMO's declared network functions

Under section 91(8) of the NEL, the Commission may only make a Rule that has effect with respect to an adoptive jurisdiction if satisfied that the proposed Rule is compatible with the proper performance of AEMO's declared network functions. The draft Rule sets out a new requirement for TNSPs, where requested and funded by another entity, to undertake a SENE design and costing study. AEMO, in its capacity as a TNSP in Victoria, would be required to undertake such studies where requested. The role of conducting the SENE design and costing study is compatible with AEMO's declared network functions under section 50C of the NEL, in particular its function of providing information and other services to facilitate decisions for investment and use of resources in Victoria's electricity industry.

2.6 More preferable Rule

Under section 91A of the NEL, the AEMC may make a Rule that is different (including materially different) from a market initiated proposed Rule (a more preferable Rule) if the AEMC is satisfied that, having regard to the issues raised by the market initiated proposed Rule (to which the more preferable Rule relates), the more preferable Rule will or is likely to better contribute to the achievement of the NEO.

Having regard to the issues raised by the Rule proposed in the Rule Change Request, the Commission is satisfied that the draft Rule will, or is likely to, better contribute to the NEO than the proposed Rule by providing a framework which better promotes efficient investment outcomes in transmission, thereby better promoting the long term interests of consumers in respect of the price of electricity. The draft Rule promotes investment efficiency better than the proposed Rule for the following reasons:

- the draft Rule more efficiently allocates the asset stranding risk associated with building an extension in anticipation of future generation to those entities best able and willing to manage that risk (market participants or investors) as opposed to those who are unable to do so (consumers);

- the draft Rule promotes more efficient investment in electricity services by maintaining a market based approach to connections rather than requiring non-market facing entities to take risks on generator investment decisions. It promotes competition in funding which should lead to lower costs for such connections. It also avoids potentially superfluous work being undertaken by AEMO and TNSPs; and

- the draft Rule is less complex than the arrangements proposed by the Rule Change Request. The relatively simple change to the Rules maintains current arrangements for access and connection thereby avoiding the potential for inconsistencies with existing frameworks.

2.7 Other requirements under the NEL

In applying the Rule making test in section 88 of the NEL, the Commission has also considered whether there are any relevant MCE Statements of Policy Principles as required under section 33 of the NEL. The Commission has determined that there is no MCE Statement of Policy Principles which is relevant to this Rule change.

The Commission considers that the following sections of the NEL are also not relevant to the draft Rule:

- section 88A (specifying the circumstances in which the AEMC must take into account form of regulation factors);

- section 88B (specifying the circumstances in which the AEMC must take into account revenue and pricing principles); and

- section 89 (relating to the matters to which the AEMC must have regard when making jurisdictional derogations).

3 Commission's reasons

The Commission has analysed the Rule Change Request and assessed the issues that it raises. For the reasons set out below and in the following chapters, the Commission has determined that a Rule be made.

3.1 Assessment of the issues

The Commission considers there is a role for a mechanism that will help strengthen the connections framework to ensure that it can continue to meet consumers' energy needs at an efficient cost, consistent with the NEO, in light of changing patterns of generation that may result from policy and technology developments.

Without some changes to the Rules, there is some risk of inefficient duplication in network assets and potential delays in connection where connections are not coordinated or built to an efficient scale.

For several reasons, achieving coordinated connections under existing frameworks may prove challenging. For example, the probabilities of proposed investments being realised over time differ between generators. This challenge implies that there is a need for an assessment of the likelihood of future generation materialising. However, uncertainty regarding the likelihood of generator entry means that forecasting future generation and investing on that basis is inherently quite risky. In addition, achieving coordinated connections requires market participants to be willing to participate and cooperate with one another if efficient outcomes are to be achieved.

These challenges may result in market participants being either unwilling, or unable, to underwrite the risks of building additional network capacity in advance of future generator connections.

The introduction of a mechanism which identifies the potential benefits of building efficiently sized connection assets should help to promote more efficient connection outcomes relative to the status quo, by providing potential investors with a greater level and quality of information from which to make better informed, and hence more efficient, investment decisions.

Although such a mechanism would not directly address the coordination of multiple generators seeking to connect over time because it does not force any entity to fund the SENE, it would encourage market participants to enter into commercial discussions to build efficient connections, particularly where the potential scale efficiencies are shown to be material.

Further, the draft Rule may assist in overcoming the first mover disadvantage where the first generator is able to negotiate a charge that is lower than the amount it would be charged to connect to the network in the absence of a SENE. This might occur where there is considerable likelihood of other generators connecting soon after and so the

risk of asset stranding is considered to be relatively low. This negotiated approach to charging for connection to the SENE is consistent with the existing arrangements.

To the extent that connection frameworks more generally require further consideration, it is appropriate to do this holistically in the context of the TFR.

3.2 Civil Penalties

The draft Rule does not amend any Rules that are currently classified as civil penalty provisions under the National Electricity (South Australia) Regulations. The Commission does not propose to recommend to the MCE that any of the proposed amendments in the draft Rule be classified as civil penalty provisions.

4 Commission's assessment approach

This chapter describes the Commission's approach to assessing the Rule Change Request in accordance with the requirements set out in the NEL (and explained in chapter 2). The assessment framework has also been used to assess the broad alternative options proposed in the AEMC's Options Paper, as well as the more preferable Rule which was subsequently developed.

In assessing the Rule Change Request and proposed alternative solutions, the Commission has considered the following issues:

- the ability of the proposed framework to capture scale efficiencies, also being mindful that the Rules will promote efficient investment where overall transmission and generation costs are appropriately balanced;
- whether the proposed framework facilitates efficient risk allocation by ensuring risk is allocated to those entities best able and willing to manage it;
- the extent to which the proposed framework facilitates competition and efficient investment decisions by promoting market-driven, as opposed to centrally planned, solutions; and
- the extent to which the changes being proposed are proportionate to the identified issues and consistent with existing regulatory arrangements.

The Commission has also considered the extent to which frameworks facilitate timely generator connection and avoid bias towards any particular technology or entity.

In applying these assessment criteria, trade-offs are likely to be required between competing objectives. For example, consideration has been given to:

- the magnitude of inefficiencies associated with duplicated assets and the complexity of any Rule, including the degree to which it is consistent with existing frameworks; and
- the magnitude of potential scale efficiency benefits and the risks and costs of asset stranding.

The Commission's objective, against which it assesses all Rule Change Requests, is to promote efficient investment in, and efficient operation and use of, electricity services in the long term interest of consumers. The Commission's role is therefore to make Rules that it considers will provide a framework under which efficient cost outcomes will occur in the context of the legislative environment within which the market operates. In respect of environmental legislation and associated government policies, the Commission's role is to ensure that behavioural changes in the market as a result of these can be accommodated in the most efficient way. It is governments' role to ensure that environmental policy objectives are met.

The key assessment factors and underlying principles are set out in more detail below.

Minimising expected total system costs

Investment in network and connection assets should be efficiently sized and located. This is particularly relevant given that scale economies are a characteristic of network investment. This means that, where possible and feasible, mechanisms and incentives should be in place to ensure that generators have the opportunity to coordinate their connections to capture potential scale economies, taking into account potential generation investment in the same geographic areas. Coordinating or building connections to an efficient scale will reduce the risk of inefficient duplication of network assets and potential delays in connection, thereby lowering expected total system costs.

In considering these issues, the Commission notes that one of its objectives is to promote efficient investment in electricity services, thereby lowering expected total system costs and over time leading to efficient prices and higher quality and service for consumers. In other words, the frameworks within the Rules should promote efficient decision making that encourages market participants to appropriately trade-off between transmission and generation investment to reduce overall costs. Creating incentives to invest in the cheapest transmission or the cheapest generation solution will not necessarily promote efficient overall outcomes: it is the appropriate balance between the two that we seek to drive.

Risk allocation arrangements

Efficient investment decisions will be made where the risk associated with those decisions is allocated efficiently. This will occur where:

1. risk is borne by the entity responsible for making the investment decision; and

2. risk is managed by the entity best able and willing to do so.

Typically, efficient outcomes will arise where those entities responsible for making investment decisions are also required to bear the risks associated with those decisions. Allocating risk in this way creates incentives on decision makers to ensure that decisions are well informed by drawing on the best available information. Efficient investment will occur where informed decisions on trade-offs between risks and potential rewards of undertaking a particular investment are made.

In addition, efficient outcomes will likely arise where risk is borne by the entity best able to manage it. This ensures the cost of reducing or mitigating risk will be minimised, allowing least cost outcomes to be achieved.

We note that the entity best placed to bear risk and the entity best placed to manage that risk may in some circumstances differ. Where this is the case, there will be incentives on both parties to coordinate to ensure the most efficient outcome can be achieved.

Arguably, in some circumstances, risk may be borne by beneficiaries where no other party is willing or able to do so. In these instances, it must be clear who the

beneficiaries are, that the benefits are realisable and likely to justify the risks, and that appropriate risk management mechanisms are in place.

Market-driven approach

Competitive, and hence lower cost, outcomes will generally arise where market based solutions are utilised. This means that, where feasible and practical, market participants and investors that receive the rewards and face the costs of a particular investment should be responsible for decision making. Market participants are well informed, commercially driven entities and as such are best placed to make efficient investment and operational decisions. This includes making efficient decisions on the location, type and size of generation.

Moreover, frameworks which provide scope for market-driven, commercial negotiations are generally less intrusive and administratively costly than frameworks relying on more prescriptive regulation.

The Commission considers that commercial arrangements with minimal regulatory intervention are desirable in competitive markets with effective competition as the means of promoting efficient investment thereby lowering expected total system costs in the long term interests of consumers.

Complexity of the framework

Any changes made to the Rules frameworks should be appropriate and proportionate to the identified issues they seek to resolve. This means that unreasonably burdensome regulatory arrangements and unrecoverable costs should not be imposed on market participants. This is in line with good regulatory practice.

In addition, making piecemeal changes to frameworks in the Rules should be avoided in order to minimise the risk of inconsistencies being introduced. Ensuring that any changes to the Rules are consistent with existing arrangements will contribute to a more certain investment environment for market participants, thereby promoting continued investment in the electricity market.

Other considerations

The Commission notes that, during the course of this Rule change process, some issues have arisen that could also fall within the scope of the TFR. The AEMC decided to proceed with this Rule Change Request on the basis that many of the issues highlighted by SENEs are sufficiently separable. Notwithstanding this, the scope of the TFR has been a factor in considering the draft Rule. In particular, the Commission has been cognisant that some of the issues raised are currently being considered under the TFR, and that this may be a better vehicle for giving appropriate consideration to them.

5 Issues this Rule change is seeking to address

This chapter is intended to provide a summary of the issues raised during the analysis of the proposed SENE Rule change, noting that some of the issues are explored in more detail in later chapters. This chapter considers the problems and challenges that were raised by the Rule change proponent and during consultation on this Rule Change Request. It also considers to what extent these challenges can be addressed under existing frameworks.

5.1 Rule change proponent's view

Section 1.2 sets out in detail the Rule change proponent's rationale for this Rule Change Request. In summary:[21]

- new investment in generation may be clustered in the same geographic areas, however it is unlikely that generators will be ready to connect at the same time;
- the existing connection framework makes it difficult for network businesses to develop connection solutions that would be efficient for multiple connections over time;
- given the scale economies available in network provision, the cost impact on customers from the inefficient duplication of connection assets may be large; and
- it is also unlikely that an initial connecting generator would be willing to pay for additional capacity given that it is likely to facilitate the connection of a competitor.

The Rule change proponent considered that the proposed Rule would, or was likely to, contribute to the achievement of the NEO by overcoming the risk of inefficient duplication of assets required to facilitate connections[22], ensuring efficient assets would be built[23] and minimising the risk to customers through various risk management mechanisms[24].

5.2 Stakeholder views

The SENE Rule change proposal has elicited divergent views across stakeholders and within industry sectors. There has been no clear consensus either on whether a need for change has been demonstrated or, amongst those who consider changes are required, what the appropriate solution is. Of the twenty-one stakeholders who submitted a response to the Options Paper, nine considered a case for change had been

21 MCE, *Rule change request - Scale Efficient network Extensions*, 15 February 2010, p.4.

22 Ibid, p.4.

23 Ibid, p.5.

24 Ibid, p.6.

demonstrated.[25] Ten stakeholders considered that existing frameworks are sufficiently robust to support efficient connection outcomes or were not convinced that the proposal met the NEO[26] and the remaining two stakeholders did not offer an opinion on the need for change to the current framework[27].

5.2.1 The need for change

In their submissions to the Consultation and Options Papers, many stakeholders agreed that timely and efficient connection will be a challenge where the pattern of generation investment changes.[28] The issues raised to support this view included:

- the first mover disadvantage. While generators may be better off if they can share the cost of an extension with others, this may represent a first mover hurdle for the initial generator to the extent that costs are not equitably shared with future connecting generators.[29] There is currently a lack of clarity in the Rules regarding access rights, particularly for connection assets and non-regulated services, which may provide a disincentive for first mover generators to fund additional capacity;[30]

- coordination issues. Timeframes for delivering generation investment are uncertain and multiple projects being undertaken by multiple parties are unlikely to reach completion at the same time. Further, generators are unlikely to be willing to tie their project timeframes to those of third parties;[31] and

- limited incentives on NSPs to build scale efficient assets.[32]

More generally, some stakeholders considered that increased entry of renewable generation in the market has highlighted weaknesses in the network connections framework.[33]

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25 AEMO, Clean Energy Council (CEC), Geodynamics, Green Grid, Grid Australia, Infigen, Origin, South Australian Department of Transport, Energy and Infrastructure (SA DTEI) and TRUenergy.

26 AGL, Alinta, EnergyAustralia, Ergon Energy, Hydro Tasmania, Integral, International Power, Major Energy Users (MEU), Nyrstar, National Generators Forum (NGF).

27 CitiPower/Powercor and Energy Supply Association of Australia (esaa).

28 Grid Australia, Consultation Paper submission, p.7, Options Paper submission p.5; TRUenergy, Consultation Paper submission, p.2; Infigen, Consultation Paper submission, p.1; CEC, Consultation Paper submission, p.2; Geodynamics, Consultation Paper submission, p.3; Tasmanian Department of Infrastructure, Energy and Resources (Tasmanian DIER), Consultation Paper submission, p.2; South Australian Chamber of Mines and Energy (SACOME), Consultation Paper submission, p.1; Origin, Consultation Paper submission, p.3.

29 CEC, Options Paper submission, p.3; Grid Australia, Consultation Paper submission, p.6; Infigen, Options Paper submission, p.1; Origin, Consultation Paper submission, p.3.

30 See AEMC 2010, *Scale Efficient Network Extensions, Options Paper*, 30 September 2010, Sydney, Chapter 5 for further discussion on this issue.

31 CEC, Options Paper submission, p.3; Green Grid, Options Paper submission, p.1; Origin, Consultation Paper submission, p.3; Grid Australia, Consultation Paper submission, p.8.

32 TRUenergy, Consultation Paper submission, pp.2,3.

Those stakeholders that supported the proposed Rule considered existing frameworks would not be robust to the challenges posed by changing patterns of generation investment. They considered the RIT-T was not the appropriate mechanism for facilitating the construction of spare capacity in advance of future generation connections. For example, Infigen considered that the RIT-T process is "slow and laborious" and therefore not appropriate for "the relatively rapid roll outs of SENEs and their associated renewable generation required to meet the Government's expanded RET target".[34] Origin also commented that, amongst other things, the RIT-T has not been successful in justifying transmission augmentations on the basis of market benefits.[35]

These stakeholders therefore considered that implementing a SENEs framework is required to provide for more efficient connection outcomes and promote competition through timely connections. They considered the proposed Rule would promote the NEO through:

- avoiding potentially inefficient duplication of assets;[36]
- levelling the playing field for remote generation;[37]
- lower prices in the contract and spot market, reducing retail prices for customers;[38] and
- potentially improving reliability.[39]

Grid Australia and the Tasmanian DIER agreed there are potential hurdles facing the connection of multiple generators which may lead to a duplication of assets. However, they tempered their comments with questions around whether the issues identified by the Rule change proponent and raised during consultation on this Rule Change Request were sufficiently material to warrant complex new Rules. For example, while supportive of some change, Grid Australia considered there was a lack of hard evidence on the shortcomings of existing frameworks. It expressed concern that a new framework may not be highly utilised.[40] Similarly, the Tasmanian DIER questioned how often duplication of assets would occur in practice.[41]

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33 AEMO, Options Paper submission, p.2; SA DTEI, Options Paper submission, p.1.

34 Infigen, Consultation Paper submission, p.4. See also Origin, Consultation Paper submission, p.4.

35 Origin, Options Paper submission, p.7.

36 Geodynamics, Consultation Paper submission, p.3; Origin, Options Paper submission, p.5; TRUenergy, Consultation Paper submission, p.3.

37 Infigen, Options Paper submission, p.1; Origin, Options Paper submission, p.5.

38 Origin, Options Paper submission, p.5; TRUenergy, Consultation Paper submission, p.3.

39 Origin, Options Paper submission, p.5.

40 Grid Australia, Options Paper submission, pp.5-6.

41 Tasmanian DIER, Consultation Paper submission, p.2.

Approximately half the stakeholders who responded to the Options Paper considered that a case has not been made for change or that existing frameworks are sufficient to promote efficient outcomes.[42] In particular, these stakeholders considered:

- there are no barriers to developing cost sharing arrangements that would allow generators to coordinate their connections, facilitated if necessary by an NSP;[43]
- the RIT-T and the National Transmission Planner (NTP) are new initiatives that could support efficient connections in the absence of a new framework and should be given the opportunity to work;[44] and
- modelling undertaken by ROAM Consulting suggests that "...highly concentrated wind development with substantial transmission development...does not appear to be the lowest cost way of meeting the RET."[45]

AGL considered:[46]

> "The gas industry routinely manages the situation that the SENE concept is seeking to address, that is, a large fuel source with a number of users who are competing with each other to get the fuel to a common location. In that industry, participants jointly arrange the construction of necessary facilities to service their needs without recourse to public subsidy or regulatory intervention."

5.2.2 Interaction with the TFR

Some stakeholders considered some of the specific issues raised during the SENEs Rule change process would be better examined as part of the TFR. For example, Origin[47] and the SA DTEI[48] considered that broader questions around access should be dealt with as part of the TFR. Grid Australia considered that many issues, including connection arrangements, are better considered holistically and the SENE Rule change should not pre-empt the TFR.[49] AGL[50] and Alinta[51] more generally considered that the SENEs concept should be considered as part of the TFR to ensure holistic review.

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42 AGL, Consultation Paper submission, pp.3-5; Loy Yang Marketing Management Company (LYMMCo), Consultation Paper submission, p.12; Alinta, Consultation Paper submission, pp.6-7.

43 AGL, Consultation Paper submission, p.3; MEU, Options Paper submission, p.7.

44 AGL, Consultation Paper submission, pp.3,5; EnergyAustralia, Consultation Paper submission, p.11; LYMMCo, Consultation Paper submission, pp.11-12; Macquarie Generation et al, Consultation Paper submission, pp.5-6.

45 AGL, Options Paper submission, p.3.

46 Ibid, p.2.

47 Origin, Options Paper submission, p.9.

48 SA DTEI, Options Paper submission, p.2.

49 Grid Australia, Options Paper submission, p.3.

50 AGL, Options Paper submission, p.4.

51 Alinta, Options Paper submission, p.5.

Similarly, LYMMCo raised concerns that the SENE Rule change may undermine the TFR.[52]

5.2.3 Assessing the Rule change against the NEO

International Power, Hydro Tasmania and Origin noted difficulties in demonstrating that the proposed SENE framework would promote the NEO. International Power considered:[53]

> "...the SENE concept cannot be evaluated as consistent with the NEO per se, but rather can be assessed only on the basis of forecasts of whether net savings or net costs will predominate over time."

On this basis, International Power[54] and Hydro Tasmania[55] did not support the implementation of a SENEs framework.

In contrast, while Origin recognised the difficulties in quantifying the benefits of future market developments, they considered a more strategic and forward looking approach to transmission planning and investment is required to accommodate the entry of new types of generation. It noted that:[56]

> "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."

While the NGF recognised that SENEs may reduce the risk of transmission duplication in a discrete location, it considered that the risk of unnecessary construction of transmission assets overall may increase, and therefore the proposed SENE framework may not meet the NEO. The NGF did not believe it was necessarily clear cut that duplication would be inefficient in all instances if economies of scale benefits were traded-off against wider market efficiencies.[57]

Others considered that the NEO would not be met where customers are required to underwrite the costs of SENEs and forecasts of future generation prove inaccurate. This is because, where forecast generation does not materialise, customers would be required to continue to pay for the under-utilised capacity. Where such asset stranding occurs, customers could face a net cost. This is discussed further in chapter 6.

52 LYMMCo, Consultation Paper submission, p.12.

53 International Power, Options Paper submission, p.1.

54 Ibid, p.1.

55 Hydro Tasmania, Options Paper submission, p.3.

56 Origin, Options Paper submission, p.3.

57 NGF, Consultation Paper submission, p.11.

5.3 Commission's analysis

In light of the changing patterns of generation that may result from future policy and technology developments, the Commission considers there is a role for some mechanism that will help strengthen the connections framework to ensure it can continue to meet consumers' energy needs at an efficient cost, consistent with the NEO. However, the Commission further considers that there is insufficient evidence to warrant a complex or intrusive new Rule.[58]

5.3.1 Patterns of generation investment are changing and uncertain

Over the next decade, significant new investment in renewable generation capacity needs to be accommodated. Estimates suggest that the expanded RET will stimulate approximately 8000 MW of new renewable plant by 2020.[59] It is currently anticipated that many of the new connections over the course of the next decade will be wind generators, given the economics of available renewable generation technologies.[60] However, other types of technology may enter the market as they become commercially viable, including geothermal, large scale solar and bioenergy.

More generally, there is significant uncertainty in the long term about the type and location of the large amount of generation investment that is required, including new base load plant. Market and regulatory frameworks will therefore need to accommodate a broad range of outcomes.

Historically, investment in electricity generation has been characterized by sizable instalments of generation capacity. The existing transmission networks have developed over time to meet the requirements of these investments, which have typically located close to coal sources, the dominant source of fuel to date.

Unlike generation from traditional sources of fuel, wind generation is characterised by smaller units of investment, often less than 100 MW. The most resource rich locations are often, but not always, located remote from the existing network. It is possible that new investment in wind generation by multiple parties will seek to cluster in these resource rich locations and are expected to connect at different times over a period of several years.

These views are supported by analysis undertaken by AEMO[61] and ElectraNet[62] in considering options for the efficient connection of new generators clustered in regions

58 Chapter 8 provides a discussion on the requirement for any new Rule to be proportionate to the issues it is intended to address.

59 McLennan Magasanik Associates (MMA) 2008, *Treasury Paper*, Figure 3-6, p.39.

60 ROAM 2008, Market Impacts paper, pp.29-32.

61 AEMO has indicated that both Regional Victoria (Ballarat region) and the South West Corridor of Victoria are potential sources of significant new generation development. See AEMO's analysis of connection hubs: *Connecting Generator Clusters to the Victoria Electricity Transmission Network*, 17 June 2010.

of Victoria and South Australia respectively. While AEMO and ElectraNet have both been exploring how efficient connection could be facilitated under current frameworks, it is possible that additional tools will be required to allow further efficiencies in connection to be captured.

In addition to the potentially large number of connection applications NSPs will be required to process over a relatively short period of time, these characteristics of likely new entrant generators highlight a number of challenges for current frameworks to connect multiple generators to the network in a timely and efficient manner.

5.3.2 Efficiently connecting new types of generation is challenging

If NSPs knew with certainty the volume and location of generation that would connect over a period of time, it would be relatively simple to match the network investment required to connect it. However, achieving this outcome is likely to prove challenging as generation investment uncertainty creates difficulties in managing the trade-off between optimising investment and managing stranded asset risks. Whether or not a proposed mechanism aimed at improving the efficiency of connections will contribute to the achievement of the NEO will ultimately depend on the outcome of this trade-off, which cannot be known in advance.

Transmission is characterised by lumpy investment, i.e. it can only be provided in discrete, often large amounts. This has been appropriate to date, as historically the size of generation investment has typically matched the size of transmission required to connect it to the network. However, as noted previously, transmission investment needs to accommodate new generation that is relatively small compared to the lumpy transmission investment required to connect it. Under the existing arrangements, transmission is likely to be relatively more expensive for these smaller blocks of generation. The implication is that significant economies of scale are likely to exist where clusters of generators in the same geographic area can connect utilising the same infrastructure.

The potential magnitude of efficiency gains will depend on several factors including the number and volume of potential generators, the geographical spread of generators within a cluster and the distance of the cluster from the shared network. Examples provided to the Commission demonstrate that there are clear efficiencies to be gained through improved coordination of connections.[63]

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62 The Eyre Peninsula has been mooted as a location with large scale renewable energy resource potential. See ElectraNet's discussion on connection "nodes": South Australian Annual Planning Report 2010, p.107. In addition, the Green Grid Initiative being undertaken by a consortium of Capital, Worley Parsons and Baker McKenzie considers options to harness large scale wind generation on the Eyre Peninsula. See: www.renewablessa.sa.gov.au.

63 Citipower/Powercor, submission to AEMC *Review of Energy Market Frameworks in light of Climate Change Policies: 1st Interim Report*, p.5, February 2009; NERA Economic Consulting, *Case Study of the Network Extension - Public Report,* 30 July 2010, AEMC 2009, *Review of Energy Market Frameworks in light of Climate Change Policies: 2nd Interim Report*, June 2009, Sydney, Appendix E.

However, coordinating multiple generators to capture the potentially significant scale economies that are characteristic of transmission investment is likely to prove challenging because of:

- difficulties in coordinating multiple parties;
- the temporal nature of the problem; and, as a consequence,
- problems in managing the risks of stranded assets.

Generators may be unwilling to tie their projects to the timeframes of others. Grid Australia has noted that:[64]

> "...members have already experienced reluctance of individual connection applications to tie their project delivery to the timelines of third parties."

Similarly, commercial sensitivities may limit the amount of information generators are willing to share. As a result, generators may be hesitant to volunteer sufficient information in a timely way so as to coordinate connections.

In addition, generators who express an interest in connection have different probabilities of their proposed investments being realised over time. This implies that the challenge is not limited to one of coordination, but also to one of timing, requiring an assessment of the likelihood of future generation materialising. With that said, it is important to note that this type of coordination has and does occur in order to develop infrastructure in the gas sector.

However, forecasting future generation is inherently difficult, particularly if site specific. While it can generally be expected that load forecasts will eventually be realised, although possibly later than anticipated, there is a significantly higher risk that forecast generation in a particular area may never materialise. This makes the temporal nature of the problem particularly challenging.

Therefore, in order to achieve economies of scale and help ensure timely connections, an entity needs to be prepared to build extra capacity in the expectation that future generation will materialise. Conversely, that entity must also bear the risk that future generation will not eventuate, leaving them to face the cost of a stranded asset.

The Rule change proponent and others consider that, under the existing frameworks, no entity will take on this risk. They consider that implementing a framework that allocates this risk to consumers would provide an opportunity for efficient connection outcomes to occur.

5.3.3 Current arrangements provide limited scope for efficiency gains

While there may be difficulties in coordinating generators and few incentives on NSPs to build in anticipation of future generation investment, the Commission considers

64 Grid Australia, Consultation Paper submission, p.8.

there is some scope under existing frameworks to promote efficient connection outcomes. In part, this has been assisted by a Rule change made in 2009 that reduces the restrictions on NSPs from releasing any information received as a result of a connection enquiry or application.[65]

More generally, the Commission considers that:

- where there are clear economies of scale to be gained, generators should have a strong incentive to coordinate with their competitors;
- TNSPs have an obligation to consider the adequacy of connection points as part of its annual planning review.[66] To the extent that the existing connection points are inadequate, the TNSP must include planning proposals for future connection points. Thus, there is already some obligation on TNSPs to consider future generation requirements; and
- while TNSPs may have limited incentives to invest in additional capacity in advance of future connections, they may be able to apply the RIT-T to incremental investment in addition to the stand alone requirements of a first mover generator.

Similarly, AEMO states that in its own experience:[67]

> "...hubs are being developed as negotiated services suggesting that, in some circumstances it is possible to accommodate the needed changes under the current framework."

We note that AEMO acknowledges there are some limitations that have yet to be addressed by the hubs arrangement, and that there may be some differences between the Victorian experiences and other jurisdictions in the NEM.[68]

Generators funding spare capacity

Previously it has been argued that generators are unlikely to be willing to finance additional capacity beyond their own requirements even where building additional capacity is likely to result in lower average costs. In addition to bearing the risk of future generators not materialising, a generator would also risk under-recovery of costs even where generation materialises. This is the 'first mover disadvantage'. Further, there is little commercial incentive for generators to build spare capacity to facilitate a competitor's connection.

This implies that there is a disincentive for a first mover generator to pay for transmission in excess of its requirements. This disincentive is likely to be heightened

65 AEMC 2009, *Confidentiality Provisions for Network Connections, Rule Determination*, 12 November 2009, Sydney.

66 NER clause 5.6.2(b)(2).

67 AEMO, Options Paper submission, p.3.

68 Ibid, p.3.

for generators located remote from the existing network because connection costs will typically be higher.

However, the Commission considers that there is some scope under existing frameworks for generators to cooperate and enter into cost-sharing arrangements with other investors. To the extent that there are large scale economies to be gained from cooperation, generators should have strong incentives to coordinate. While the Commission recognises the uncertainties in timing of investment, if the savings are significant then we would expect market participants in a competitive market to come up with innovative solutions to capture those gains.

NSPs funding efficient outcomes

Similarly, the Commission considers there is some scope for NSPs or other entities to fund additional capacity where there is clear future demand, and earn a return on capital that is commensurate with the risk taken. NSPs arguably have the best information regarding likely future connections and, as such, would have a better idea of risks involved in building additional capacity. To the extent that NSPs can earn a return that is commensurate with the risk that anticipated future generation does not materialise, there is some, albeit potentially weak, incentive on them to fund such investment.

Applying the RIT-T

In response to the Consultation Paper, some stakeholders considered the RIT-T may be sufficient to promote efficient outcomes and that it should be tested before imposing a new framework.[69] In this instance, a TNSP could consider whether the services provided might meet the definition of a prescribed transmission service and so be funded by consumers. In undertaking the planning of future network augmentations, TNSPs might consider the need for a network extension to efficiently connect future generation in a given location even in the absence of formal connection enquiries or applications.

An augmentation may be classified as providing a prescribed transmission service where it can be shown to provide standard shared transmission services or above standard services with system-wide benefits. Arguably, this could be demonstrated by undertaking a RIT-T if system-wide benefits can be considered equivalent to net market benefits.

NERA Economic Consulting, in a report commissioned by Grid Australia, found that there are likely to be a number of difficulties in applying the RIT-T to a network extension in the absence of a generator application for connection, for a number of reasons.[70]

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69 AGL, Consultation Paper submission, pp.3,5; EnergyAustralia, Consultation Paper submission, p.11; LYMMCo, Consultation Paper submission, pp.11-12; Macquarie Generation et al, Consultation Paper submission, pp.5-6.

70 NERA Economic Consulting 2010, *Case Study of the Network Extension – Public Report*, 30 July 2010. Available at www.aemc.gov.au.

In particular, NERA found that establishing the base case generation development scenario and identifying alternative credible options are likely to be highly contentious and subject to dispute. This is partly because there is no clear limit on the scope of the base case or alternative options that may be considered. Given this, it is unlikely that TNSPs would have an incentive to propose and assess such an extension.

However, Grid Australia also raised the possibility of an "incremental RIT-T" approach.[71] Under this approach, generators fund an extension to meet their connection requirements and the RIT-T is then applied to assess whether building additional capacity to allow future connections would be efficient. Grid Australia considered that this approach could be accommodated under existing frameworks, although greater clarity regarding when the RIT-T may be applied and the implications for service classification and cost allocation may be helpful.

Grid Australia also noted that, under this approach, the first mover issue would remain. However, as discussed above, the Commission considers there is some scope for generators to cooperate and contribute to the first mover's stand alone costs where significant benefits are demonstrated.

Grid Australia considers that assessing the worth of building incremental capacity would clearly bound the scope of alternative credible options. This is because the stand alone cost of meeting the connection requirements of the first connecting generator(s) would be treated as sunk and the RIT-T assessment would be limited to examining the net market benefits of increasing the capacity or changing the configuration of the extension.

However, Grid Australia were also concerned that regulated options, such as that described in this section, should not crowd out market-driven investments. As discussed further in chapter 7, this approach would still require TNSPs with limited information to anticipate market based decisions through forecasts of future generation investments.

The Commission considers there may be some scope for TNSPs to apply the RIT-T to assess whether building incremental capacity in anticipation of future generator connections may be efficient. However, the Commission recognises there may be some risks associated with this approach. In particular, use of the RIT-T could potentially distort the market based decision-making process.

5.3.4 Conclusion

On balance, the Commission is of the view that, while some change is warranted, there is some scope within existing frameworks to take advantage of the economies of scale available from efficiently coordinating the connection of clusters of generation in the same geographic area to the network. The importance of ensuring that any changes to

71 Grid Australia, Consultation Paper supplementary submission, 4 August 2010. AEMO has been testing a similar approach. See, for example, AEMO 2010, *Connecting generator clusters to the Victorian Electricity Declared Shared Network: A technical paper,* 16 June 2010.

the Rules are proportionate to the identified challenges is discussed further in chapter 8.

The Commission is mindful that the NEO will be achieved where overall transmission and generation costs are appropriately balanced. This will not necessarily occur through promoting investment in locations with the cheapest fuel sources for generation. Any changes to the Rules should therefore preserve locational signals and ensure that the cost of transmission is factored into generators' locational decisions.

Transparency in the size of the economies of scale that could potentially be captured by coordinating the connection of clusters of generation should help facilitate more efficient connection outcomes than would otherwise occur. For example, where there are clear advantages in coordinating generator connections, transparency in the potential cost-savings could help to encourage cooperation amongst generators.

6 Efficient allocation of stranded asset risk

There are a number of types of risk associated with planning and building large investments such as transmission assets. These include planning and construction cost overruns, the initial financing risks and the risk of default. The allocation of risks in the case of connections is usually commercially negotiated between NSPs and generators.

A large risk associated with building additional network capacity in anticipation of future generation connections is that generation does not materialise as forecast, leaving a potentially costly stranded asset. It is this stranded asset risk that is particularly difficult to quantify and manage.

Such risks sometimes fall on consumers as a means of achieving desired outcomes. Where this occurs, appropriate regulatory oversight and other measures should be provided such that consumer exposure is appropriately managed on their behalf. However, the Commission is also mindful that risk should not be allocated to consumers simply because the alternatives appear challenging. Ideally, risks should be allocated to those parties best able and willing to manage them.

Further, the risks associated with building spare capacity in anticipation of future generation are likely to be higher than those associated with building capacity in advance of load growth. This is because it can generally be expected that load forecasts will eventually be realised (although possibly later than anticipated).[72] In contrast, forecast generation in a particular area may never materialise.

In considering the appropriate allocation of risk, the Commission has carefully weighed the likely beneficial outcomes from capturing scale economies against the costs that may be imposed on consumers to the extent that forecast generation does not occur.

6.1 Rule change proponent's view

The proposed Rule would require customers to underwrite the risks, and therefore the cost, of under-utilised capacity on a SENE. This means that if generators connect later than forecast or do not connect at all, customers would be required to fund the cost of the unused portion of the SENE. Conversely, customers would benefit where generators connect earlier than expected.

The Rule change proponent considers this risk allocation arrangement was appropriate on the basis that customers are the ultimate beneficiaries of more efficient connection outcomes.

To help manage customer exposure to the risks and costs of sub-optimal investment, the proposed Rule incorporates a new SENE planning framework and a number of regulatory oversight measures.

72 This expectation holds in the absence of stronger demand side measures.

The Rule Change Request states that the planning framework for SENEs is sufficient to promote a robust forecast of future generation connection requirements, including consideration of the suitability of the location and the potential of the fuel resource, in addition to the timing and size of generation connections.

The MCE proposed that this is achieved by the following components of the planning process:[73]

- "a strategic component involving identification by AEMO of potentially economic geographical locations for SENEs; and
- a design component involving the identification by network businesses of possible remote connection line locations, capacities, and indicative costs, taking into consideration possible implications for the shared network."

This two-step process would require AEMO to focus on locations that are more likely to offer the best outcomes for the NEM, promoting efficient investment in electricity services. This first step also provides for public consultation, allowing market participants to contribute to the identification of appropriate locations.

The second component would require NSPs to provide public information on the possible design and indicative costs of SENEs. This is intended to enable generators and other market participants to make more informed, and therefore more efficient, investment decisions than is currently possible.

In addition to inaccurate forecasting, both NSPs and generators may have some incentive to over-size SENEs, which could lead to inefficiently high levels of investment.

The Rule Change Request proposes a series of checks and balances to help mitigate these incentives and the risks of inaccurate generation forecasts leading to stranded assets. These include:

- at least one generator must agree to connect to the SENE before it can be built. Therefore a SENE will only proceed if a generator finds it privately profitable to connect;
- AEMO would be required to review NSPs' forecast generation profiles. Further, the MCE has proposed that new projects should only go ahead if AEMO approves those forecasts. Stakeholders also have an opportunity to provide input into this process; and
- the AER has the option to disallow a proposed SENE if it considers the generation forecast or cost estimates are not sufficiently robust.

The MCE considered that, collectively, these elements would minimise the risks to customers of asset stranding.[74]

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73 MCE 2010, *Rule Change Request - Scale Efficient Network Extensions*, February 2010, p.5.

6.2 Stakeholder views

6.2.1 Allocating risks to those best able to manage them

A number of stakeholders raised concerns that the proposed Rule would require customers to bear significant risks which they are not best placed to manage.[75]

For example, AGL expressed concern that:[76]

> "... [the proposed] checks and balances, including AEMO approval being a condition precedent for the AER decision, would poorly emulate the investment decision process. AGL considered that risky and complex investments such as SENEs should be undertaken and underwritten by those best able to manage them."

Similarly, Alinta considered that none of the risk mitigation measures proposed either as part of the proposed Rule or within the Options Paper would appropriately manage risk exposure on behalf of customers. Alinta noted:[77]

> "...passing risk exposure onto end users…represents an inefficient outcome given their limited ability to manage these potential risks."

Although the MEU considered that the status quo would provide the best solution to generator connections, it nonetheless proposed an alternative solution whereby NSPs would bear asset stranding risk on the basis that NSPs have:[78]

> "...the ability to both minimise the costs for providing surplus capacity and to assess the likelihood of additional generators connecting to the extension and the capacities that might be the most efficient."

A key input into the investment decision on whether, or how much, additional capacity should be built is the forecast of likely future generation entry.

AGL[79] and EnergyAustralia[80] were both of the view that forecasting future generation is inherently uncertain and as such, generators and NSPs should bear the risk of any

74 MCE 2010, *Rule Change Request - Scale Efficient Network Extensions*, February 2010, p.5.

75 AGL, Consultation Paper submission, p.1; Alinta Energy, Consultation Paper submission, p.10; esaa, Consultation Paper submission, p.5; EnergyAustralia, Consultation Paper submission, p.7; Ergon Energy, Options Paper submission, pp.4-5; Tasmanian DIER, Consultation Paper submission, p.2; Energex, Consultation Paper submission, p.1; Macquarie Generation et al, Consultation Paper submission, p.3.

76 AGL, Consultation Paper submission, p.3.

77 Alinta, Options Paper submission, pp.4-5.

78 MEU, Options Paper submission, p.38.

79 AGL, Consultation Paper submission, p.3.

80 EnergyAustralia, Options Paper submission, p.3.

investment decisions undertaken on the basis of such forecasts. Specifically, EnergyAustralia noted:[81]

> "…prospective generators are in the best place to manage the risk of asset stranding. The utilisation of the SENE is heavily dependent on future generators locating as indicated at the time of the SENE… The regime transfers this risk to customers, who are not in a position to manage the risk."

Further, Ergon Energy considered that:[82]

> "...the NEO will not be satisfied if forecast generation does not transpire, particularly where the costs of developing a SENE are borne by customers. SENEs should therefore only be developed when a proponent or proponents can be found that are willing to financially commit to a material share of the development."

In contrast to these views, both Geodynamics[83] and Infigen[84] considered that the AER was the appropriate body to represent consumers and manage risk on their behalf.

In addition, in a report to the Green Grid Forum, Macquarie Capital noted that:[85]

> "...the risk to customers is diversified across a broad portfolio of individual transmission assets in accordance with the application of TUOS charges... Individual generators are unable to manage or adequately assess the intent or timing of competing generators. Increasing the risks generators face may result in under investment in generation assets which would undermine progress for establishing appropriately sized large-scale SENE projects."

6.2.2 Sharing risks based on the "beneficiaries pay" principle

A number of stakeholders, including the CEC[86], SACOME[87] and Infigen[88] considered that customers would ultimately gain from SENEs and therefore it would be appropriate for them to bear the asset stranding risk.

Hydro Tasmania also considered it was appropriate for customers to fund additional capacity until future generation connects, provided sufficient checks and balances were

81 EnergyAustralia, Consultation Paper submission, p.19.

82 Ergon Energy, Options Paper submission, p.4.

83 Geodynamics, Consultation Paper submission, p.4.

84 Infigen, Consultation Paper submission, p.3.

85 Macquarie Capital, *AEMC SENE Options Paper: Report to the Green Grid Forum*, December 2010, p.5.

86 CEC, Consultation Paper submission, p.4, Options Paper submission, p.5.

87 SACOME, Consultation Paper submission, p.3.

88 Infigen, Consultation Paper submission, p.7.

in place, on the basis that the decision to build additional capacity is one of public policy.[89]

Similarly, the NGF, although ultimately supporting a market based approach, considered that requiring customers to underwrite risk was appropriate where it leads to least cost outcomes and does not distort locational decisions.[90]

In contrast, Energex[91], the MEU[92] and the Tasmanian DIER[93] considered that generators would also stand to benefit from more efficiently sized connection arrangements and therefore should also bear some of the risk of asset stranding.

The MEU further considered that customers will only indirectly benefit from scale efficient connections and therefore questioned whether it was appropriate for customers to directly bear the risk associated with such investments.[94]

The esaa noted that consideration should be given to allocating some of the risk to taxpayers, on the basis that the benefits from renewable energy are societal.[95] Others considered it may be appropriate to recover SENE charge shortfalls across all NEM customers on the basis that increased penetration of renewable energy has market-wide benefits.[96]

6.2.3 Extent to which benefits will be passed through to customers

A number of respondents expressed some reservations as to whether the scale efficiency benefits resulting from SENEs would ultimately be passed through to customers.

The MEU considered it was a "giant leap of faith" to imply that consumers would ultimately benefit from SENEs through reduced electricity and REC (Renewable Energy Certificate) prices. The MEU explained that this was due to the market price setting process in the NEM.[97]

Alinta also expressed some reservations as to whether these efficiencies would reach customers. It explained that in NEM jurisdictions where electricity retail prices are still regulated by jurisdictional regulators, the RET liability is passed through to customers

89 Hydro Tasmania, Options Paper submission, p.4.

90 NGF, Consultation Paper submission, p.2.

91 Energex, Consultation Paper submission, p.1.

92 MEU, Consultation Paper submission, p.16.

93 Tasmanian DIER, Consultation Paper submission, p.2.

94 MEU, Consultation Paper submission, p.16; MEU, Options Paper submission, p.25.

95 esaa, Consultation Paper submission, p.5.

96 Ergon Energy, Consultation Paper submission, p.4; Origin, Consultation Paper submission, p.4.

97 MEU, Consultation Paper submission, p.25.

via a range of approaches. Where generators' REC costs are less than the regulated pass through, consumers would be unlikely to capture any efficiency benefits.[98]

In contrast, Origin and TRUenergy considered that the cost savings resulting from SENEs would flow through to customers. Origin considered that efficiency gains would result in a:[99]

> "...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."

Similarly, TRUenergy noted that:[100]

> "...ultimately customers benefit from [reduced connections costs] as generator cost savings flow through the competitive market delivering lower wholesale energy costs over time."

6.2.4 Mechanisms to manage asset stranding risks to customers

While not necessarily supporting the Rule change proposal as a whole, many stakeholders commented on the relative effectiveness and appropriateness of introducing various risk management mechanisms in addition to those included in the Rule change proposal. These mechanisms included:

- introducing a threshold such that a given proportion of the capacity or construction costs of the SENE would need to be underwritten by firm contracts with generators prior to construction of the SENE commencing;
- including an economic test, such as the existing RIT-T or an alternative efficiency test, to ensure net benefits would accrue to customers before requiring them to underwrite the risk of the SENE; and
- alternative cost allocation arrangements such that generators are required to pay a greater proportion of costs, more quickly reducing the burden on customers.

Origin considered that asset stranding is likely to be minimal on the basis that:[101]

- there are three levels of review before SENEs are agreed – AEMO, TNSP and AER;
- the shortage of transmission capacity and load growth means that transmission in Australia is under supplied and will be filled;

98 Alinta, Consultation Paper submission, p.7.

99 Origin, Options Paper submission, p.5.

100 TRUenergy, Consultation Paper submission, p.2.

101 Origin, Consultation Paper submission, p.8.

- the demand for renewable energy under the RET is such that huge amounts of generation need to be built; and
- the existence of a SENE asset would increase the probability of success associated with all projects in a particular region by reducing the risk associated with the project's ability to connect to the network, thus increasing the number of generators looking to connect.

Several of the responses to the Consultation Paper considered greater upfront commitment by generators in the form of a capacity threshold would help minimise asset stranding risk.[102] A capacity threshold would require firm commitments from generators, demonstrated by signed connection agreements covering a given proportion of the capacity of the SENE, before it could proceed. Where stakeholders suggested a threshold level, this ranged from 25 to 60 per cent of the capacity of the SENE.[103]

Options 1 and 2 in the Options Paper proposed a threshold of 25 per cent of the capital costs of the investment, to be underwritten by firm connection agreements with generators. This was in addition to the regulatory oversight by the AER and AEMO. Geodynamics[104] and Infigen[105] considered the threshold sufficient as a risk mitigation measure.

Option 2 sought to introduce the use of an economic test applied to the entire SENE as a further risk management mechanism. Options 3 and 4 also proposed the use of an economic test, specifically the RIT-T, which would be applied to the incremental capacity above that required to connect the first generator(s). Stakeholders had mixed views on these risk mitigation measures.

Origin[106] and TRUenergy[107] supported some form of economic test to minimise asset stranding risk, but considered that the RIT-T was not appropriate. In its response to the Options Paper, Origin set out a suggested framework for a conceptual economic test that would have the objective of deciding on the appropriate or efficient size of the SENE. Part of this proposed test was to use AEMO's generator assessment criteria to assign probabilities to the likelihood of generation projects reaching completion.

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102 Citipower/Powercor, Consultation Paper submission, p.3; EnergyAustralia, Consultation Paper submission, p.8; Ergon Energy, Consultation Paper submission, p.3; Macquarie Generation et al, Consultation Paper submission, p.2; TRUenergy, Consultation Paper submission, p.4; Hydro Tasmania, Consultation Paper submission, p.4.

103 EnergyAustralia, Consultation Paper submission, p.8; Ergon Energy, Consultation Paper submission, p.3; Macquarie Generation et al, Consultation Paper submission, p.2; TRUenergy, Consultation Paper submission, p.1; Hydro Tasmania, Consultation Paper submission, p.4.

104 Geodynamics, Options Paper submission, p.1.

105 Infigen, Options Paper submission, pp.3-4.

106 Origin, Options Paper submission, pp.6-9.

107 TRUenergy, Options Paper submission, p.3.

Similarly, Grid Australia considered that requiring forecasts of future generator connections to meet specific commitment criteria, in addition to the regulatory oversight mechanisms, would assist in appropriately managing asset stranding risk.[108]

Several stakeholders considered the RIT-T was not appropriate for determining whether SENE investments should be undertaken because, among other things, it is:

- overly complex given the speculative nature of the required inputs (specifically generation forecasts);[109]
- an unnecessary regulatory burden;[110] and
- unsuited to determining the efficient size of the SENE.[111]

In contrast, Citipower/Powercor[112], Ergon Energy[113] and the SA DTEI[114] supported the use of the RIT-T (or Regulatory Investment Test for Distribution (RIT-D)) with some modifications to streamline the process and so avoid delays in investment and therefore connection.

A number of stakeholders who did not support a Rule change being made nonetheless considered that, of the options presented in the Options Paper, Option 4 (or a variation) struck the most appropriate balance between allocating stranded asset risk amongst market participants.[115] As well as introducing an efficiency test, Option 4 allocated some of the asset stranding risk to generators by requiring them to pay charges based on their stand alone connections.

In contrast, several other stakeholders considered it undesirable to transfer asset stranding risk to generators, as would occur under Option 3 and particularly Option 4, especially where net market benefits have been demonstrated through application of the RIT-T.[116]

108 Grid Australia, Options Paper submission, p.8.

109 NGF, Options Paper submission, p.6; Hydro Tasmania, Options Paper submission, p.3.

110 Geodynamics, Options Paper submission, p.1; Infigen, Options Paper submission, p.5.

111 AGL, Options Paper submission, p.6; NGF, Options Paper submission, p.6.

112 Citipower/Powercor, Options Paper submission, p.4.

113 Ergon Energy, Options Paper submission, p.5.

114 SA DTEI, Options Paper submission, p.1.

115 AGL, Options Paper submission, p.2; Alinta, Options Paper submission, p.13; NGF, Options Paper submission, pp.11-12.

116 Geodynamics, Options Paper submission, p.4; Infigen, Options Paper submission, p.5; Macquarie Capital, *AEMC SENE Options Paper: Report to the Green Grid Forum*, December 2010, p.5.

6.3 Commission's analysis

6.3.1 Efficient allocation of risk

As discussed in chapter 4, the Commission considers that efficient investment decisions are more likely to be made where the risk associated with those decisions is allocated efficiently. This will occur where:

- risk is managed by the entity best able to do so; and
- risk is borne by the entity responsible for making the investment decision.

In the case of SENEs, a large risk to manage is the asset stranding risk associated with under-utilised assets. The full efficiency gains available from building excess capacity in anticipation of future generator connections will only be realised where all anticipated generation materialises and connects to a SENE as forecast. Where generation does not materialise as forecast, the party bearing the asset stranding risk faces the cost of the under-utilised capacity.

Being able to manage risk in this sense requires having the best available information on likely future generation entry and taking measures to reduce asset stranding risk, such as through staged or modular network investment. The accuracy of information and ability to undertake staged development will differ between potential SENEs, such that each SENE has its own risk/reward trade-off.

Unless those entities with the best information and best ability to manage risk are responsible for bearing some or all of that risk, then they have few incentives to give due consideration to the relative benefits and risks of an investment decision. Further, risk is less likely to be managed in the most cost effective way. In contrast, where the decision maker and risk bearer are linked, there is a strong incentive on that entity to ensure:

- they are fully informed, to the best of their ability, about the true level of risk; and
- they have in place risk mitigation measures to reduce the risk, and so cost, of asset stranding.

This should lead to efficient investment decision making, consistent with the NEO.

6.3.2 Analysis of the proposed Rule and options

The proposed Rule and each of the five options presented in the Options Paper would require consumers to bear risks that are unquantified and which they have no ability to manage. In addition, consumers have limited ability to influence the circumstances under which they would be required to bear that risk. The investment decision would primarily be influenced by NSPs' decisions on whether, and if so by how much, to

over-size a connection asset in anticipation of future generation (subject to regulatory oversight).

There was no measure proposed such that NSPs would face the consequence of their investment decision. Thus they would have limited incentives to ensure that their decision was likely to minimise costs.

The proposed Rule and each of the five options presented in the Options Paper attempt to mitigate the risk to consumers through various mechanisms, including:

- regulatory oversight via the AER and AEMO;
- a cost threshold which represents the proportion of construction costs that must be met by firm contracts with generators before the SENE could be built; and
- an economic test.

Under the proposed Rule, the AER and AEMO would have oversight roles to help ensure that any incentives that NSPs or generators may have to inefficiently size SENEs are kept in check. For example, AEMO would be required to review a NSP's generation forecasts to reduce the risks of inaccurate generation forecasts, while the AER would have the option to disallow a proposed SENE.

However, given the inherent difficulties associated with accurately forecasting future generation entry, AEMO and the AER are likely to be limited in their ability to accurately assess the reasonableness of a NSP's generation forecasts and the proposed SENE designs. This limitation is likely to be exacerbated by the fact that AEMO and the AER are non-market facing entities. The Commission therefore considers that, irrespective of these measures, consumers would still remain exposed to a significant level of risk under the proposed Rule.

Options 1 and 2 seek to strengthen these risk mitigation measures by also requiring a percentage of the capital costs of a SENE to be underwritten by firm commitment from generators before a SENE is built. However, consumers would still be required to underwrite a proportion of the capital costs of a SENE, which could be substantial. Under proposed Options 1 and 2, this proportion could be up to 75 per cent.[117]

Options 2 to 5 attempt to further reduce risks to consumers by requiring the application of an economic test to assess the efficiency of an investment. The purpose of such a test would be to directly assess the market benefits of the investment. The SENE would then only proceed if there was sufficient evidence that the costs were outweighed by the benefits.

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117 The effectiveness of this measure in limiting consumer exposure to risk will to some extent be determined by the level of the cost threshold. For example, increasing the level of the cost threshold above 25 per cent would reduce consumer exposure to asset stranding. However, caution would need to be exercised in setting the threshold level given that setting it too high would risk projects never materialising.

While inclusion of an economic test would provide assurance that, based on the information available at the time, an investment is likely to be efficient if all anticipated generation materialises, the Commission notes that it will not protect consumers from the risk of asset stranding. In addition, the Commission notes there is no assurance that inclusion of an economic test would necessarily result in the lowest cost outcomes.[118]

With that said, Options 3 and 4 further encourage low cost outcomes by allocating some of the risk to the first generator that connects to a SENE. Under Options 3 and 4, generators would face their stand alone cost rather than their average cost, lowering the proportion of the costs that consumers would potentially face. However, consumers would still face the full risks associated with the capacity built in excess of the first generator's requirements.

On balance, despite the various risk management mechanisms proposed, the Commission remains concerned that the proposed Rule and the five options set out in the Options Paper continue to expose consumers to an unacceptable level of risk.

6.3.3 Analysis of the draft Rule

An alternative solution to allocating risks to consumers, and one supported by the Commission, would be to allocate asset stranding risk, and all other risks, to generators, TNSPs or other potential investors willing to fund a SENE, given that these parties are likely to be better placed to manage this risk than consumers. For example, generators have better access to information and greater financial incentive to investigate the viability of potential generation sites and other factors that contribute to the decision on the appropriate sizing and location of a SENE. Similarly, TNSPs have information on future potential connections through connection enquiries that may not be publicly available.[119] Further, TNSPs are also well-placed to assess opportunities for staged development of SENEs to minimise the risk of stranded capital costs.

The draft Rule supports this approach by leaving the market to determine the allocation of risk. Instead of imposing risk on a specific entity, the draft Rule facilitates a process whereby the market can be informed about potential scale efficiencies. Any entity willing to bear the risk associated with building a SENE can then choose to invest.

In doing so, the draft Rule facilitates a process whereby asset stranding risk is allocated to those best able to manage it – proponents of the investment. Where investors consider that the potential rewards from funding a SENE are likely to outweigh the potential risk, they will have a strong incentive to seek out ways to minimise that risk. This is likely to include, for example:

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118 The RIT-T should result in least cost outcomes, as it seeks to identify the investment option with the greatest net market benefits. However, for reasons discussed in section 5.3.3, there are difficulties in applying the RIT-T to an extension to connect future generation where it is not bounded.

119 The Commission notes that TNSP's ability to utilise such information is limited by confidentiality provisions in the Rules, for example, NER clause 5.3.8.

- requiring a significant proportion of the capacity of the SENE to be underpinned by firm contractual agreements; and

- exploring options for staged or modular development so as to minimise the risk of asset stranding while still capturing economies of scale.

Aligning incentives in this way will ensure that an appropriate trade-off is made between the potential gains from capturing scale economies and the associated risk of asset stranding. Better informed decision making is likely to lead to more efficient investment being undertaken relative to the current arrangements, proposed Rule and five options, in turn leading to lower overall transmission costs. Providing incentives for investors to quantify and appropriately manage and bear risk also obviates the need to specify particular risk management mechanisms. It also allows those entities involved in the investment decision to negotiate the most appropriate risk sharing arrangements amongst themselves.

The Commission therefore considers that the draft Rule is likely to result in more efficient risk allocation than the proposed Rule and five options, promoting more efficient investment in electricity services, consistent with the NEO.

6.3.4 Allocating risk to those who benefit

As discussed above, the Commission is of the view that efficient investment decisions will be made where the risk is allocated to the entity best able and willing to manage it. However, there may be a case for allocating risk in some other way, for example, to the beneficiaries of investment where it is likely to promote more efficient outcomes. In these instances, it must be clear who the ultimate beneficiaries are likely to be and whether the likely benefits to those entities are outweighed by the likely costs.

As noted previously, the proposed Rule allocates risk to consumers on the basis that, as ultimate beneficiaries of a more efficient network connection, they should face the associated risks. However, the Commission has some reservations as to whether the full extent of savings resulting from better coordinated, and hence more efficient, connections would be passed through to consumers.

The principle benefit in capturing scale economies is the lower connection costs for generators who connect to a SENE. Where lower connection costs lead to a reduction in total system costs, the Commission considers that it is likely that some benefits will be passed on to consumers.

However, it is uncertain whether any savings resulting from better coordinated, and hence more efficient, connections would be fully passed through to consumers. The proportion of any pass through will depend on a number of factors including whether generators connecting to a SENE are price takers (for example wind generators) or

price setters (for example thermal generators),[120] as well as the extent of competition in the market. Without a full analysis of each of these factors, it is difficult to establish the extent to which cost savings will be passed on to consumers in any particular case. In general, to the extent that the market is fully competitive, cost savings would be expected to be passed through to consumers over time.

Further, it is not clear whether total system costs would actually be minimised. This will be determined by asset stranding on individual SENEs and whether, in aggregate, the efficiency gains outweigh the stranded asset costs. This cannot be known *ex ante*, which makes quantitative assessment of this Rule change challenging.

For the reasons set out above, the Commission is not satisfied on the evidence provided that the "beneficiaries pay" principle, upon which the proposed Rule and the five options (albeit to different degrees) are based, is appropriate. While consumers would be required to bear potentially significant costs associated with asset stranding, it is not clear that they would receive the full extent of the available efficiency benefits.

6.3.5 The Commission's conclusion

On balance, the Commission considers that it is not appropriate to require consumers to bear the risk that assets, oversized with the intention of more efficiently connecting multiple future generators, will be under-utilised. The Commission is not convinced on the basis of the evidence provided by stakeholders that the benefits to consumers will outweigh the costs. Even with risk mitigation measures in place, the Commission holds concerns that without linking the investment decision maker and the risk bearer, inefficient investment outcomes may occur.

The proposed Rule and Options 1, 2 and 5 in particular require consumers to bear the entirety of the asset stranding risk. The decision on how much capacity to build is made by TNSPs, who do not face the costs of any inefficient investment decisions. While the SENE would not be built until some market interest had been demonstrated and the SENE would be subject to regulatory review, the Commission is concerned that inefficient investment decisions could occur for the reasons described above.

While Options 3 and 4 transfer some risk back to the first connecting generator(s), who would drive the construction of the SENE, this would only reduce risk to consumers, it would not eliminate it. This residual risk reflects the amount of spare capacity built in addition to the requirements of the first connecting generator(s). Again, this decision on how much spare capacity to build is driven by an entity - the TNSP - that does not face the consequences of its decision.

In contrast, the draft Rule does not require any entity to take on risk, but allows those parties who are best able and willing to manage the risk to make their own trade-off

120 For example, wind generation is a price taker in the NEM. This means that, regardless of the costs of generation, its capacity will be offered at the lowest cost and it will receive the marginal price set by the highest cost generator that is dispatched. Any changes to the costs of generation, including any reduction in connection costs resulting from the implementation of a SENEs framework, may be at least partially absorbed by the generator and not passed directly through to consumers.

between the potential risks and the potential rewards from oversizing capacity in advance of future generation. By linking the investment decision maker to the entity that bears the risk, the investor has strong incentives to appropriately assess the likely costs and benefits of an investment, thereby ensuring the investment decision is efficient.

The draft Rule also maintains consistency with existing frameworks by maintaining the status quo which allows the allocation of risk to be determined by the market, through a process of commercial negotiation. The consequence of this is that risk will be allocated to those parties that are best able and willing to manage it.

Finally, in providing a new mechanism to identify the potential benefits of building efficiently sized connection assets so as to take advantage of scale economies, the draft Rule should assist in facilitating more efficient coordination amongst generators than would likely be achieved under the current arrangements, proposed Rule and five options. The cost savings to generators from lower connection costs should ultimately lower total system costs. At least a portion of these cost savings should then flow through to consumers.

7 Market based versus central planning approaches

This chapter considers the relative merits of a market based approach to building transmission extensions to facilitate connection of future generation compared to an approach that relies on non-market facing entities anticipating investment decisions by generators. While economic theory suggests that market based approaches will typically result in more efficient outcomes, there may be a role for central planning or a more regulated approach where market or regulatory failures can be demonstrated.

7.1 Rule change proponent's view

The Rule change proponent did not directly address this issue.

7.2 Stakeholder views

7.2.1 General approach

Several stakeholders, particularly those that did not support the Rule Change Request overall, expressed a preference for a market based solution to the identified issues of more efficiently connecting generation to the network.[121] Market based solutions were preferred primarily because risk would be allocated to those parties best able to manage it. In addition, it was considered that a market based solution would avoid a more formal, time-consuming and costly regulatory approvals process.

A number of stakeholders considered that a lack of property rights limits market-driven options for building extensions and that providing firm access would increase investment in merchant transmission.[122] Similarly, United Energy Distribution (UED) considered incentives could be introduced to promote merchant distribution and transmission links, which would require firm transmission rights.[123]

Generally, these stakeholders considered that any regulated framework should not crowd-out private investment.

Origin considered that comments around the centrally-planned nature of the proposed SENE Rule change were misconceived, since investment in transmission could not proceed without sufficient market interest.[124]

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121 AER, Consultation Paper submission, p.1; EnergyAustralia, Options Paper submission, p.2; Grid Australia, Consultation Paper submission, p.4; Macquarie Generation et al, Consultation Paper submission, pp.6-7; MEU, Consultation Paper submission, p.28; NGF, Options Paper submission, p.5; SP AusNet, Consultation Paper submission, pp.5-6; UED, Consultation Paper submission, p.11.

122 LYMMCo, Consultation Paper submission, p.11; NGF, Consultation Paper submission, p.10 and Options Paper submission p.4; TRUenergy, Consultation Paper submission, pp.2-3.

123 UED, Consultation Paper submission, p.11.

124 Origin, Options Paper submission, p.4.

A number of stakeholders supportive of the SENEs proposal considered that the introduction of the SENEs framework, which involves a degree of intervention in the market, would be an appropriate and proportionate response to the issues the Rule Change Request is seeking to address.[125] TRUenergy stated:[126]

> "It is difficult to envisage a pure market based approach being able to capture the relevant efficiency due to timing difficulties in generator commitment decisions, and information co-ordination barriers resulting from the competitive generation investment process. A degree of central planning therefore seems difficult to avoid in this instance."

From a different perspective, esaa considered that:[127]

> "In broad terms, the proposed approach for SENEs accords with the guided decentralisation of the philosophy of the NEM model: they entail a mixture of centralised planning with decentralised investment decisions by market participants. However, the overbuild feature does represent a step towards a strategic approach to building connection assets that is not present in the current frameworks."

7.2.2 Impact on locational signals and competitive neutrality

A number of stakeholders were concerned that the proposed SENEs framework would distort market arrangements by providing renewable generators in SENE zones an advantage over generators located elsewhere.[128] For example, LYMMCo considered:[129]

> "Given SENEs are driven by the interests of renewable generation the charging regime introduces bias towards wind connections. This is inappropriate and arguably not consistent with the National Electricity Objective."

Similarly, the MEU considered that the proposed Rule would give:[130]

> "....distant generation near an independently identified hub a commercial benefit compared to a renewable generator located closer to the shared network or not one able to locate near the hub or shared network."

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125 Infigen, Consultation Paper submission, p.1; Geodynamics, Consultation Paper submission, p.5; Origin, Consultation Paper submission, p.3; Green Grid, Options Paper submission, p1; TRUenergy, Consultation Paper submission, p.5.

126 TRUenergy, Consultation Paper submission, p.5.

127 esaa, Options Paper submission, p.5.

128 NGF, Consultation Paper submission, p.8; LYMMCo, Consultation Paper submission, p.4; MEU, Consultation Paper submission, pp.12-13; EnergyAustralia, Consultation Paper submission, p.4.

129 LYMMCo, Consultation Paper submission, p.4.

130 MEU, Consultation Paper submission, pp.12-13.

The MEU considered this approach would be contrary to competitive neutrality.

International Power expressed concern that the very presence of a SENE would distort locational decisions by generators by making one particular location more attractive as a result of reduced connection times and construction risks for later users.[131]

The AER noted that a regulated approach had the potential to distort investment decisions by passing the risk of development onto customers, and that any intervention should be limited to removing any barriers to market response.[132]

In addition, the MEU considered:[133]

> "...the current rules provide appropriate signals for investment and generation location and the proposed rule will dilute these from being market driven to being one influenced by regulatory decision making."

In contrast, Origin considered that, in addition to connection costs, locational signals such as loss factors and congestion risk would be taken into account prior to a SENE being built. As such, Origin considered that the SENE: [134]

> "…does not dampen the market's current locational signals, including the cost of connection."

Geodynamics and Infigen both considered that the SENE proposal would achieve a levelling of the playing field for remote generation. For example, Infigen considered that:[135]

> "...properly designed SENEs will incentivise energy market participants in overcoming many of the hurdles presently faced by renewable energy proponents wishing to develop sites that are remote from the current electrical power system."

In reference to the Cooper Basin, Geodynamics held the view that the structure of the SENEs framework, whereby customers would underwrite the risks of under-utilised capacity, would create: [136]

> "…clear benefit for generator project proponents to connect utilising the SENE process rather than developing their own transmission connection solution."

131 International Power, Options Paper submission, p.2.

132 AER, Consultation Paper submission, p.3.

133 MEU, Consultation Paper submission, p.28.

134 Origin, Options Paper submission, p.4.

135 Infigen, Consultation Paper submission, p.1.

136 Geodynamics, Consultation Paper submission, p.3.

7.3 Commission's analysis

As discussed in the previous chapter, the Commission is supportive of a market based approach to risk allocation given that generators, TNSPs or other potential investors willing to fund a SENE are likely to be better placed to manage risk than consumers. The Commission considers this market based approach will promote efficient decision making given that participants that face market signals typically have greater incentives to ensure their investment decisions are well-informed and balanced against any associated risks. Efficient investment will help promote dynamic efficiency, lowering expected total system costs and, over time, leading to more efficient prices and higher quality and service for consumers.

The Commission accepts that there are some difficulties in coordinating generation investment due to difficulties in timing. However, the Commission considers that there is insufficient evidence to suggest that these challenges are insurmountable and therefore require a complex new framework. Instead, the Commission considers it appropriate to introduce an additional mechanism to assist market based outcomes to occur.

The Commission notes that some stakeholders considered market based outcomes could be promoted through alternative means, in particular by assigning firm access rights to those that fund transmission investment. Access issues are currently being considered as part of the TFR. The Commission's initial view is that these issues are better considered holistically to ensure that any changes to the way in which generators can connect to and access the national grid are internally consistent.

7.3.1 Analysis of the proposed Rule and options

The proposed Rule and Options 1 to 5 each involve some degree of central planning. While in each case firm generator interest would be required before a SENE investment could proceed, each option requires AEMO and TNSPs to make assumptions about future generation entry, attempting to anticipate commercial decisions. In addition, the proposed Rule and Options 1 and 2 require AEMO and TNSPs to undertake a degree of pre-planning. AEMO is required to identify potential "SENE zones" and TNSPs are required to develop possible SENE designs for each of the identified zones.

Requiring TNSPs to develop an initial SENE design prior to indications of firm market interest could reduce connection times where predictions about future generation entry prove accurate. However, it could also result in unnecessary work being undertaken at some cost to TNSPs and ultimately consumers, diverting limited resources away from other priorities.

Further, the proposed Rule and Options 1 to 5 would require non-market entities to make assumptions about commercial decision making. These entities are unlikely to have the best information available, limiting their ability to fully evaluate and identify the most efficient investment outcome. Further, as discussed in chapter 6, where these entities do not face the consequences of their decisions they have limited incentives to

ensure that their decisions reflect the best available information and carefully evaluate the risk reward trade-off.

The Commission is concerned that these approaches, which have an element of central planning, could lead to:

- allocative inefficiencies by directing TNSP resources away from other priorities; and
- inefficient transmission investment decisions as a result of non-market entities seeking to predict commercial outcomes.

The Commission notes some stakeholders have raised concerns that, without intervention, Australia will not meet its renewable energy target by 2020.[137] However, the NEO, against which the Commission assesses all Rule Change Requests, is to promote efficient investment in and use of electricity services in the long term interest of consumers. The Commission's role is therefore to make Rules that it considers will promote efficient outcomes within the context of the legislative and policy environment within which the market operates. In the absence of market or regulatory failures, lowest cost outcomes will generally occur where market based investors that face market signals and face the risks and rewards, make investment decisions. In keeping with this principle, the Rules should not be biased towards or against any particular technology or market outcome.

7.3.2 Analysis of the draft Rule

In contrast to the proposed Rule and Options 1 to 5, the Commission considers that the draft Rule, which is intended to provide an additional tool to help facilitate market based outcomes, is more likely to promote outcomes in keeping with a decentralised decision-making process.

As discussed in chapter 6, the Commission considers that it is not appropriate to require consumers to bear the risk that assets, oversized with the intention of more efficiently connecting multiple future generators, will be under-utilised. Instead, the Commission supports a framework under which opportunities to capture scale efficiencies are made transparent, allowing the market to make decisions on the efficient allocation of risk. The Commission considers that this market based approach to risk allocation will promote more efficient decision making, more so than under the proposed Rule and five options, given that participants have greater incentives to ensure their investment decisions are well-informed and balanced against any associated risks.

In addition, under the draft Rule, SENEs will be built where clear market interest has been demonstrated. Consideration of a SENE is triggered by interested parties seeking further information on possibilities for capturing economies of scale. This approach also avoids potentially superfluous work by AEMO and TNSPs in the form of

137 Infigen, Consultation Paper submission, p.1; CEC, Consultation paper submission, p.2.

identifying SENE zones and undertaking preliminary planning prior to tangible market interest being demonstrated. The Commission notes Grid Australia's comment that mandating preliminary planning in the absence of firm indication of interest is likely to have limited value.[138]

The draft Rule has an advantage over the other proposed solutions as it should promote competition in the funding of SENEs. It does this in two ways: firstly, it explicitly allows any entity to fund potential SENEs studies; and, secondly, through the publication of the SENE design and costing study, it provides that entity, and any other potential investor, with information to assist the decision on whether to further investigate the potential benefits and risks of investing in a SENE. Providing information transparency overcomes any information asymmetry between TNSPs and the market and opens up the possibility of contestability in funding as well as in the construction of a SENE. Increased competition should lead to more possibilities of SENEs being built at lower costs, while ensuring that consumers do not face the risk of those decisions.

The draft Rule maintains existing locational signals by requiring generators to negotiate with TNSPs in developing connection solutions consistent with existing arrangements for connections. Generators are typically required to pay the costs associated with their connection, including any extension to effect a connection to the existing network. This provides one form of locational signal that allows generators to trade-off between the costs of generation and transmission.[139]

Finally, the draft Rule preserves a generator's rights to connect to the network. The draft Rule does not regulate charges for use of the SENE or compel generators to connect to a SENE. Instead, the terms and conditions of connection to the transmission network (as augmented by the SENE) will be negotiated between the TNSP and the generator subject to the existing Rules governing connection. The outcome of these negotiations is likely to be influenced by a number of factors, including the cost of connection at different locations and required environmental and planning approvals.

7.3.3 The Commission's conclusion

In summary, the Commission does not consider that sufficient evidence has been provided to suggest that significant inefficiencies are likely to occur under existing frameworks that warrant extensive regulatory intervention. For this reason, the draft Rule maintains a market based approach to connections which preserves the features of the existing connections framework but should provide for a better informed market. This should result in generators having the opportunity to connect to the network in the most cost effective way and should provide for more efficient investment in transmission solutions relative to the current arrangements, proposed Rule and five options.

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138 Grid Australia, Options Paper submission, p.11.

139 While generators face the cost of their connection to the network, they do not face the deeper connection costs associated with any augmentation to the existing network.

8 Complexity

Any changes made to the Rules framework should be appropriate and proportionate to the identified issues. This means that burdensome regulatory arrangements and unrecoverable costs should not be imposed on market participants or consumers. This is in line with good regulatory practice.

In addition, making piecemeal changes to frameworks in the Rules should be avoided in order to minimise the risk of inconsistencies being introduced. Ensuring that any changes to the Rules are consistent with existing arrangements will contribute to a more certain investment environment for market participants, thereby promoting efficient investment in the electricity market.

8.1 Rule change proponent's view

The Rule change proponent did not comment directly on this issue.

8.2 Stakeholder views

Several stakeholders considered that, while consideration should be given to whether a SENE may lead to efficiency gains, any changes to the Rules should represent an appropriate and proportionate response to the issues the Rule change is seeking to address.[140]

For example, ENA considered:[141]

> "…the SENE model appears overly complex in relation to the size of the problem and further work (eg a practical case study) should be carried out to explore less complex alternative solutions."

Grid Australia also considered:[142]

> "...the lack of hard evidence of shortcomings in the current arrangements means that there is a real possibility that any new framework may, in practice, end up being used only in limited circumstances. It is therefore important that any Rule changes remain proportionate."

In addition, a number of stakeholders explicitly expressed support for the principle that any new rules to implement a SENE regime should be consistent with the features

140 AER, Consultation Paper submission, p.3; Electricity Networks Association (ENA), Consultation Paper submission, p.1; Ergon Energy, Options Paper submission, p.2; Grid Australia, Consultation Paper submission, p.4; Macquarie Generation et al, Consultation Paper submission, p.2; SP AusNet, Consultation Paper submission, p.2.

141 ENA, Consultation Paper submission, p.1.

142 Grid Australia, Options Paper submission, pp.5-6.

of the existing Rules, as far as possible, to maintain regulatory certainty and stability.[143]

Origin considered the regulatory regime governing the SENE should be clear and transparent, and issues surrounding the point at which the SENE becomes part of the shared network as well as the implications for the charging regime, must be resolved now and remain stable. Origin considered this would be imperative in providing certainty to prospective investors.[144]

Several stakeholders, including a number of DNSPs, also considered that certain characteristics of SENEs do not fit naturally into the existing framework, for example, the nature of the service that the SENE provides and compensation arrangements where generators are constrained off the SENE.[145] These stakeholders were of the view that the proposed arrangements create a further layer of complexity in the Rules, which is not desirable. For example, Energex stated:[146]

> "...the proposed arrangements appear overly complex and their practical application may not deliver the efficiencies that are envisaged."

In respect of the proposed compensation arrangements, NSPs were generally opposed on the basis that the arrangements would be difficult to administer.[147] For example, EnergyAustralia noted:[148]

> "...the compensation regime will be unduly complex and burdensome to administer for assets which are shared by multiple parties."

Citipower/Powercor[149] and Ergon Energy[150] considered it may be more appropriate for AEMO to manage compensation arrangements.

EnergyAustralia[151] and SP AusNet[152] also noted that the introduction of capacity rights would be out of step with the current open access regime. The NGF[153] and

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143 SP AusNet, Consultation Paper submission, pp.2-3, Grid Australia, Consultation Paper submission, pp.4-5.

144 Origin, Consultation Paper submission, p.7.

145 Energex, Consultation Paper submission, p.3; Grid Australia, Consultation Paper submission, p.1; SP AusNet, Consultation Paper submission, p.3; AER, Consultation Paper submission, p.1; EnergyAustralia, Consultation Paper submission, p.8; CitiPower/Powercor, Consultation Paper submission, p.1; Macquarie Generation et al, Consultation Paper submission, p.1.

146 Energex, Consultation Paper submission, p.3.

147 SP AusNet, Consultation Paper submission, p.5; EnergyAustralia, Consultation Paper submission, p.22,;Citipower/Powercor, Consultation Paper submission, p.4; Ergon Energy, Consultation Paper submission, p.7.

148 EnergyAustralia, Consultation Paper, submission p.22.

149 Citipower/Powercor, Consultation Paper submission, p.4.

150 Ergon Energy, Consultation Paper submission, p.7.

151 EnergyAustralia, Consultation Paper submission, p.22.

152 SP AusNet, Consultation Paper submission, p.5.

153 NGF, Consultation Paper submission, p.3.

Macquarie Generation[154] considered that private agreements for determining compensation and access would be more appropriate and would negate the need for complex regulatory rules in these areas.

DNSPs also expressed some concern that the SENE arrangements would be potentially onerous on DNSPs and require them to undertake a number of activities which they are not best placed to undertake.[155] In addition to administering compensation arrangements, DNSPs weren't convinced they were best placed to undertake future generation forecasts. For example, UED noted:[156]

> "NSPs possess only limited experience in the task of forecasting generation output, although TNSPs probably have a larger number of employees with requisite skills than DNSPs."

DNSPs were also strongly opposed to any ring fencing arrangements and considered that it was imperative that SENEs could be easily incorporated into the shared network given the meshed nature of the distribution network where load is more likely to connect to the SENE.[157] For this reason, DNSPs were also generally supportive of SENEs being classified as a direct control service as opposed to a negotiated distribution service.

In contrast to these views, Geodynamics considered:[158]

> "...the currently proposed SENE process has the crucial benefit of simplicity whilst maintaining the appropriate incentives on participants."

Geodynamics held the view that a market-based approach is likely to be significantly more complex.

Origin also disagreed that the proposed Rule was overly complex. Origin considered that, because the detailed design of the SENE had not been previously articulated, this, along with a number of misconceptions about the mechanism, has led to a perception of complexity and an unwarranted shift in support away from SENEs.[159]

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154 Macquarie Generation et al, Consultation Paper submission, p.7.

155 Citipower/Powercor, Consultation Paper submission, p.1; UED, Consultation Paper submission, p.7; Energex, Consultation Paper submission, p.2; Ergon Energy, Consultation Paper submission, p.6.

156 UED, Consultation Paper submission, p.7.

157 EnergyAustralia, Consultation Paper submission, p.10; Citipower/Powercor, Consultation Paper submission, p.2; Ergon Energy, Consultation Paper submission, p.7.

158 Geodynamics, Consultation Paper submission, p.5.

159 Origin, Options Paper submission, p.2.

8.3 Commission's analysis

The Commission considers that any changes to the Rules should be proportionate to the magnitude of the problems identified. This is important to ensure that the costs of any solution do not exceed the costs of the problem.

In addition, the Commission is not supportive of arrangements that introduce an unreasonable level of complexity into the Rules. Introducing complex Rules may increase the costs of compliance and implementation, and may act as a barrier to market participants choosing to utilise any new framework.

Further, the Commission considers it important to avoid introducing changes which may be inconsistent with the existing Rules. Increasing confusion and uncertainty is undesirable and risks creating a less certain investment environment for market participants.

Chapter 5 provided a summary of the issues raised during the analysis of the proposed Rule. The Commission concluded that while it considers some change to the existing connections framework is warranted, there is some scope under existing frameworks to capture economies of scale and promote efficient connection outcomes.

The Commission was mindful of this conclusion when assessing the complexity of the proposed Rule, Options 1 to 5 and the draft Rule.

8.3.1 Analysis of the proposed Rule and options

The proposed Rule and Options 1 to 5 proposed introducing new frameworks with varying degrees of complexity into the Rules. Some aspects of the proposed frameworks are already permitted under the Rules, albeit subject to minor amendments; other aspects, including those in the proposed Rule, would likely require substantial amendments to the Rules in order to be implemented.

The proposed Rule and Option 1 would both introduce explicit compensation arrangements, a new mechanism to recover costs from consumers which would sit outside of the existing arrangements, and a unique service classification. The Commission recognises that implementation of these features would require substantial amendments to the Rules which, if not considered carefully, would risk introducing inconsistencies with existing frameworks.

Option 2 would be less complex compared to the proposed Rule and Option 1, primarily because it does not propose to introduce prescriptive arrangements for compensation. Under Option 2, compensation would be left for negotiation between the NSP and generators, consistent with current arrangements.

However, Option 2 would introduce a new economic test to assess whether the proposed investment was efficient. The economic test would perform a similar function to the existing RIT-T, although it would be separate from the RIT-T. The

Commission recognises that having two separate tests performing a similar function may be confusing and potentially inconsistent with recent policy decisions.[160]

The proposed Rule and Options 1 and 2 would also introduce new obligations on AEMO and NSPs to undertake a series of preliminary planning activities. The Commission considers these obligations risk increasing regulatory burden, particularly on NSPs, who would be required to undertake these activities even in the absence of firm market interest for a SENE. This is a particular concern where there is some uncertainty around the number of studies that NSPs would be required to perform.[161]

Options 3 and 4 would require the RIT-T to be applied to the incremental capacity above that required to connect the first generator. The Commission considers a key advantage of Option 3 is that the approach would generally be consistent with the existing framework and, as such, would not require major changes to the Rules in order to be implemented.

Unlike the proposed Rule and Options 1 and 2, Option 3 would also enable a SENE to be more easily subsumed into the shared network if required. This is because the incremental capacity paid for by consumers would be classified as providing a prescribed transmission service, in line with standard services provided by the shared network.

Option 4 would add a layer of additional complexity to Option 3, in order to implement the different cost allocation arrangements it proposes. For example, consideration would need to be given to what charges subsequent generators would face and the profile of rebates to both generators and consumers.

A key advantage of Option 5 compared to the proposed Rule and the other four options is the relative simplicity of the arrangements. Under Option 5, a SENE would be classified as part of the shared network and would provide prescribed transmission services, albeit with a new type of prescribed transmission charge for generators. Classifying a SENE this way would remove the complexities associated with compensation arrangements as well as how to distinguish a SENE from the shared network.

However, challenges in implementation would remain. For example, the key change under Option 5 would be the need to determine and levy charges for the use of the shared connection. The shared connection would need to be carefully defined in order to distinguish shared network services paid for by generators, from shared services paid for by load. This is important because once an asset no longer met this definition, it would be subsumed into the broader shared network and generators would no longer be required to pay the prescribed charge.

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160 For example, the newly implemented RIT-T amalgamated the reliability and market benefit limbs of the regulatory test. In its final determination, the Commission noted that "having a common test would mean that all projects are assessed in the same manner irrespective of the primary cause of the investment". See AEMC 2009, *Regulatory Investment Test for Transmission, Final Rule Determination*, 25 June, 2009, Sydney, p.34.

161 This is because it is not entirely clear how many SENE zones would likely be identified by AEMO.

8.3.2 Analysis of the draft Rule

The Commission considers that a key advantage of the draft Rule is that it does not introduce a complex new framework into the Rules thereby minimising the risk of unintended consequences. Instead, it introduces a relatively simple change to existing frameworks by enabling better information to be provided to the market by way of a study. Arrangements for connection will progress as per the existing frameworks, through commercial negotiations between generators and TNSPs.

The framework under which negotiations will take place (i.e. under the Rules or outside the Rules) will depend on the classification of the services provided by the SENE. Unlike the proposed Rule and options which prescribe the type of services provided by SENEs, the draft Rule leaves this to be determined on a case by case basis based on the existing definitions of services.[162]

Another key advantage of the draft Rule is that it does not require any entity to bear unrecoverable costs or significant risks, thereby avoiding increases in regulatory burden on market participants. The new SENE design and costing study would be similar to the preliminary planning requirements on NSPs under the proposed Rule and Options 1 and 2. However, unlike the proposed Rule and Options 1 and 2, a TNSP would only be obliged to undertake a study where market interest has been demonstrated and an entity has agreed to fund it.

Further, the draft Rule maintains consistency with existing frameworks by not introducing firm financial rights on the SENE. Unlike the proposed Rule and Option 1, generators would not automatically be entitled to receive compensation for being constrained off (or pay compensation for constraining others off) below their agreed power transfer capability. As per the existing arrangements, generators would continue to negotiate directly with TNSPs on terms and conditions of access.

The Commission notes that the broader issues around access rights and connection that were raised in consideration of this Rule Change Request will be considered more holistically as part of the TFR. The Commission considers this approach avoids some of the complexity associated with the proposed Rule and five options. In particular, the Commission considers it will minimise the risk of potential inconsistencies being introduced into existing frameworks.

The draft Rule also maintains consistency with existing frameworks in allocating risk amongst market participants. It provides a light-handed approach that allows risk to be allocated to those parties that are best able and willing to manage that risk through the process of commercial negotiation.

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162 As noted in chapter 3, it is likely that, for the purposes of the first connecting generator, the services provided by the SENE would be treated as non-regulated. This is because the construction of a SENE and subsequent provision of services is likely to be contestable. However, once the SENE is built, it is likely that the SENE will be treated as providing negotiated services, given there is no opportunity for contestability.

The Commission acknowledges that the negotiation of commercial contracts with multiple parties can be challenging. However, to the extent that there are large scale economies to be gained from the coordination of multiple parties, the Commission considers there should be strong incentives on parties to negotiate and reach agreement.

Finally, the draft Rule does not contemplate SENE design and costing studies being undertaken regarding connections to a distribution network. The Commission considers that excluding distribution from the draft Rule represents an appropriate and proportionate response on the basis that generally there are likely to be limited scale efficiency benefits available in distribution. However, the Commission notes that there are no current limits on market participants requesting a DNSP to undertake a study similar to a SENE study, and the draft Rule will not impose any such limits.

In addition, as set out in chapter 5, the Commission considers there is some scope within existing frameworks to take advantage of the economies of scale available in coordinating the connection of clusters of generators in the same geographic areas. In the instance that opportunities for capturing scale efficiencies on the distribution network present themselves, existing frameworks should be able to facilitate efficient outcomes.

8.3.3 Commission's conclusion

Overall, the Commission considers that the draft Rule provides a change to the existing framework that is proportionate to the identified issues. It does not introduce significant complexity or the potential for inconsistencies with existing frameworks. Further, the draft Rule does not impose unrecoverable costs or unreasonable requirements on market participants or consumers.

The Commission considers that the cost of compliance with and implementation of the draft Rule will not be unreasonably high. Further, the Commission considers the likely cost of the solution does not outweigh the likely cost of problem, thereby allowing efficient outcomes to be achieved at lower cost.

For these reasons, the Commission considers that the draft Rule will contribute to a more certain investment environment for market participants relative to the proposed Rule and five options, thereby promoting efficient investment in electricity services in the long term interests of consumers.

Abbreviations

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
APR	Annual Planning Report
CEC	Clean Energy Council
Climate Change Review	Review of Energy Market Frameworks in light of Climate Changes Policies
Commission	See AEMC
CPRS	Carbon Pollution Reduction Scheme
DNSP	Distribution Network Service Provider
ENA	Electricity Networks Association
esaa	Energy Supply Association of Australia
LYMMCo	Loy Yang Marketing Management Company
MCE	Ministerial Council on Energy
MCE SCO	Ministerial Council on Energy Standing Committee of Officials
MEU	Major Energy Users
MMA	McLennan Magasanik Associates
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NGF	National Generators Forum
NSP	Network Service Providers

NTNDP	National Transmission Network Development Plan
NTP	National Transmission Planner
RAB	Regulatory Asset Base
RET	Renewable Energy Target
RIT-T	Regulatory Investment Test for Transmission
Rules	See NER
SA DTEI	South Australian Department of Transport, Energy and Infrastructure
SACOME	South Australian Chamber of Mines and Energy
SENE	Scale Efficient Network Extensions
Tasmanian DIER	Tasmanian Department of Infrastructure, Energy and Resources
TFR	Transmission Frameworks Review
TNSP	Transmission Network Service Provider
UED	United Energy Distribution

A Summary of issues raised in submissions to the Consultation Paper and Options Paper

The table below provides a summary of the issues raised by stakeholders in their submissions and supplementary submissions to the Consultation Paper (CP) and Options Paper (OP). The table sets out the Commission's response to each of the issues.

The submissions and supplementary submissions received to both documents are available on the AEMC website at www.aemc.gov.au.

For ease of reference, relevant page numbers from submissions have been included in the table.

Stakeholder	Issue	AEMC Response
AEMO	Raised a number of concerns in respect of AEMO's SENE identification role under the proposed Rule. (CP p.5)	The draft Rule does not require AEMO to identify potential "SENE zones". However, the Commission considers there is merit in AEMO continuing to identify clusters of generation in its NTNDP, as it did in the 2010 NTNDP.
AEMO	Raised a number of concerns in respect of AEMO's role assessing NSP generation forecasts under the proposed Rule. (CP p.6)	The draft Rule does not require AEMO to assess NSP generation forecasts.
AEMO	Supported a staged approach to developing SENEs under the proposed Rule. However, recognised that the cost implications of such a development would require consideration. (CP p.7)	The draft Rule does not preclude the staged development of a SENE. While the scope of the SENE design and costing study would be subject to negotiation between the TNSP and the person who requested the study, any opportunities for staged or modular development should be considered.
AEMO	Considered there may be some benefit in making the construction of SENE assets subject to competitive tender. (OP p.4)	The draft Rule does not address the arrangements for the construction of a SENE and does not preclude the construction of the SENE being subject to competitive tender.

Stakeholder	Issue	AEMC Response
AEMO	Considered the final version of the proposed Rule would need to include provisions clarifying which SENE functions would be performed by AEMO and which by the other Victorian NSPs. (CP p.9)	The draft Rule sets out a new requirement for all TNSPs, where requested and funded by another entity, to undertake a SENE design and costing study. AEMO, in its capacity as a TNSP in Victoria, would be required to undertake such studies where requested. This is consistent with AEMO's declared network functions under section 50C of the NEL.
AEMO	Considered that the SENE options as set out in the Options Paper should be assessed in the context of the broader network access issues being considered in the TFR. (OP p.1)	The Commission considers that the issue of access is best considered holistically as part of the TFR. The draft Rule does not introduce new arrangements for access.
AEMO	Considered there may be benefit in clarifying the third party access regime that applies to transmission connection assets. It considered doing so may facilitate alternative development opportunities to SENEs, by allocating risks to parties who are potentially better able to manage them. (OP p.2)	The Commission considers that the broader issues around access and connections raised in the context of the Rule Change Request are best considered holistically as part of the TFR.
AEMO	Considered the use of an economic test would provide worthwhile assurance that any costs imposed on customers would provide overall benefits. However, considered the application of a full RIT-T would be difficult for TNSPs to apply and ways to simplify the test should be considered. (OP p.4)	The draft Rule allocates risks and costs to market participants and investors rather than to consumers. The draft Rule therefore does not include an explicit efficiency test.
AEMO	Considered there are problems with the current arrangements stemming primarily from the bilateral negotiation process. (OP p.2)	The Commission considers that the broader issues around connection are best considered holistically as part of the TFR.

Stakeholder	Issue	AEMC Response
AER	In respect of the proposed compensation arrangements, made a number of comments regarding the preparation and publication of data on the marginal costs of generation facilities, proposed under the Rule Change Request. (CP p.5)	The Commission considers that issues around firm financial access are best considered holistically as part of the TFR.
AER	Considered AEMO's role under the proposed Rule should be expanded to provide it with the discretion to advise the AER on any aspects on the relevant SENE connection offer and planning report. (CP p.4)	This issue is not relevant to the draft Rule which does not propose that AEMO or the AER have regulatory oversight roles in respect of SENE planning.
AER	Proposed that the AEMC consider giving it the discretion to include an economic efficiency test in the SENE planning guidelines which could be used by NSPs to determine whether material scale efficiencies exist and the best options for capturing those benefits. (CP p.4)	This issue is not relevant to the draft Rule which does not require NSPs to undertake preliminary planning or require the AER to produce planning guidelines.
AGL	Considers a market failure has not been identified (CP p.2) and that there are no barriers to generators entering cost-sharing arrangements. (OP p.1)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request.
AGL	Considers customers should not bear the stranded asset risk. Instead, market participants should bear these risks, or government should invest if they consider there is a market failure. (CP pp.1,3)	The Commission agrees that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion.

Stakeholder	Issue	AEMC Response
AGL	Concerned that the proposed Rule may not be consistent with the NEO. (CP p.4)	The specific issues raised by AGL are less relevant in the context of the draft Rule. See chapter 2 for a discussion of why the Commission considers that the proposed Rule meets the NEO.
AGL	Consider there are insufficient checks and balances under the proposed Rule. Proposed some specific risk management mechanisms in the context of the proposed Rule. (CP pp.3-5)	This is not relevant to the draft Rule where consumers are not exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation.
AGL	Any further deliberation on the SENE concept should be encompassed in the TFR to ensure holistic review. (CP p.5; OP p.4)	The Commission considers the SENEs concept is sufficiently separable to make a draft Rule on the SENEs Rule change. However, the AEMC agrees that there are some issues, such as access and broader connection issues, that are better considered holistically as part of the TFR.
AGL	Considers that, of the options presented, Option 4 is the "least worst" option because it best aligns risk exposure. (OP pp.1-2)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion.
AGL	Considers applying the RIT-T or a SENEs test is problematic. (OP pp.5-6)	The draft Rule does not include an explicit efficiency test. The "investment test" is privately undertaken by entities that are willing and able to bear the risk of funding a SENE. Application of an economic test is less relevant where consumers are not exposed to asset stranding risk.
AGL	Raised concerns regarding the central planning element of the proposed Rule. (OP p.1)	The draft Rule does not require non-market facing entities to take risks on generator investment decisions or for consumers to bear these risks.

Stakeholder	Issue	AEMC Response
AGL	Modelling undertaken by ROAM Consulting for the Clean Energy Council leads to the conclusion that the economies of scale in transmission connection and extension assets is likely to be small. (OP p.3)	Noted. Nevertheless, the Commission considers there is some scope for change to the existing frameworks to promote more efficient connection outcomes.
Alinta	Considers the proposed Rule does not meet the NEO because it increases transmission costs to customers and negatively impacts reliability, safety and security of the system. (CP p.2; OP p.6)	The Commission considers that the draft Rule is likely to promotes the NEO and is likely to better promote the NEO than the proposed Rule. See chapter 2 for further discussion.
Alinta	Doesn't support average cost charging. (OP p.11)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Alinta	Considers access arrangements under the proposed Rule are appropriate. (OP pp.11-13)	The Commission considers that the issue of access is best considered holistically as part of the TFR.
Alinta	Expressed concern at the limited quantitative analysis. (OP p.2)	It is difficult to quantitatively assess the likely benefits and costs of a SENE as efficiency gains will depend on whether the spare capacity is utilised, which cannot be known *ex ante*. In addition, the costs and potential magnitude of efficiency gains will depend on several factors including volume and number of potential generators, geographical spread of generators in a cluster and distance of the cluster from the shared network.
Alinta	Considers the Commission must demonstrate that connecting remote renewable generators will provide greater efficiency than if they were not connected. (OP p.7)	The Commission is bound to make Rules that it is satisfied will or are likely to contribute to the achievement of the NEO. The Commission's role is therefore to make Rules that it considers will promote efficient outcomes within the legislative and policy environment within which the market operates. The RET is likely to increase investment in renewable energy. The Commission's role is to put in place frameworks that promote efficient outcomes in this context.

Stakeholder	Issue	AEMC Response
Alinta	Considers the Rule change would be better assessed following completion of the TFR. (OP p.5)	The Commission considers the SENEs concept is sufficiently separable to make a draft Rule on the SENEs Rule change. However, the Commission agrees that there are some issues, such as access and broader issues around connections, that are better considered holistically as part of the TFR.
Citipower/Powercor	Raised a number of issues in respect of the proposed capacity rights and compensation arrangements under the proposed Rule. (CP p.4)	The Commission considers that issues around firm financial access are best considered holistically as part of the TFR.
Citipower/Powercor	Considered the proposed Rule was not clear on how a distribution SENE provider would be able to recover costs from customers. (CP p.6)	The draft Rule does not apply to distribution businesses.
Citipower/Powercor	Key concern was that any SENE framework must be able to ensure adequate and workable cost recovery arrangements in order for NSPs to recover their efficient costs. (OP pp.3-4)	The draft Rule does not address funding of the SENE. There are no limits on investment by the TNSP and no requirements for a TNSP to fund a SENE.
Citipower/Powercor	Considered adopting the proposed RIT-D would ensure consistency with the existing framework. However, considered timeframes for any test would need to take into account the difficulties associated with assessing SENE options, including any delays by regulatory authorities. (OP p.4)	The draft Rule does not include an explicit efficiency test. The "investment test" is undertaken privately by entities that are willing and able to bear the risk of funding a SENE. Application of an economic test is less relevant where customers are not exposed the asset stranding risk associated with investing in transmission for the purpose of connecting future generation.
Citipower/Powercor	In respect of distribution, held some concerns in respect of service classification. Considered the Commission should be mindful that the AER is ultimately the authority who determines service classification and therefore cost recovery, from DNSP's customer base. (OP p.4)	The draft Rule does not apply to distribution. Further, the draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing frameworks.

Stakeholder	Issue	AEMC Response
Citipower/Powercor	Did not consider that a prescriptive regime for access was required given that access is sufficiently addressed under chapter 5 of the Rules and under the Victorian Jurisdictional arrangements. (OP p.5)	The Commission considers that the issue of access is best considered holistically as part of the TFR.
Clean Energy Council	Considered the NEO requires amendment to consider renewable objectives consistent with the legislated objectives of the Australian Government. (OP p.2)	This is outside the scope of the AEMC's role.
Clean Energy Council	Considered several aspects of the proposed Rule should be reviewed to ensure NSPs have appropriate incentives to deliver SENE projects on time and budget. (CP p.4)	Current arrangements for connections will apply. Further, TNSP incentives in the context of connections will be addressed as part of the TFR.
Clean Energy Council	Suggested an option to allow generators to lock in a long term tariff is needed under the proposed Rule in order to align tariff costings with generator financing timeframes. (CP p.5)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Clean Energy Council	Considered the trigger for considering a SENE should be either a generator connection enquiry or AEMO identifying SENE zones. It considered both were needed to holistically capture options for renewable energy generation. (OP p.4)	Under the draft Rule, consideration of a SENE would be triggered by a generator, or other entity, requesting that a TNSP undertake a study to examine the potential scale economies from constructing a SENE in a particular geographic area.
Clean Energy Council	Considered the RIT-T requires further work if it is going to be used as the SENE investment test, particularly in respect of the requirement for the proponent to produce multiple options. (OP p.4)	The draft Rule does not include an explicit efficiency test. The "investment test" is privately undertaken by entities that are willing and able to bear the risk of funding a SENE. Application of an economic test is less relevant where consumers are not exposed to asset stranding risk.

Stakeholder	Issue	AEMC Response
Clean Energy Council	Supported defined access rights but considered these issues would best be addressed as part of the TFR. (OP p.5).	Agree that these issues are best considered as part of the TFR.
Clean Energy Council	Believed it was critical that SENE cost allocation ensures there is direct financial incentive to encourage the first generator to participate in establishing a SENE. Therefore supportive of the first generator facing proportional average cost. (OP p.5)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Clean Energy Council	Noted that the theory behind the SENE framework was to provide a regulatory framework to assist in unlocking the untapped renewable energy resources in remote areas of Australia and to bring low carbon energy to load centres. (OP p.2)	The Commission is bound to make Rules that it is satisfied will or are likely to contribute to the achievement of the NEO. The Commission's role is therefore to make Rules that it considers will promote efficient outcomes within the legislative and policy environment within which the market operates. The Commission's role is to put in place frameworks that promote efficient outcomes in this context.
ENA	The ENA considered further work should be undertaken to explore whether there were less complex alternative solutions to the proposed Rule. It considered amending existing market arrangements would be a preferred solution. (CP p.1)	The Commission considers the draft Rule represents a less complex approach than the proposed Rule. Further, under the draft Rule consumers are not exposed to the asset stranding risk associated with investing in transmission for the purpose of connecting future generation.
Energex	Considered there may be value in generators facing some risk to improve reliability of information they provide to NSPs under the proposed Rule. (CP p.2)	The Commission considers that risk should be borne and managed by those best able and willing to do so. See chapter 6 for further discussion on this issue.

Stakeholder	Issue	AEMC Response
Energex	Considered the AEMC should give further thought to the issues around DNSP cost recovery, and the classification of services provided by means of a SENE connected to a distribution network. (CP p.2)	The draft Rule does not apply to distribution businesses. Further, the draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing arrangements.
EnergyAustralia	Concerned at the lack of evidence presented to suggest existing frameworks would result in higher electricity prices for customers than under the proposed Rule. Encouraged the AEMC to undertake modelling on this issue before considering changes to the Rules. (OP pp.1-2)	It is difficult to quantitatively assess the likely benefits and costs of a SENE as efficiency gains will depend on whether the spare capacity is utilised, which cannot be known *ex ante*. In addition, the costs and potential magnitude of efficiency gains will depend on several factors including volume and number of potential generators, geographical spread of generators in a cluster and distance of the cluster from the shared network.
EnergyAustralia	Considered that all market-led solutions should be exhausted before implementing a regulatory solution such as a SENE. (OP p.2)	The Commission considers that consumers should not be exposed to asset stranding risk, and that this risk is better borne and managed by market facing entities to promote efficient decision making. See chapters 6 and 7 for further discussion.
EnergyAustralia	Considered the SENE framework would provide preferential treatment to generators located in SENE zones and would therefore be contrary to the principle of competitive neutrality. (OP p.3)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
EnergyAustralia	Considered there was a risk that the proposed SENE framework could result in perverse behaviour by generators by not penalising generators from walking away from a proposed connection after a SENE is built. (OP p.3)	Additional measures to help mitigate risk to consumers are not relevant to the draft Rule where market entities are responsible for managing their own risk. Any penalties would be agreed between the relevant parties during negotiations.

Stakeholder	Issue	AEMC Response
EnergyAustralia	Considered, if a SENE framework was to be pursued, AEMO should identify and rank SENE areas based on an economic assessment of the long term benefits to customers. (OP p.4)	The draft Rule does not require AEMO to identify potential "SENE zones". However, the Commission considers there is merit in AEMO continuing to identify clusters of generation in its NTNDP, as it did in the 2010 NTNDP.
EnergyAustralia	Considered, if a SENE framework was pursued, a SENE should be classified as providing standard control (prescribed) services. (OP p.4)	The draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing arrangements.
EnergyAustralia	Held concerns in respect of the preliminary planning arrangements set out in the proposed Rule. For example, considered that DNSPs would not be best placed to forecast future generation and this role was better suited to AEMO. (CP p.24)	The draft Rule does not apply to distribution businesses. Further, the draft Rule does not require TNSPs to undertake preliminary planning prior to a request for a SENE study.
EnergyAustralia	Held a number of concerns regarding the compensation arrangements set out under the proposed Rule. In particular, considered the requirement for NSPs to administer the arrangements should be removed as NSPs have no current market involvement. (CP p.26)	The draft Rule does not prescribe arrangements for access to a SENE. These would be negotiated between generators and TNSPs as per the existing arrangements. The Commission considers that issues around firm financial access are best considered holistically as part of the TFR.
Ergon Energy	Considered that penalties should apply to potential SENE generators who delay or abandon a project under the proposed Rule. (CP p.3)	Any penalties would be agreed between the relevant parties during negotiations.

Stakeholder	Issue	AEMC Response
Ergon Energy	Considered there were a number of areas in respect of distribution which lacked clarity under the proposed Rule and five options. Also considered the draft Rule should be delayed until issues regarding distribution networks were satisfactorily analysed and resolved. (OP pp.2,3,4)	The draft Rule does not apply to distribution businesses.
Ergon Energy	Concerned that the preliminary planning requirements set out under the proposed Rule were potentially onerous on DNSPs. (CP p.4)	The draft Rule does not impose preliminary planning requirements prior to a request for a SENE study. Further, the draft Rule does not apply to distribution businesses.
Ergon Energy	Considered that the NEO would not be satisfied where forecast generation failed to transpire, particularly where SENE costs were borne by customers. (OP p.4)	By ensuring risk is allocated to those parties best able and willing to manage risk, the Commission considers the draft Rule is likely to promote more efficient investment decisions, consistent with the NEO. See chapters 2 and 6 for further discussion.
esaa	Considered an alternative approach worth consideration was whether tax payers as opposed to electricity consumers should bear the costs associated with SENEs under the proposed Rule. (CP p.5)	The draft Rule seeks to facilitate a process under which risks and costs are allocated to market participants and/or investors rather than consumers. Under the draft Rule, a government may choose to fund a SENE. See chapters 2 and 6 for a more complete discussion.
Geodynamics	Development of transmission solutions has long lead times. Planning, approvals and easement acquisition should begin at the earliest possible stage. (CP p.1)	This is an issue for state governments. TNSPs' rights and obligations regarding planning approvals and easement acquisitions are set out in jurisdictional electricity legislation.
Geodynamics	Agree that inefficient duplication of assets is likely to occur under existing frameworks and that a Rule change is required. (CP p.3)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion of this issue.

Stakeholder	Issue	AEMC Response
Geodynamics	Considered sufficient checks and balances were contained in the proposed Rule to minimise risk to customers. (CP p.4)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion of this issue.
Geodynamics	Commented on cost arrangements for the proposed Rule. (CP p.5)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Geodynamics	Does not support the proposed compensation for constrained utilisation and does not support the proposed agreed power transfer capability more generally on the basis that this is incompatible with the rest of the shared network. (CP p.6; OP p.6)	The Commission considers that issues around firm financial access are better considered holistically as part of the TFR.
Geodynamics	Commented on the connection of interruptible generation and load to the SENE under the proposed Rule. (CP pp.7-8)	This issue is not relevant to the draft Rule as these situations will be covered through commercial negotiations and existing Rules.
Geodynamics	Considers Option 1, of the options presented in the Options Paper, is the most appropriate. (OP p.1)	The Commission considers the risk allocation under Option 1 and the complexity of the arrangements limit the effectiveness of this option. See chapters 6 and 8 for further discussion.
Geodynamics	Considers an explicit investment test adds an unnecessary level of regulatory burden. (OP pp.1-2)	The draft Rule does not contain a regulatory investment test.
Government of SA	Considers that increased entry of renewable generation has highlighted weaknesses in the connections framework. (OP p.1)	Noted. See chapter 5 for a discussion of this issue.

Stakeholder	Issue	AEMC Response
Government of SA	Of the options presented, preferred a variant of option 4. (OP p.1)	The Commission considers that the draft Rule is more likely to promote the NEO than an option that allocated risk to consumers for the reasons discussed in the body of this report. In particular, the risk allocation arrangements under the draft Rule are likely to promote more efficient investment decisions.
Government of SA	Considers firm financial access is more appropriately dealt with in the TFR. (OP p.2)	Agreed.
Green Grid Forum	Consider the current frameworks do not effectively allow investors to coordinate to build efficiently sized transmission infrastructure. (OP p.1)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion of this issue.
Green Grid Forum	Is strongly supportive of the proposed SENE Rule. (OP p.2)	The Commission considers that the draft Rule is more likely to promote the NEO than the proposed Rule for the reasons discussed in the body of this report. In particular, the risk allocation arrangements under the draft Rule are likely to promote more efficient investment decisions.
Grid Australia	Supports commercially negotiated market-based solutions for the development of network extensions, where possible, and considers that these should not be inadvertently crowded out (CP p.1; OP p.3)	The Commission agrees that market participants and investors are better able to manage and bear the risk associated with asset stranding and therefore better equipped to make efficient investment decisions than an approach which allocates risk to consumers.
Grid Australia	Considers a first mover hurdle exists, and that some TNSPs have experienced a reluctance of individual connection applicants to tie their project delivery to third parties. (CP pp.7-8; OP pp.5-6)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for further discussion of this issue.

Stakeholder	Issue	AEMC Response
Grid Australia	Supports consideration of the use of the RIT-T where the extension is likely to have significant market benefits. (CP p.4)	The Commission considers there is scope for this to occur under existing frameworks. See chapter 5 for further discussion.
Grid Australia	Concerned that the proposed Rule introduces a third category of regulated transmission service and that it may not be robust to future network developments. (CP p.10)	The draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing arrangements.
Grid Australia	Consider the proposed Rule would face significant practical difficulties in Victoria. (CP p.11)	No longer relevant.
Grid Australia	Of the options presented, Grid Australia prefers a variant of Option 1. (OP p.4)	The Commission considers that the draft Rule is more likely to promote the NEO than an options that allocates risk to consumers for the reasons discussed in the body of this report. In particular, the risk allocation arrangements under the draft Rule are likely to promote more efficient investment decisions.
Grid Australia	Areas highlighted in the Options Paper as requiring clarification would be better considered as part of the TFR. (CP p.5; OP pp.6-7)	The Commission agrees that these issues are better considered holistically as part of the TFR.
Grid Australia	Mandating preliminary planning for all potential SENE zones is likely to have limited value. (OP p.11)	The draft Rule does not require preliminary planning on the part of TNSPs prior to a request for a SENE study.
Hydro Tasmania	Considers it remains unproven that SENEs are needed, but notes difficulties in relation to presenting evidence for the future. (OP p.3)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion of this issue.

Stakeholder	Issue	AEMC Response
Hydro Tasmania	Supports the use of financial access rights, including the preservation of rights in the event that SENEs become part of the shared network. (CP p.1; OP p.6)	The Commission considers that issues around firm financial access are better considered holistically as part of the TFR.
Hydro Tasmania	Made a number of comments on risk mitigation measures, such as use of a cost threshold, auctioning options and the way in which costs are apportioned between generators and customers under the proposed Rule and options. (CP pp.1,4; OP p.4)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. Risk mitigation measures are therefore less relevant under the draft Rule. See chapter 6 for further details.
Hydro Tasmania	Commented on the variability of charging under the proposed Rule and options. (CP pp.1,4; OP p.7)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Hydro Tasmania	Considers the RIT-T is probably not the right tool to connect renewable generation quickly. (OP pp.3-4)	The draft Rule does not employ the RIT-T.
Hydro Tasmania	Considers all SENE services should be treated as prescribed services. (OP p.6)	The draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing arrangements.
Hydro Tasmania	Considers high-level, fast-tracked environmental/planning approvals in relation to SENE developments should be considered. (CP pp.1,8)	This is an issue for state governments. TNSPs' rights and obligations regarding planning approvals and easement acquisitions are set out in jurisdictional electricity legislation.
Infigen	Consider existing rules do not adequately allow for scale efficient connections. (CP p.1; OP p.1)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion of this issue.

Stakeholder	Issue	AEMC Response
Infigen	Prefers a slight variation of Option 1. (OP p.3)	The Commission considers the risk allocation under Option 1 and the complexity of the arrangements limit the effectiveness of this option compared to the draft Rule. See chapters 6 and 8.
Infigen	Considers the proposed Rule contains sufficient checks and balances. Provides specific suggestions on risk mitigation measures. (CP pp.1,2,4; OP p.4)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further details.
Infigen	Provides specific comments/queries on the cost allocation and charging arrangements for the proposed Rule and options. (CP p.2; OP p.5)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Infigen	The RIT-T is slow and laborious and would not be appropriate for rapid roll-out of SENEs. (CP p.4; OP p.5)	The draft Rule does not employ the RIT-T.
Infigen	Provides specific comments on the connection of interruptible generation and load in the context of the proposed Rule. (CP pp.6-7)	This issue is not relevant to the draft Rule as these situations will be covered through commercial negotiations and existing Rules.
Infigen	Considers the Rule should maintain mandatory compensation arrangements consistent with the proposed Rule. (OP p.5)	The Commission considers that issues around firm financial access are better considered holistically as part of the TFR.
Integral Energy	Expressed concern that the Commission had not yet demonstrated a market failure with the current connection framework. Considered the new NTP arrangements and RIT-T may address the perceived risk and should be given sufficient time to operate. (OP p.1)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request.

Stakeholder	Issue	AEMC Response
Integral Energy	Considered clarification of circumstances where transmission investment may become economically regulated could address some of the disincentives faced by generators in respect of joint financing by generators. (OP p.1)	Noted. The Commission considers that broader issues around connection and access are best considered holistically as part of the TFR.
Integral Energy	Preferred that the terms and conditions of access to SENEs be kept consistent with the current shared network arrangements. Considered that mandatory compensation arrangements should not be introduced without first being considered in the context of the TFR. (OP p.2)	The Commission agrees. Under the draft Rule, arrangements for access to a SENE would be negotiated between generators and TNSPs as per the existing arrangements. The Commission considers that the broader issues around access are best considered holistically as part of the TFR.
International Power	Considers SENEs cannot be evaluated as consistent with the NEO *per se*, but only on the basis of forecasts of whether net savings or net costs will predominate over time. (OP p.1)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request. See chapter 2 for discussion on why the Commission considers the draft Rule is likely to promote the NEO.
International Power	Charges should be based on stand alone connection costs until the SENE is fully subscribed to prevent distortions to locational signals (OP p.2)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
International Power	Considers generators should pay their stand alone cost and receive firm access rights. (OP pp.2,4-5)	The Commission considers that issues around firm financial access are better considered holistically as part of the TFR.
International Power	SENEs that have an element of central planning are likely to create biases in favour of a particular location and hence distort decision making. (OP p.2)	The draft Rule does not require non-market facing entities to take risks on generator investment decisions, nor does it require consumers to bear those risks.

Stakeholder	Issue	AEMC Response
LYMMCo	Not convinced there is a clear economic case for introducing SENEs. (CP p.11)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request. See chapter 2 for discussion on why the Commission considers the draft Rule is likely to promote the NEO.
LYMMCo	Considers the RIT-T should be tested as a possibility for promoting efficient shared connections. (CP p.11)	The Commission considers there is limited scope under existing frameworks for the RIT-T to be used to build incremental spare capacity for connecting future generators. See chapter 5 for further discussion.
LYMMCo	Considers the charging regime for the proposed Rule distorts locational signals, risks inefficient investment and subsidises renewable generation. (CP p.4) Also commented on the variable nature of the charging regime under the proposed Rule. (CP p.6)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
LYMMCo	Consider that, despite the checks and balances, there is significant risk associated with the centrally-planned elements of the proposed Rule. (CP p.10)	The draft Rule does not require non-market facing entities to take risks on generator investment decisions, nor does it require consumers to bear those risks.
Macquarie Capital Advisors	Requested clarification on whether the calculation of the annual SENE charge under the proposed Rule would be based on the life of the generator's connection to the SENE or the economic life of the SENE itself. (CP p.1)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Macquarie Generation et al	Questions whether the costs of a complex new regulatory framework have been fully considered. (CP p.2)	The Commission considers that the proposed Rule was complex, and that a simpler approach is appropriate. See chapter 8 for further discussion.

Stakeholder	Issue	AEMC Response
Macquarie Generation et al	Concerned that under the proposed Rule customers face significant asset stranding risks and the proposed checks and balances are insufficient. (CP pp.2-3)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further details.
Macquarie Generation et al	Consider that the charging arrangements under the proposed Rule should be changed to minimise distortions. (CP pp.3-4)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Macquarie Generation et al	Consider the proposed Rule should be tested against the existing regulatory framework and possible market-based alternatives. (CP pp.5-7)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request. See chapter 2 for discussion on why the Commission considers the draft Rule is likely to promote the NEO.
MEU	The MEU noted the lack of quantitative evidence to support the assumption that consumers will benefit from lower electricity prices as a result of providing SENEs. (OP p.4)	The Commission is not satisfied on the evidenced provided that it is appropriate for consumers to be exposed to the asset stranding risk associated with investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion.
MEU	Considered that the party next best placed to manage risk associated with a SENE (other than the generator) is the NSP. (OP p.39)	Any entity that chooses to may bear the risk associated with constructing a SENE.
MEU	Considered that the existing Rules provide adequate incentives and ability for generators to "coordinate" with NSPs to provide for their own SENE. (OP p.7)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request. See chapter 2 for discussion on why the Commission considers the draft Rule is likely to promote the NEO.

Stakeholder	Issue	AEMC Response
NGF	Is unconvinced that SENEs are required. (OP p.2)	The Commission considers there is some scope for change to the existing frameworks. See chapter 5 for a discussion on the issues identified as part of this Rule Change Request. See chapter 2 for discussion on why the Commission considers the draft Rule is likely to promote the NEO.
NGF	Of the options presented in the Options Paper, prefers Option 4. Also presents a preferred model. (OP p.11)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion.
NGF	Considers the charging framework under the proposed Rule creates uncertainty, distorts locational signals and creates a competitive disadvantage for some generation. (CP pp.2,10; OP p.8)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
NGF	Commented on aspects of the Commission's assessment framework including issues around risk and regulatory certainty. (CP pp.8-9).	Noted. The Commission agrees that risk and regulatory certainty are important issues for consideration. Risk allocation, in particular, was a key factor in the Commission's draft decision.
NGF	Considers the provision of property rights may encourage greater merchant investment in transmission. (CP p.10; OP p.4)	The Commission considers that issues around firm financial access and property rights are better considered holistically as part of the TFR.
NGF	There are many problems with the existing connections framework that go beyond those this Rule change is intended to address. Without addressing these issues, the framework may not operate effectively. (OP p.4)	The Commission is considering connection issues as part of the TFR.

Stakeholder	Issue	AEMC Response
NGF	Considers the proposed SENE framework raises concerns regarding stranded asset risk for consumers. (CP pp.3,10; OP p.3)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further details.
NGF	Comments on specific aspects of the proposed Rule, including: it directs funds away from investment in other parts of the transmission network; it creates an additional form of regulatory risk; and it increases the cost of meeting the RET. (CP p.10)	The Commission considers that the draft Rule appropriately addresses these issues.
NGF	Considers the issues of NSP incentives and the interaction between SENEs and the shared network should be further considered as part of the TFR. (CP pp.13-14,19)	The Commission notes that NSP incentives in the context of connections will be addressed as part of the TFR. It is envisaged that the SENE will become part of the TNSP's network with the same access arrangements and rights as currently exist.
NGF	Considers that the AEMC's view that the Rules should be robust to government policies by ensuring any behavioural changes are accommodated in the most efficient way may be inconsistent with the NEO as it concerns social objectives. (OP p.3).	The Commission is bound to make Rules that it is satisfied will or are likely to contribute to the achievement of the NEO. The Commission's role is therefore to make Rules that it considers will promote efficient outcomes within the legislative and policy environment within which the market operates. The RET is likely to increase investment in renewable energy. The Commission's role is to put in place frameworks that promote efficient outcomes in this context.
Nyrstar	Primary concern is that the costs and risks borne by end users could outweigh any scale efficiency benefits. Concerned that an option would be chosen that drives unintended consequences and distortions to the market. (OP p.1)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion.

Stakeholder	Issue	AEMC Response
Nyrstar	Considered there was a strong argument that any modification should at least be synchronised to the policy surrounding a carbon price. Considered that the options presented in the Options Paper did not accommodate major shifts in climate change policies. (OP p.1)	The Commission is bound to make Rules that it is satisfied will or are likely to contribute to the achievement of the NEO: that is, to make Rules that promote efficient investment in, and efficient operation and use of, electricity services in the long term interest of consumers. The Commission's role is therefore to make Rules that it considers will promote efficient outcomes within the legislative and policy environment within which the market operates.
Nyrstar	Considered there was an argument that the Federal Government, through vehicles like Infrastructure Australia or other climate change based programmes, should either partially or fully fund the costs and underwrite the risks for SENEs.(OP p.2)	The Commission considers that efficient investment decisions will be made where risk is allocated to those parties best able and willing to manage that risk. The draft Rule seeks to allocate risk and cost to market participants rather than to consumers. The draft Rule does not limit who may choose to fund a SENE. See chapter 6 for further discussion of this issue.
Origin	Supportive of SENEs. (CP p.1; OP p.4)	The Commission considers that some change to the existing frameworks is warranted. However, the Commission considers that consumers should not be required to bear the asset stranding risk associated with investing in transmission for the purpose of connecting future generation.
Origin	Consider the RIT-T is unworkable in the context of SENEs (CP p.2; OP pp.6-7) but that a well designed investment test may be appropriate. (OP p.7)	The Commission considers there is limited scope under existing frameworks for the RIT-T to be used to build incremental spare capacity for connecting future generators. However, the Commission considers a market-based approach is more appropriate.
Origin	Consider the magnitude and likelihood of asset stranding is minimal and discussions around this should be kept in perspective. (CP p.2)	The Commission considers that risk allocation is a key issue. The Commission is concerned that the allocation of risk under the proposed Rule could lead to inefficient investment. See chapter 6 for further discussion on this issue.

Stakeholder	Issue	AEMC Response
Origin	Consider the cost of SENEs should be apportioned across the entire market. (CP p.4)	The Commission considers that the risk of SENEs should be borne by those best able to manage it. See chapter 6 for further discussion on this issue.
Origin	Comments on the flexibility of the SENE configuration and connection of interruptible generation. (CP p.2)	Under the draft Rule these issues will be subject to commercial negotiation between the relevant parties.
Origin	Considers issues around increased levels of access should be dealt with under the TFR. (OP p.9)	Agreed.
Origin	Comments on the interaction between SENEs and the shared network. (CP p.10)	The impact on the shared network should be considered as part of the SENE design and costing study under the draft Rule.
Origin	Supports the basic charging regime in the proposed Rule and considers it imparts appropriate locational signals. (CP p.11)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Origin	Raised concerns regarding variability of charges under the proposed Rule. (CP p.11)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Origin	Of the options presented, prefer a variation of Option 2. (OP pp.8-9)	The Commission considers consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation.
Pacific Hydro	Considers the NEO should be amended to reflect low emissions objectives. (CP p.1)	This is outside the scope of the AEMC's role.

Stakeholder	Issue	AEMC Response
Pacific Hydro	Concerned that the proposed SENEs process does not address the prohibitive network cost barrier for developers making investments in the public good. Considers SENE deserve recognition as important nation building infrastructure. (CP p.2)	The Commission is bound to make Rules that it is satisfied will or are likely to contribute to the achievement of the NEO. The Commission's role is therefore to make Rules that it considers will promote efficient outcomes within the legislative and policy environment within which the market operates. The RET is likely to increase investment in renewable energy. The Commission's role is to put in place frameworks that promote efficient outcomes in this context.
Pacific Hydro	Concerned that the proposed SENE process does not include mechanisms to trigger investment in deep augmentation of the existing network. (CP p.2)	The impact of a SENE on the shared network should be considered as part of the SENE design and costing study under the draft Rule. Any subsequent augmentation to the shared network will be considered under the existing frameworks.
Pacific Hydro	The SENE design should consider the possibility of generators obtaining rebates in the event of new load centres connecting to the SENE. (CP p.2)	This is subject to commercial negotiation between the relevant entities.
Pacific Hydro	Considers charges should be based on the economic life of the SENE rather than the economic life of the generator. (CP p.3)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
Pacific Hydro	Provides qualified support for SENEs. (CP p.3)	Noted.
SACOME	Considered there may be benefit in extending the proposed SENE framework to allow the connection of remote load without the SENE reverting to a prescribed service. Considered this could provide a positive economic case for mining operations to connect to network extensions in preference to onsite diesel generation. (CP p.2)	The Commission notes the process for connecting to a SENE, by either generation or load, would be subject to the existing Rules governing connections. However, the Commission recognises that the characteristics of a transmission service may change over time such that some or all of the services provided by means of a SENE fall within the definition of a prescribed transmission service. See section 2.1 for further discussion on this issue.

Stakeholder	Issue	AEMC Response
SP AusNet	Supports concept of a SENE but considers aspects of the proposed Rule require reconsideration. (CP p.2)	Noted.
SP AusNet	Categorisation of assets under the proposed Rule is complex and inconsistent. (CP p.3)	The draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing arrangements.
SP AusNet	Concerned with the introduction of capacity rights. (CP p.5)	The draft Rule does not introduce capacity rights. The Commission considers that issues around firm financial access are better considered holistically as part of the TFR.
SP AusNet	Considers the proposed Rule is inconsistent with the contestability framework used in Victoria. (CP p.5)	The Commission considers the draft Rule is consistent with arrangements in Victoria.
SP AusNet	Market-led approaches should be allowed to work where possible. (CP p.6)	Agreed. The draft Rule represents a market-based approach to risk allocation.
Tasmanian DIER	Expressed concern regarding the lack of jurisdictional involvement in determining the location of SENEs under the proposed Rule. Considered a SENE planner should also consider the delivery of other services and additional infrastructure requirements in an area that would arise from the construction of electricity assets. (CP p.3)	There is nothing in the draft Rule which prevents jurisdictional involvement in the funding and planning of SENEs.
TRUenergy	Consider the existing framework is insufficient to promote efficient investment in coordinated connections. (CP p.2)	The Commission considers that some change to the existing frameworks is warranted. However, the Commission considers that consumers should not be required to bear the asset stranding risk associated with investing in transmission for the purpose of connecting future generation.

Stakeholder	Issue	AEMC Response
TRUenergy	In general prefer market based approaches, but consider the SENE proposal is a reasonable hybrid. (CP p.3)	The Commission considers that a market-based approach to risk allocation is appropriate in this instance. Refer to chapters 6 and 7 for more details.
TRUenergy	Considers the charging arrangements under the proposed Rule are uncertain. (CP pp.9-10)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply.
TRUenergy	Comments on issues specific to the proposed Rule including: supports a flexible approach to configuration of the SENE; consider interruptible generators should be free to connect only once all firm capacity is contracted; and consider potential for loops is a remote possibility. (CP pp.6,8)	These issues are generally dealt with either through commercial negotiation or existing frameworks.
TRUenergy	Supports compensation arrangements. (CP p.5, OP pp.4-5)	The Commission considers that issues around firm financial access are better considered holistically as part of the TFR.
TRUenergy	Considers of the options presented, a variant of Option 4 best promotes the NEO. (OP p.2)	The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation. See chapter 6 for further discussion. See chapter 2 for discussion on why the Commission considers the draft Rule is likely to promote the NEO.
TRUenergy	Considers an economic test that is separate from the RIT-T should be included. (OP pp.3-4)	The draft Rule allocates risks and costs to market participants and investors rather than to consumers. The draft Rule therefore does not include an explicit efficiency test.
TRUenergy	Supports the first generator paying stand alone cost, customers underwriting spare capacity and both these charges reducing as other generators connect. (OP p.4)	Charging for use of the SENE is not addressed in the draft Rule. Instead, the existing process for determining charges will apply. The Commission considers that consumers should not be exposed to asset stranding risk in the case of investing in transmission for the purpose of connecting future generation.

Stakeholder	Issue	AEMC Response
TRUenergy	Agrees that the Rules should provide a framework to allow the goals of government policies and programmes to be achieved, noting the market may not always agree with such policies. (OP p.2)	Noted.
UED	Considered the AEMC should provide specific examples of the failure of the planning and regulatory arrangements currently in place for transmission entities as this would provide a firmer basis for decision-making. (CP pp.2,3)	See chapter 5 of the report for a discussion of the problems and challenges raised by the Rule Change Proponent and during consultation on this Rule Change Request.
UED	Considered contestability should be brought into the SENE planning process under the proposed Rule, for example, by allowing bilateral negotiations to take place between generators and competing NSPs. (CP p.5)	This is consistent with the draft Rule whereby any entity may approach a TNSP to request a SENE design and costing study, and any entity that chooses to may fund a SENE.
UED	Considered the regulatory oversight measures proposed in the Rule Change Request should be strengthened, for example, by requiring AEMO to provide explicit endorsement of the forecasts if it is satisfied these are reasonable. (CP p.7)	Under the draft Rule, consumers are not required to bear the asset stranding risk associated with transmission investment for the purpose of connecting future generation. Therefore regulatory oversight measures to protect consumers are not required.
UED	Considered the proposed Rule should allow NSPs to undertake an economic cost benefit analysis where they believe there is merit in doing so. (CP pp.9-10)	The draft Rule does not include an explicit economic test. The exact scope of the SENE design and costing study will be subject to negotiation between the TNSP and the entity requesting the study.
UED	Questioned the merits of classifying a SENE as a negotiated service under the proposed Rule given that SENEs were more akin to prescribed services. (CP p.12)	The draft Rule does not specify the type of transmission service provided by the SENE or how the SENE would be treated over time. These issues would be resolved under existing arrangements.

Stakeholder	Issue	AEMC Response
Vestas	Supports the Competitive Renewable Energy Zones framework used in Texas (noting significant changes to existing transmission pricing rules would be required). (CP p.2)	The Commission considers that significant changes to existing frameworks are not warranted at this stage.
Vestas	The SENE proposal will have limited success as it will not be able to deliver transmission investment in the timeframes required due to the complicated, lengthy process involved. (CP pp.2-4)	The draft Rule may promote more timely investment than the proposed Rule as consumers are not required to underwrite the risk of the investment. Therefore the checks and balances provided by the AER and AEMO under the proposed Rule are no longer required.
Vestas	Considers the NEO should be amended to address matters such as greenhouse emissions and the promotion of renewable energy. (CP p.4)	As noted by Vestas, this is outside the scope of the AEMC's role.

B Negotiating connection to the SENE

This chapter considers the possible classification of the services provided by a SENE and therefore the legal framework for connection to a SENE.

B.1 Introduction

The draft Rule does not change the existing connections framework. Therefore, where a SENE proceeds, decisions on the classification of the services provided by means of the SENE assets would follow existing processes in the Rules i.e. the generator would negotiate with the TNSP on the commercial and technical terms and conditions with respect to its proposed connection, including for the use of the network as augmented by the SENE.

The framework under which negotiations between the generator and the TNSP take place (i.e. under the Rules or outside of the Rules) will depend on the classification of the services provided by means of the SENE. Under the Rules, *transmission services* are classified by reference to definitions of those services set out in Chapter 10 of the Rules. A *transmission service* may be a *prescribed transmission service*, a *negotiated transmission service*, or neither, in which case it will be a *non-regulated transmission service*. These terms, and other relevant definitions, are replicated in appendix C.

In practice, the service classification may depend to some extent on the approach of individual TNSPs. Consequently, there may be some debate about what type of transmission service a SENE asset provides. Generally, these matters will be resolved during the commercial negotiation of connection agreements.[163]

Therefore, given that the classification of services will be determined on a case by case basis, and, in practice, may be influenced by individual TNSP practices, it is difficult to be prescriptive on the classification of services provided by SENEs and consequently the framework under which negotiations will take place.

For illustrative purposes however, we have set out an example that draws on the approach advocated by Grid Australia in its Categorisation of Transmission Services Guideline[164], noting that not all TNSPs necessarily use this approach in practice.

The example considers two scenarios:

- first, a scenario whereby a generator seeks connection prior to the SENE being built; and
- second, a scenario whereby a generator seeks connection once the transmission network has been augmented by the SENE.

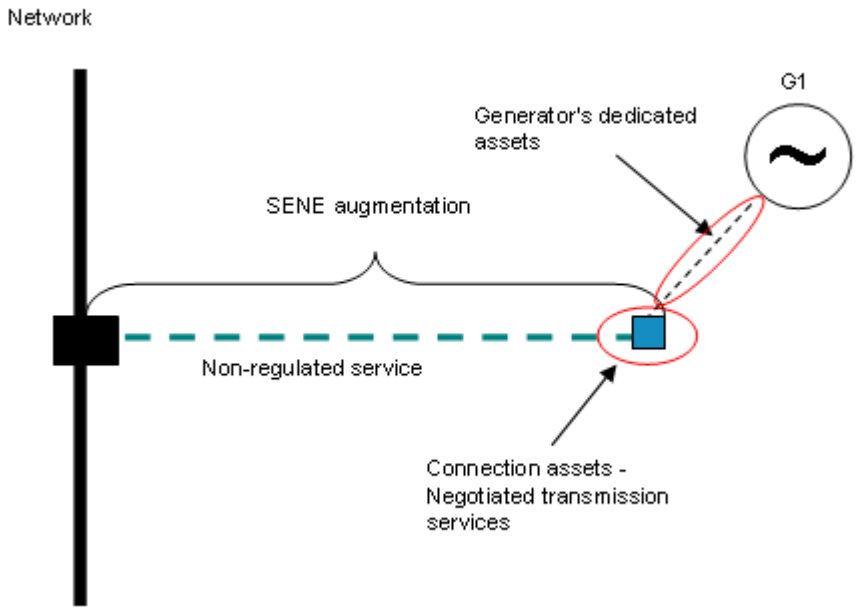
163 A more detailed discussion of the existing connections framework is available in Chapter 5 of the Options Paper for this Rule change request. See AEMC 2010, *Scale Efficient Network Extensions, Options Paper*, 30 September 2010, Sydney, pp.18-32.

164 Grid Australia, Categorisation of Transmission Services Guideline, Version 1.0, August 2010.

B.2 Possible outcome before the SENE is constructed

Where a generator (G1) seeks connection to the *transmission network* prior to the SENE being built, the services to be provided by the SENE assets may be treated as *non-regulated transmission services*. This is because construction of the SENE and the subsequent services provided by means of the SENE are contestable. For example, another TNSP may offer a competitive bid to construct the SENE. This example is demonstrated in Figure B.1.

Figure B.1



In this example, the green dashed line represents a proposed SENE, which will provide non-regulated transmission services.

The blue box represents the connection assets at the point of connection between the SENE and the generators' facilities. The services provided by means of those assets are likely to be classified as providing a negotiated transmission service under the Grid Australia approach because they serve the generator at the point of connection to the TNSP's network.

The assets required to facilitate connection between the generator's facilities and the point of connection may form part of the generator's facility or, if operated by the TNSP, could provide either non-regulated or negotiated transmission services. Again, the classification may depend to some extent on the approach of individual TNSPs and Grid Australia's Classification of Transmission Services Guideline sets out one approach.

In practice, if a service is classified as a non-regulated transmission service, this means that those services are not subject to economic regulation under the Rules. This includes the negotiating framework and dispute resolution processes that apply in the case of negotiated services.

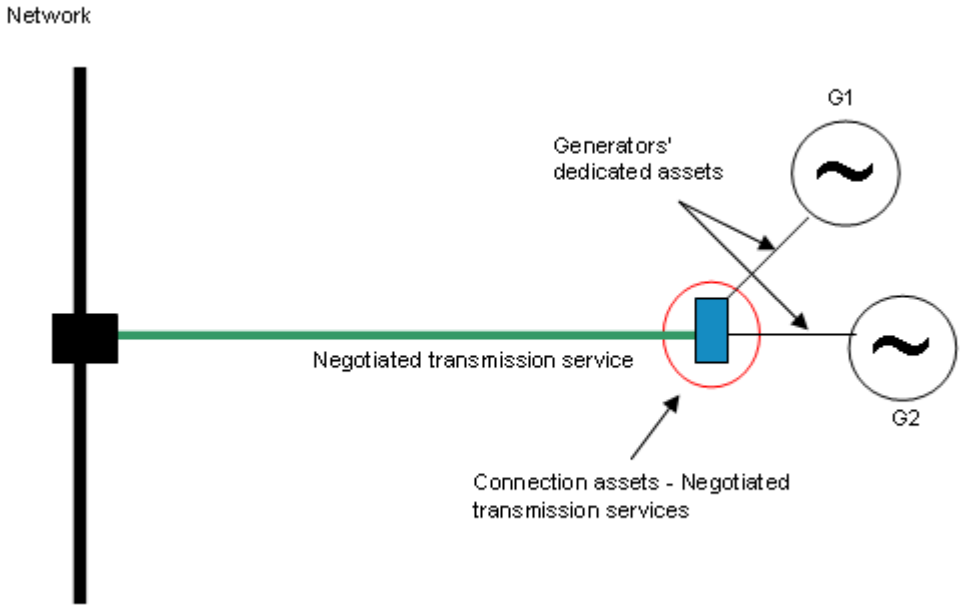
If a service is classified as a negotiated transmission service, discussions between the TNSP and the generator take place under the TNSP's approved negotiating framework. The generator also has recourse to the dispute resolution processes that are set out in Part K of Chapter 6A of the Rules.

B.3 Possible outcome once the SENE has been constructed

The second scenario considers a case whereby a second generator (G2) seeks connection to the transmission network once the network has been augmented by a SENE. The service provided by means of the SENE may be treated as providing a negotiated transmission service. This is because there are no longer any opportunities for contestable activities to be undertaken in the building of the SENE.

As a negotiated transmission service, subsequent connecting generators would have the right to seek access to the SENE on a fair and reasonable basis, in line with the relevant TNSP's negotiating framework[165], and dispute resolution processes[166], under which the terms and conditions of access may be sought. This example is demonstrated in Figure B.2.

Figure B.2



In this example, the green solid line represents the transmission network as augmented by the SENE. Unlike in the previous example, the service provided by means of this augmentation is no longer contestable as it forms part of the TNSP's network.

As in the previous example, the blue box represents the connection point between the TNSP's network and the relevant generating systems. The assets at the connection

165 Under Chapter 6A Part D of the Rules.

166 Under Chapter 6A Part K of the Rules.

point are likely to be classified as providing a negotiated transmission service. The assets between the generator's facilities and the connection point may form part of the generator's facilities or, if operated by the TNSP, could provide either non-regulated or negotiated transmission services.

For clarity, the services provided by SENE assets are not intended to provide prescribed transmission services and therefore the costs should not be recovered from consumers, even where funded by the TNSP. However, the Commission notes that the characteristics of a transmission service may change over time such that some or all of the services provided by means of a SENE fall within the definition of a prescribed transmission service. In this instance, the Commission anticipates that the AER would carefully consider any application by a TNSP to include in its RAB the costs of the SENE. The Commission also anticipates that the AER would be cognisant that the TNSP funded the SENE based on calculated risks regarding its likely return on investment.

C Glossary of relevant terms

The following table sets out relevant definitions from the NEL and Chapter 10 of the Rules (as relevant).

augmentation	Augmentation of a transmission or distribution system means work to enlarge the system or to increase its capacity to transmit or distribute electricity.
connect, connected, connection	To form a physical link to or through a *transmission network* or *distribution network*.
connection assets	Those components of a *transmission* or *distribution system* which are used to provide *connection services*.
connection point	The agreed point of *supply* established between *Network Service Provider(s)* and another *Registered Participant, Non-Registered Customer* or *franchise customer*.
connection service	An *entry service* (being a service provided to serve a *Generator* or a group of *Generators*, or a *Network Service Provider* or a group of *Network Service Providers*, at a single *connection point*) or an *exit service* (being a service provided to serve a *Transmission Customer* or *Distribution Customer* or a group of *Transmission Customers* or *Distribution Customers*, or a *Network Service Provider* or a group of *Network Service Providers*, at a *single connection point*).
extension	An *augmentation* that requires the *connection* of a power line or *facility* outside the present boundaries of the *transmission* or *distribution network* owned, controlled or operated by a *Network Service Provider*.
negotiated transmission service	Any of the following services: (a) a *shared transmission service* that: 1. exceeds the *network* performance requirements (whether as to quality or quantity) (if any) as that *shared transmission service* is required to meet under any *jurisdictional electricity legislation*; or 2. except to the extent that the *network* performance requirements which that *shared transmission service* is required to meet are prescribed under any *jurisdictional electricity legislation*, exceeds or does not meet the *network* performance requirements (whether as to quality or quantity) as are set out in schedule 5.1a or 5.1; (b) *connection services* that are provided to serve a *Transmission Network User*, or group of *Transmission Network Users*, at a single *transmission network connection point*, other than *connection services* that are provided by one *Network Service Provider* to another *Network Service Provider* to *connect* their *networks* where neither of the *Network Service Providers* is a *Market Network Service Provider*; or (c) *use of system services* provided to a *Transmission Network User* and referred to in rule 5.4A(f)(3) in relation to *augmentations* or *extensions* required to be undertaken on a *transmission network* as

	described in rule 5.4A, but does not include an *above-standard system shared transmission service* or a *market network service*.
non-regulated transmission services	A *transmission service* that is neither a *prescribed transmission service* nor a *negotiated transmission service*.
prescribed transmission service	Any of the following services: (a) a *shared transmission service* that: 1. does not exceed such *network* performance requirements (whether as to quality or quantity) as that *shared transmission service* is required to meet under any *jurisdictional electricity legislation*; 2. except to the extent that the *network* performance requirements which that *shared transmission service* is required to meet are prescribed under any *jurisdictional electricity legislation*, does not exceed such *network* performance requirements (whether as to quality or quantity) as are set out in schedule 5.1a or 5.1; or 3. is an *above-standard system shared transmission service*; (b) services that are required to be provided by a *Transmission Network Service Provider* under the *Rules*, or in accordance with *jurisdictional electricity legislation*, to the extent such services relate to the provision of the services referred to in paragraph (a), including such of those services as are: (i) required by *AEMO* to be provided under the *Rules*; and (ii) necessary to ensure the integrity of a *transmission network*, including through the maintenance of *power system security* and assisting in the planning of the *power system*; or (c) *connection services* that are provided by a *Transmission Network Service Provider* to another *Network Service Provider* to *connect* their *networks* where neither of the *Network Service Providers* is a *Market Network Service Provider*; but does not include a *negotiated transmission service* or a *market network service*.
transmission network	A *network* within any *participating jurisdiction* operating at nominal *voltages* of 220 kV and above plus: (a) any part of a *network* operating at nominal *voltages* between 66 kV and 220 kV that operates in parallel to and provides support to the higher voltage *transmission network*; (b) any part of a *network* operating at nominal *voltages* between 66 kV and 220 kV that is not referred to in paragraph (a) but is deemed by the *AER* to be part of the *transmission network*.
transmission service	The services provided by means of, or in connection with, a *transmission system*.