THE NATIONAL ELECTRICITY MARKET AND THE ENVIRONMENT: ARE WE HEADING IN THE RIGHT DIRECTION?

by Glen Wright

Introduction

The national electricity market (NEM) is the wholesale electricity market and physical network connecting Australia's eastern states.[1] Greenhouse gas (GHG) emissions from the NEM constitute approximately 31% of Australia's GHG emissions.[2] Australia's electricity sector is 'unusually emissions-intensive' due to heavy reliance on coal for stationary energy generation.[3]

However, Australian policy to curb those emissions and transition to a low-carbon economy has begun: a renewable energy target (RET) and legislation to implement a carbon price is in place. A number of reports have found that the NEM has not driven positive environmental outcomes to date.[4] Given the current policy context, it is pertinent to assess whether the regulatory and policy frameworks of the NEM are heading in the right direction so as to accommodate future electricity generation in a carbon-constrained Australia.

This essay will provide a brief outline of the NEM,[5] before assessing the appropriateness of the national electricity objective (NEO), by which all NEM policy and rule-making is guided. It will continue by asking: 'what is the right direction for a low-carbon electricity system?'. The future holds a mixture of three broad options: demand side participation (DSP), distributed generation (DG), and large scale renewables (LSR). Accordingly, this essay will identify the key barriers to implementation of these options and assess whether recent and proposed changes to the national electricity rules (NER) will alleviate these barriers. It will conclude by drawing together the analysis of the NEM framework, and assess whether it is heading in the right direction from an environmental perspective.

The national electricity market

The NEM was established in 1998 under nationally consistent electricity law (NEL).[6] The NEM is governed by national electricity rules (NER) and four core regulatory bodies: the Ministerial Council on Energy (MCE),[7] the Australian Energy Market Commission (AEMC),[8] the Australian Energy Regulator (AER)[9] and the Australian Energy Market Operator.[10] These bodies are responsible for market policy,[11] market rules,[12] enforcement[13] and physical operation of the market[14] respectively.

1 Queensland, New South Wales and the Australian Capital Territory, Tasmania, Victoria and South Australia. Western Australia and the Northern Territory are not part of the NEM, due to geographic distance and have their own regulatory regimes: ABARE, *Energy In Australia 2010* (Canberra, 2010) 19.

2 Department of Climate Change and Energy Efficiency, *Australian National Greenhouse Accounts - National Inventory Report 2009* (Volume 1, Canberra 2011).

3 R Garnaut, *The Garnaut Climate Change Review* (Cambridge University Press, Melbourne 2011) Chapter 11.

4 See for example: I MacGill, 'The Australian National Electricity Market' (Presentation for EVN Training Program, University of New South Wales, Sydney 2007); McDonnel, G., 'COAG's Quandary: What to do with the Energy Markets Reform Program?' (Total Environment Centre and the Alternative Technology Association 2005); L Chin, R Gawler, and W Gerardi, 'NEM Market Failures and Governance Barriers for New Technologies: Final Report to Garnaut Climate Change Review' (McLennan Magasanik Associates 2008).

5 The NEM is an incredibly complex instrument. This paper will not dwell on the NER in detail and will instead focus on giving a broad overview of the aspects of the NEM relevant to an environmental perspective.

6 The NEL is a schedule to the *National Electricity (South Australia) Act 1996* (SA) subsequently adopted in the other NEM jurisdictions through implementing legislation.

7 Council of Australian Governments (COAG), 'Australian Energy Market Agreement' (2004).

8 *Australian Energy Market Commission Establishment Act 2004* (SA).

9 Part IIIAA *Trade Practices Act 1974* (Cth).

10 *National Electricity (South Australia) (National Electricity Law - Australian Energy Market Operator) Amendment Act 2009* (SA).

11 Section 4, COAG, 'Australian Energy Market Agreement' (2004).

12 Sections 6(a)&(b) *Australian Energy Market Commission Establishment Act 2004* (SA).

13 Part IIIAA, *Trade Practices Act 1974* (Cth).

14 AEMO, 'Organisation Structure & Operations' <http://www.aemo.com.au/corporate/org.html>.

What is the right direction?

Asking if we are heading in the right direction begs the question 'what is the right direction?'. As Australia's electricity generation mix will undergo significant changes as a result of the proposed cap-and-trade system for GHG emissions and the RET, it is likely that a shift away from the current model for meeting Australia's electricity demands will soon occur.[15]

This shift requires an electricity system based on a combination of three options. Firstly, lowering the demand for electricity through DSP measures. Secondly, decentralising generation and generating more electricity locally from renewable sources (DG). Thirdly, commissioning large-scale, centralised wind and solar power plants (LSR)[16] to directly replace coal.[17] In order to ensure that Australia efficiently and effectively transitions to a sustainable electricity system, the NEM must pursue each of these options equally, ensuring that there are no barriers to implementation.

The national electricity objective

The NEO is the guiding principle of the NEM: all NEM rules must be made in accordance with the NEO.[18] The NEO, as it currently stands, is to ensure:

> 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.[19]

Although precursors to the NEO included consideration of the environment,[20] lamentably, the existing NEO does not explicitly include any such reference. This is an unfortunate oversight: the Australian Energy Market Agreement (2004)[21] mentioned environmental concerns, but failed to allocate responsibility to any of the NEM's governing bodies.[22] Thus the current NEO was promulgated in 2005[23] without an environmental component.

Although a range of actors have called for the NEO to be reformed,[24] and environmental objectives feature in similar objectives in other OECD countries,[25] no serious effort has been made to date to address the issue.

Reducing demand through demand side participation

Reducing demand for electricity is the most environmentally sustainable way of meeting demand into the future, yet

15 'The introduction of a carbon price will change the choice of fuel sources, move investment decisions toward low-emissions forms of generation and unlock the possibilities of new technologies by driving innovation'. R Garnaut, 'Transforming the Electricity Sector' (Garnaut Review, Update Paper 8, 2011) 5.

16 Biomass generation is also likely to increase, though such plants are generally smaller and can easily be located close to the network, and therefore do not fall within the discussion of connection of LSR to the network below. Geothermal energy and marine (wave and tidal) energy are also under development, but are not yet at the commercial viability stage. Much of the discussion of LSRs will apply to geothermal, whereas marine energy is likely going to require specific policy measures.

17 And, following a transition period, gas.

18 NEL, s 32.

19 NEL, s 7.

20 See National Grid Management Council, National Grid Protocol (First Issue 1992); COAG, Energy Policy Details (8 June 2001); MCE, Communiqué (Melbourne, 7 December 2001).

21 Available at <http://www.ret.gov.au/Documents/mce/_documents/IGA_FINAL_(30JUNE2004)20040713100323200411121628 49.pdf> accessed 21 October 2011.

22 The regulatory bodies at that time were the AEMC, AER and the National Energy Market Management Company (NEMMCO), which was subsequently replaced by AEMO.

23 As an amendment to the *National Electricity (South Australia) Act 1996*. See <http://www.legislation.sa.gov.au/LZ/C/A/NATIONAL%20ELECTRICITY%20(SOUTH%20AUSTRALIA)%20ACT%201996/2007.12.31/1996.44.UN.PDF> for the 2005 amended version of the Act.

24 See for example: Total Environment Centre et al., 'Power for the People Declaration' (2007) 1 (coalition of civil society organisations calling for changes to the regulatory regime to 'require regulators to consider the environment when making decisions and to contribute to the achievement of ecologically sustainable development').

25 See for example: the UK (Department of Energy and Climate Change, 'Electricity Market Reform: Consultation Document' (The Stationery Office, December 2010)), the US (Federal Energy Regulatory Commission, 'About Us' <http://www.ferc.gov/about/about.asp> accessed 15 October 2011) and Canada (National Energy Board, 'Strategic Plan' (2011) available at <http://www.neb-one.gc.ca/clf-nsi/rthnb/whwrndrgvrnnc/strtgcpln-eng.html> accessed 15 October 2011).

it has long been overlooked in the NEM, and mobilisation of DSP has historically been very low.[26] In any electricity system, as demand for electricity increases there is a need to ensure a steady supply: either production can be increased (supply side), or demand can be reduced (demand side). Using less electricity ultimately means less GHG emissions are produced.

The NEM was originally intended to be a two-sided market where both supply and demand side measures would be on an equal footing in meeting Australia's electricity needs. The first outline design of the NEM included a strong statement about DSP.[27] Unfortunately, this even-handed approach was not subsequently implemented by the NER: when the NEM commenced operation, there were no provisions that ensured equal opportunities for DSP,[28] resulting in a bias toward the supply side.[29]

Some provisions were subsequently implemented which refer to consideration of DSP options in network planning, however, these still do not require anything beyond nominal consideration of DSP measures.[30] In short, DSP is simply not yet part of the 'mindset' of the NEM.

Barriers to demand side participation

A recent Institute for Sustainable Futures (ISF) report surveyed NEM stakeholders and found that the four main reasons cited for the lack of DSP in the NEM were:

- lack of national/state level policy coordination (policy coordination problem)
- lack of environmental aspect to the NEO
- poor reflection of true cost in consumer electricity prices (pricing problem)
- bias of utility companies toward centralised electricity supply (utility bias problem).[31]

There are many other issues for DSP[32] but this article discusses these four main barriers.

The lack of an environmental objective has been already been discussed above, and the ISF report simply adds further weight to the notion that the NEO should be reformed. The other three issues require further attention.

The policy coordination problem

As there is no national DSP policy, a range of disconnected initiatives have been implemented across Australia. There are energy savings schemes in NSW, SA and Victoria,[33] as well as initiatives at the federal level.[34] Third party aggregators[35] are not able to participate in the wholesale market for electricity,[36] and in any case find it difficult to

26 The recorded energy saving from DSP in 2010/11 was 51.3 gigawatt hours of electricity, 0.02% of energy used in that year. The equivalent percentage in the US was 4.4%.C Dunstan, N Ghiotto, K and Ross, 'Report of the 2010 Survey of Electricity Network Demand Management in Australia' (Australian Alliance to Save Energy and the Institute for Sustainable Futures, University of Technology, Sydney 2011) vi. These figures refer to reduction of summer peak, not overall, demand: DSP is generally focused on reducing peak demand as this demand drives infrastructure development. Note that the US figure includes contributions by retailers and integrated utilities.

27 National Grid Management Council, National Grid Protocol (First Issue 1992) iii.

28 D Crossley, 'Demand-Side Participation in the Australian National Electricity Market: A Brief Annotated History' (Regulatory Assistance Project 2011) 8.

29 The Prime Minister's Task Group on Energy Efficiency noted that a quarter of the submissions it received argued that the NEM is 'excessively supply-side focused', and that it 'fails to effectively balance the incentives and obligations for supply and demand solutions'. Prime Minister's Task Group on Energy Efficiency, *Report of the Prime Minister's Task Group on Energy Efficiency* (Canberra 2010) 166.

30 The current provisions regarding DSP in the NER are contained in the following rules: 5.6.2(a) and (b)(4); 5.6.2A(4)(vi) and (6)(iv); 5.6.5A(c)(3)(v); 5.6.6(c)(5); 5.6A.3(3)(ii); 6A.6.6(e)(12); and 11.27.4(c)(7).

31 C Dunstan, K Ross, and N Ghiotto, 'Barriers to Demand Management: A Survey of Stakeholder Perceptions Australia' (Australian Alliance to Save Energy and the Institute for Sustainable Futures, University of Technology, Sydney 2011) 4.

32 Such as competing priorities within utilities companies (this is discussed below in relation to DG) landlord-tenant relationships, and the difficulty of capturing the benefits of DSP in a disaggregated market (I.e. there is a difficulty in establishing which NEM participants will reap the benefit of DSP actions)

33 New South Wales Energy Savings Scheme, the South Australian Residential Energy Efficiency Scheme the Victorian Energy Efficiency Target.

34 For example the Energy Efficiency Opportunities program, the National Home Energy Rating Scheme, Minimum Energy Performance Standards and the National Framework for Energy Efficiency.

35 So called because they aim to aggregate disparate reductions in energy usage in order centralise the capacity so as to enable to sale of this capacity.

36 There is no provision for their participation in the NER.

pull together the capacity provided by these programs due to their fragmented nature.[37] The disparate nature of these initiatives also makes it difficult for other participants in the NEM, including policymakers, to keep track of DSP and monitor progress. There is also an argument that a lack of a policy is symptomatic of a lack of enthusiasm. In the absence of a national-level or otherwise coordinated DSP policy, it is perhaps unsurprising that the uptake of DSP opportunities has been low.

The pricing problem

The NEM does not provide direct pricing signals for consumers that could encourage greater DSP. Retail price regulation and the lack of interval metering means that there is little use of time-differentiated retail prices.[38] This means that the price of electricity for consumers does not reflect the true cost of producing that electricity and therefore provides little incentive for demand reduction at times when the cost of producing electricity is at its highest.

The utility bias problem

The utility bias problem refers to systemic biases in the NER that cause transmission and distribution network service providers (TNSPs and DNSPs)[39] to prefer expansion of the electricity system rather than reduction of demand.[40] TNSPs and DNSPs are regulated businesses. The level of revenue that a TNSP is allowed to make is determined based on its level of capital expenditure (capex). As such, TNSPs have an incentive to increase their capex, and in some cases overinvest,[41] rather than utilise DSP. Similarly, DNSPs derive their revenue from energy throughput. DSP, in reducing demand, reduces revenue received by DNSPs. As a result, distribution businesses have an incentive to discourage DSP.[42]

Demand side participation reform

Although some minor changes have been introduced to the regulatory framework in recent years,[43] these changes have failed to increase the uptake of DSP opportunities. Recent reports state, 'the level of demand-side participation has been, and currently remains, quite low'[44] and that DSP is still 'applied much less often and extensively… than economic efficiency would warrant'.[45]

Since late 2007 the AEMC has been reviewing DSP in the NEM.[46] Unfortunately, in spite of the systemic biases noted above,[47] the AEMC concluded in stage 2 of its review that the current NER do not materially bias against DSP.[48] The

37 For an overview of third party aggregators in the NEM, see M Zammit, 'Submission to AEMC Issues Paper: Power of Choice – giving consumers options in the way they use electricity EPR0022; Demand Side Participation (DSP) Stage 3 Review' (Enernoc 2011).

38 Chin *et al*, n 4, 24. Electricity companies generally provide a flat tariff, or a usage or time of use tariff that does not accurately reflect the true cost of electricity on the wholesale market at a given time. Note that this is somewhat different in Victoria, where retail prices have been deregulated.

39 The companies responsible for delivering electricity from generators to customers via the electricity transmission and distribution networks.

40 It may be though that there would be strong toward supply bias on the part of generators and retailers, which are profit-driven commercial enterprises and therefore generally seek to increase electricity consumption. However, this bias was very low on the list of concerns expressed by stakeholders. This is perhaps because generators are less affected by a reduction in peak demand than NSPs, as their growth is more closely tied to overall electricity consumption, while retailers have some incentive to undertake DSP as they can use DSP capacity as a hedge against high wholesale prices.

41 Sometimes referred to as 'gold plating' the network. A recent example is the revenue proposal of Queensland TNSP Powerlink, who have come under fire for allegedly greatly overstating the level of investment in infrastructure required for efficient operation of their transmission network. See Total Environment Centre, 'Submission to the AER Powerlink Revenue Determination 2013–17: Response to Powerlink's Initial Revenue Proposal' (2011) and Powerlines Action Group Eumundi Inc., 'Submission to the AER review of the Powerlink revenue reset application for 2012 –17' (2011).

42 Chin *et al*, n 4, 24.

43 Ibid.

44 D Crossley, 'Demand-Side Participation in the Australian National Electricity Market: A Brief Annotated History' (Regulatory Assistance Project 2011) 49.

45 C Dunstan, K Ross, and N Ghiotto, 'Barriers to Demand Management: A Survey of Stakeholder Perceptions Australia' (Australian Alliance to Save Energy and the Institute for Sustainable Futures, University of Technology, Sydney 2011) 3.

46 See AEMC, 'Review of Demand Side Participation in the National Electricity Market' <http://www.aemc.gov.au/Market-Reviews/Completed/Review-of-Demand-Side-Participation-in-the-National-Electricity-Market.html> accessed 10 October 2011.

47 As well as by numerous stakeholders. See, for example, M Zammit, 'Submission to AEMC Issues Paper: Power of Choice – giving consumers options in the way they use electricity EPR0022; Demand Side Participation (DSP) Stage 3 Review' (Enernoc 2011); Fraser, R., Submission to Australian Energy Market Commission Review of Demand-Side Participation in the National Electricity Market, Stage 2: Issues Paper' (Energy Response 2008) and Mather, G., 'SUBMISSION to AEMC Review of demand-side participation in the National Electricity Market Stage 2: Issues Paper' (Total Environment Centre 2008).

48 AEMC, 'Final REPORT, Review of Demand-Side Participation in the National Electricity Market' (2009) vii.

AEMC has now moved to stage 3 of the review, which is focussed on a NEM-wide approach to DSP and on giving consumers choice, particularly through pricing structure reform.

Assuming the review process identifies a suitable approach to DSP, this review should go some way to alleviating the policy coordination and pricing problems discussed above. However, it is clear that this process will not alleviate the utility bias problem, nor is reform of the NEO within its scope. Although the DSP review is likely to lead to some positive change, the extent to which this will increase DSP, especially in the absence of more ambitious changes to the NER, remains to be seen.

Distributed generation[49]

In the context of constant technological improvements and a pending price on carbon, distributed generation, whereby electricity is generated by smaller, decentralised generating units,[50] will become increasingly important.[51] DG is, in a sense, a subset of DSP,[52] and many of the institutional and regulatory barriers for DG are the same as those for DSP.[53]

The ISF report asked relevant stakeholders additional questions regarding barriers to DG. The four main barriers identified were:

- the policy coordination problem (discussed above in relation to DSP)
- competing priorities within utilities (the competing priorities problem)
- the lack of an environmental aspect to the NEO
- complexity in arranging connection of DG (the connection complexity problem).

Again the lack of an environmental objective for the NEM is highlighted as a barrier to better environmental outcomes, as is the policy coordination problem.

The competing priorities problem

To some extent, all commercial enterprises have competing priorities. However, the NER creates priorities that compete with DG and DSP for resources. For example, potentially excessive state-based reliability standards encourage investment in supply side infrastructure investment rather than DSP and DG.[54] Ensuring that electricity constantly flows to meet demand consumes resources that could be used elsewhere.[55]

The utility bias problem, discussed above in relation to DSP is a major NER-induced competing priority. Professor Garnaut notes that there is a 'conflict between the desire to over-invest in one's own assets, and connecting and contracting with distributed generation' and states that curtailing the ability of NSPs to gold plate their assets would encourage NSPs to be more facilitative of DG.[56]

The connection complexity problem

The NER reflect the electricity system that led to their creation. The rules regarding connection of generators to the network are set up to connect large scale generators, commissioned and operated by large power companies, and are therefore not designed to efficiently connect multiple disparate generators, nor to be readily intelligible to small customers wishing to initiate the process themselves. The Energy Networks Association has developed guidelines for connection application, which highlights the layers of complexity involved, even when the process is simplified.[57]

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49 Sometimes the related term 'embedded generation' is used. DG is 'embedded' in the NEM in that it is connection to the distribution network at the point of load, rather than connected to the transmission network distant from the point of load.

50 Such as solar panels on rooftops and micro-wind.

51 R Garnaut, above n 15, 44.

52 In that involves generation that does not take place on the traditional supply side of the electricity system.

53 Such as the landlord-tenant relationship and the difficulty of capturing the benefits of DSP in a disaggregated market.

54 Garnaut, above n 15.

55 See for example NSW Industry & Investment, 'NSW Electricity Network and Prices Inquiry' (Final Report 2010) 32.

56 Garnaut, above n 15, 45.

57 Energy Networks Association, 'Guideline for the preparation of documentation for connection of Embedded Generation within Distribution Networks' (Demand Management and Embedded Generation Committee, Energy Networks Association 2011).

Reforms of the NER in relation to distributed generation

A number of regulatory reforms are pending with the AEMC. There is a rule change that would allow operators of DG to benefit from the avoided use of the network resulting from their generation[58] and a rule change that would expand the Demand Management Incentive Scheme[59] to include research into DG.[60] However, as there are no plans to significantly reform the complexity of the NER to be better suited to generation, the NER will continue to reflect a supply side mindset.

Large scale renewable energy generation

As Garnaut notes, the electricity industry has developed in its current centralised form for good reason, as it allows remote fuel resources to be exploited and provides substantial economies of scale.[61] The World Resources Institute notes that large scale renewables (LSR) are 'likely to be the most economic low-carbon option in many electricity markets'.[62] It therefore seems likely that LSR will play a significant role in the energy mix in a carbon-constrained Australia.

Reviewing all barriers to LSR would be a very large task indeed. This article will therefore focus on a recent rule change considered by the AEMC that was intended to overcome one of the most critical barriers for LSR development: connection of remote LSR generators to the transmission network.

Location of the network and renewable energy sources

Renewable energy resources can be conceptualized as being present in distinct 'basins' which are generally far from the network,[63] which is built around the coal basins that currently form the backbone of electricity generation in Australia.[64]

As generation from LSR increases, there is a need to augment the network to transmit this additional electricity,[65] and such augmentation is extremely capital intensive. It is expected that numerous generators will seek to develop LSR and connect to the network in close proximity to each other over time.[66] However, the existing regulatory regime regarding connection to the Network was developed to support traditional generation investment[67] and therefore does not provide a mechanism for coordinating the connection of a number of LSR generators in an area over time.

Noting that substantial efficiencies could be gained by anticipating increased LSR generation and augmenting the network in advance to 'unlock' an area's resources,[68] the AEMC initiated the 'scale efficient network extensions' (SENEs) rule change.

58 See AEMC, 'Network Support Payments and Avoided TUoS for Embedded Generators' <http://www.aemc.gov.au/Electricity/Rule-changes/Open/Network-Support-Payments-and-Avoided-TUoS-for-Embedded-Generators.html> accessed 10 October 2011.

59 Promulgated by the AER under Chapter 6 of the NER. See AER, 'Demand Management Incentive Scheme' (Final Decision 2008).

60 AEMC, 'Inclusion of Embedded Generation Research into Demand Management Incentive Scheme' <http://www.aemc.gov.au/Electricity/Rule-changes/Open/Inclusion-of-Embedded-Generation-Research-into-Demand-Management-Incentive-Scheme.html> accessed 10 October 2011.

61 Garnaut, above n 15, 44.

62 Tawney, L., Bell, R. and Ziegler, M., 'High Wire Act: Electricity Transmission Infrastructure and its Impact of the Renewable Energy Market' (World Resources Institute, Washington DC 2011) v.

63 E.g. the strongest winds are offshore and on the Eyre Peninsula (300km west of Adelaide); solar radiation is strongest in the far northwest of New South Wales and mid- to north-Queensland. Geoscience Australia and ABARE, *Australian Energy Resource Assessment* (Canberra 2010) 240 and 262 respectively. Even where the resource is close to the existing network, connection of clusters of LSR generation is challenging. See AEMO, 'Connecting Generation Clusters to the Victorian Electricity Transmission Network: A Technical Perspective' (2010) 5.

64 See Geoscience Australia and ABARE, *Australian Energy Resource Assessment* (Canberra 2010) 133. This problem occurs in other countries also: see Tawney, L., Bell, R. and Ziegler, M., 'High Wire Act: Electricity Transmission Infrastructure and its Impact of the Renewable Energy Market' (World Resources Institute, Washington DC 2011) for an American, Chinese and European perspective.

65 This is happening more rapidly due to the Renewable Energy Target and is likely to be further affected by the price on carbon. AEMC, 'Review of Energy Market Frameworks in light of Climate Change Policies' (Final Report, 2009) 11.

66 In the same manner that multiple coal-fired power stations have developed and connected over time in close proximity to coal basins.

67 AEMC, 'National Electricity Amendment (Scale Efficient Network Extensions) Rule 2010' (Options Paper, 2010) 13

68 For examples, see NERA Economic Consulting, 'Case Study of the Network Extension' (Public Report, Grid Australia, 2010) and AEMC, 'Review of Energy Market Frameworks in light of Climate Change Policies' (Final Report, 2009) 151-6.

Scale efficient network extensions

A SENE is a network augmentation that is efficiently sized so as to provide capacity for future generators, thus taking advantage of economies of scale. The AEMC's SENEs Options Paper[69] suggested five options for a SENEs rule. Broadly, these options all involve the construction of a SENE funded by numerous generators over time, with excess capacity being funded by consumers.[70] The AER would have certain powers of regulatory oversight.

Unfortunately, the AEMC ultimately adopted an alternative rule that, instead of incentivising and de-risking investment in SENEs, simply allows generators to request that TNSPs undertake studies for SENEs.[71]

The SENEs rule[72] thus does little to address problems with the pre-existing framework for constructing SENEs. Specifically, the rule:

- does not spread the high cost of augmentation or provide any certainty for investment[73]
- does not address the underlying reason for under-investment in SENEs, i.e. that a generator that can build a dedicated augmentation for their project is unlikely to run the risk of asset stranding[74] by building excess capacity
- does not give control or rights to a generator that invests in an augmentation, [75] which is crucial to ensuring that the investor can recoup their costs from generators that subsequently connect to the Network via that augmentation[76]
- provides information to facilitate coordination, despite the reality that 'potential generators are unlikely to be in a position to achieve simultaneous financial close, let alone come to a decision on the required transmission infrastructure'[77]
- does not acknowledge that generators are unlikely to be willing to tie their schedule to others' projects
- assumes a that a study alone will guarantee investment and coordination of connections, an assumption which Australia's largest owner of wind farms calls 'heroic'.[78]

In short, the rule makes no significant change to the position of the existing framework and seems unlikely to materially affect the construction of efficiently sized network infrastructure to connect LSR generators to the NEM.

Conclusion: is the NEM heading in the right direction?

This essay has offered a brief overview of some of the key issues facing the current regulatory framework of the NEM in its attempt to transition to a low-carbon future. DSP is currently receiving some much needed attention after long being neglected, though it is questionable how effective any reforms will be in the absence of a reformed NEO or an

69 AEMC, 'National Electricity Amendment (Scale Efficient Network Extensions) Rule 2010' (Options Paper, 2010).

70 With some risk of underuse being borne by consumers. The AEMC noted that this was a particular point of contention amongst stakeholders. AEMC, 'National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011' (Draft Rule Determination, 2011) iv.

71 See *National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011*.

72 Ibid.

73 Allocating asset stranding risk and cost to generators, rather than consumers as the MCE had envisaged (see MCE, 'Rule Change Request to AEMC' (2010) available at <http://www.aemc.gov.au/Media/docs/MCE%20Rule%20change%20request-80fa97f6-8444-470d-94d7-ec85b2c9bd46-0.pdf> accessed 31 October 2011), means that the cost of augmentation will continue to act as a deterrent to investment.

74 I.e. the risk of investing in an augmentation that is subsequently underutilised.

75 Under Section 2.5.1(a) of the NER, a person must not own, operate, or control a part of the Network without registering as a NSP: generators generally build the infrastructure and gift it to a Transmission NSP (See Grid Australia, submission to AEMC National Electricity Amendment (Scale Efficient Network Extensions) Rule 2010 (Consultation Paper, 2010) 6 and AEMC, 'National Electricity Amendment (Scale Efficient Network Extensions) Rule 2010' (Options Paper, 30 September 2010) 47).

76 See, for example, AEMO, Submission to AEMC National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011 (Draft Rule Determination, 2011) (2011) 3 and National Generators Forum, Submission to AEMC National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011 (Draft Rule Determination, 2011) (2011) 3.

77 Origin Energy, Submission to AEMC National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011 (Draft Rule Determination, 10 March 2011) (2011).

78 Infigen, Submission to AEMC National Electricity Amendment (Scale Efficient Network Extensions) Rule 2011 (Draft Rule Determination, 2011) (2011) 1.

attempt to mitigate the effects of utility bias toward supply side solutions. While there has been some movement toward improving the utilisation of DG, the NEM and NER are centred on large scale generation, which is likely to cause ongoing difficulties for the proponents of small, distributed renewables. Finally, the SENEs rule appears have done little to progress LSR.

Overall, there is some cause for hope, as the NEM and NER slowly reform and adapt to accommodate future methods of meeting electricity demand. However, there is legitimate concern that the piecemeal rule changes being made are not addressing the concerns of stakeholders nor the institutional bias toward traditional modes of meeting electricity demand. This, compounded by the lack of an overarching environmental objective, may mean that change will come too slowly and will restrict the uptake of more environmentally sustainable methods for meeting Australia's future electricity needs.