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Discussion Paper

Reforming the National Electricity Objective

to improve environmental outcomes in the National Electricity Market

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Total Environment Centre's National Electricity Market advocacy

Established in 1972 by pioneers of the Australian environmental movement, Total Environment Centre (TEC) is a veteran of more than 100 successful campaigns. For nearly 40 years, we have been working to protect this country's natural and urban environment: flagging the issues; driving debate; supporting community activism; and pushing for better environmental policy and practice.

TEC has been involved in National Electricity Market (NEM) advocacy for eight years, arguing above all for greater utilisation of demand side participation (DSP) — energy conservation and efficiency, demand management (DM) and decentralised generation — to meet Australia's electricity needs. By reforming the NEM we are working to contribute to climate change mitigation and improve other environmental outcomes of Australia's energy sector, while also constraining retail prices and improving the economic efficiency of the NEM — all in the long term interest of consumers, pursuant to the National Electricity Objective (NEO).

The NEO itself has been the subject of much discussion since the implementation of the NEM, and this discussion paper is intended to give an overview of why the NEO target may be needed in the NEM and some of the key design issues. However, it is clear that more research is needed into the specific design of a DM target for the NEM.

Executive summary

The National Electricity Objective (NEO) is the guiding principle of the National Electricity Market (NEM). Despite its predecessors including environmental sub-objectives, the current NEO does not include such a sub-objective. While actors in the NEM have an environmental mandate according to the Australian Energy Market Agreement (AEMA), environmental outcomes in the NEM have been poor in the absence of a clear environmental objective placed at the centre of the regulatory framework.

This Discussion Paper provides some background on the development of the NEO and the omission of an environmental goal, and outlines the linkages between the electricity system, the environment and the long term interests of consumers. The poor environmental performance of the NEM to date is discussed and three options for reform are presented: the implementation of a new NEO, reinterpretation of the current NEO, and work within the status quo.

This Discussion Paper concludes that, while a new NEO is needed to ensure proper consideration of environmental concerns, there is currently not the will within the NEM institutional framework to implement this reform. In the alternative, the Discussion Paper proposes a broader interpretation of both 'consumer interest' and 'efficiency' in order to provide long term win-wins for consumers and the environment.

The National Electricity Objective

Section 7 of the National Electricity Law (NEL) states:

> *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.*[1]

The NEO is the guiding principle of the NEM, and its centrepiece – the long term interest of consumers – is often referred to in regulatory processes. However, it is not operationalised in the NEL. That is, there is no legal requirement for regulators and market participants to adhere strictly to the NEO; it remains a high-level objective.

History of the environment in the NEO

There have been a number of steps along the road to the (still incomplete) implementation of the national market. Some of these included objectives and goals that included environmental sustainability, as well as other issues such as affordability. For example, the First Issue of the National Grid Protocol (1992) had one overarching goal, similar to the current NEO, which was:[2]

> *To encourage the most efficient, economical and environmentally sound development of the electricity industry consistent with key National and State policies and objectives.*

Later, in 2001, the Council of Australian Governments agreed on a number of national energy policy objectives, including:[3]

> *Mitigating local and global environmental impacts, notably greenhouse impacts, of energy production, transformation, supply and use.*

The excision of the environment from the NEO, which was promulgated in 2005,[4] is rumoured to have been at the behest of a particular senior Commonwealth bureaucrat with an anti-environmental agenda. Whether or not this is correct, its excision is unfortunate. One commentator called this change a "somewhat remarkable legislative turn of events".[5] The *Australian Energy Market Agreement* (2004 and 2006)[6] continued to include environmental concerns, but failed to allocate responsibility to any of the NEM's governing bodies.

Nonetheless, the *Energy White Paper* (2012) continues to place environmental considerations at the centre of energy policy, stating:[7]

> *At its core, the Australian Government's energy policy framework is based on a clear vision of building a secure, resilient and efficient national energy system that [inter alia] delivers clean and sustainable energy.*

[1] NEL, s 7.

[2] National Grid Management Council, National Grid Protocol (First Issue 1992).

[3] Council of Australian Governments, *COAG Energy Policy Details: Towards a National Energy Policy* (2001).

[4] 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.

[5] Rowena Cantley-Smith & Diana Bowman (eds), *Green Power: An Environmental Audit of the National Electricity Market* (2009) 25.

[6] Australian Energy Market Agreement, (2004).

[7] Department of Resources Energy and Tourism, *Energy White Paper: Australia's energy transformation* (2012). The 2004 White Paper, and its 2006 update, also incorporated similar statements regarding environmental sustainability

Externalisation of environmental issues

One result of having no environmental sub-objective in the NEO is that the environment is seen as external to the operation of the NEM, which does not take account of any of the long-run environmental costs of producing and supplying electricity, such as greenhouse gas emissions. For instance, NEMMCO, the predecessor body to the AEMC stated in 2008 that "Environmental benefits, unless explicitly priced, are externalities".[8] More recently the AEMC's John Pierce[9] commented:[10]

> *The way I think about it is with a football team analogy: everyone on the team has the same objective; it is just that we have different positions and different roles… Our role in relation to rules that relate to economic efficiency is part of one role in what people expect out of this sector. There are other manifestations of government that obviously deal with environmental issues in a systemic sense, such as climate change and, in a local sense, land use planning and emissions… You could make the same comment about suggestions around social objectives. Again, there are other parts of government that address that.*

As such, the NEM does not provide price signals to foster research, development and deployment of renewable energy, energy efficiency or demand management. Policy instruments such as emissions trading that aim to price environmental impacts, and industry development policies like the Renewable Energy Target, are required to correct the structural flaws in the energy market, and in doing so serve to entrench the status quo, i.e. that the environment is something external to energy supply.

Inclusion of the environment in pre-NEM state-based regimes

Prior to the creation of the NEM and the privatisation of electricity assets, state-owned electricity companies were required to account for the environment. The *State Owned Corporations Act 1989* (NSW), for example, has a section entitled *Principal objectives of company SOCs*, which states that

> *(c) where its activities affect the environment, to conduct its operations in compliance with the principles of ecologically sustainable development contained in section 6 (2) of the Protection of the Environment Administration Act 1991.*

In NSW, before the regulation of distribution networks was handed to the AER, the regulation of networks was carried out by IPART, which had ecological sustainability as a core objective. The *Independent Pricing and Regulatory Tribunal Act* (1992) stated that, when making a pricing determination, the Tribunal may have regard to "the need to maintain ecologically sustainable development", "appropriate pricing policies to protect the environment" and "considerations of demand management… and least cost planning".[11]

Likewise, the Queensland's *Electricity Act 1994* has as its overall objective:

> *[to] set a framework for all electricity industry participants that promotes efficient, economical and environmentally sound electricity supply and use.*[12]

[8] NEMMCO. 2008. NEMMCO submission of stage 2: issues paper – review of demand-side participation in the national electricity market. Source: http://www.aemc.gov.au/pdfs/reviews/Review%20of%20Demand-Side%20Participation%20in%20the%20National%20Electricity%20Market/submissions2/016NEMMCO.pdf. Last accessed: 1 April 2009. Page 2.

[9] A Commissioner of the AEMC.

[10] The Senate Select Committee on Electricity Prices, *The Senate Select Committee on Electricity Prices: Reducing energy bills and improving efficiency* (2012) 78.

[11] Independent Pricing and Regulatory Tribunal Act 1992.

[12] Section 3(a).

Confused state/federal responsibility

The lack of an environmental objective in the NEO has caused issues with delineating the responsibilities of state and federal governments. This occurs, for example, in the infrastructure planning process. The AER administers the Regulatory Investment Tests for Transmission and Distribution (RIT-T/D), which is a purely economic test to determine whether an investment is economically efficient. TEC has repeatedly argued that these tests are inherently deficient, but this is worsened by the fact that state governments have treated compliance with the AER's RIT processes for a proposed network investment as tantamount to a determination from the AER that a project is needed in order to meet electricity demand and/or reliability criteria.

This is incorrect. The AER does not approve projects; it merely ensures that the regulatory tests have been complied with. It does not currently have the mandate or the resources to carry out its own independent assessment of projects submitted to it under regulatory tests.

Thus, compliance with a regulatory test does not mean that a project is justified, let alone necessary or urgent. Given that the RIT processes are essentially box-ticking exercises undertaken by networks for their own benefit, the lack of environmental oversight from either the state or federal government gives networks a free pass to undertake costly and environmentally damaging investments.

A further example is that some conservative state governments are currently using the implementation of a price on carbon to justify the retraction of environmental and energy programs. [13] This does not account for the fact that the Federal Government's price on carbon cannot, nor is intended to, drive the necessary transformation of energy reform in the absence of deeper regulatory reform and policy efforts. It also ignores the fact that the current carbon price is not set at a level that would rationally internalise all relevant environmental impacts of climate change; rather, it is a politically expedient price.

Environmental outcomes

The TEC/ISF 2012 N*EM Report Card* asked stakeholders how well they thought the NEM was performing against the criteria currently included in the NEO and another set which are currently excluded. The NEM was generally seen as performing quite well in terms of security of supply, quality, safety and reliability, though over half of stakeholders though performance on price was below average. By contrast, the NEM was perceived as being particularly weak on environmental performance, demand management and customer energy efficiency.[14]

Demand-side participation (DSP) provides one clear example. The NEM was intended to be a two-sided market, with electricity needs being met both through traditional centralised generation and supply, and through demand-side initiatives.[15] Yet the NEM has encouraged little demand-side activity to date. Whereas demand side activity represents 4% of peak demand requirements in the Western Australia electricity market and 6% in California, only around 1% of peak demand in the NEM is met with demand side measures.[16] A survey of network DM in the NEM found that in 2010/11 networks saved 51.3 gigawatt hours of electricity during the summer peak, just 0.02% of energy used in that year. The equivalent percentage in the US was 4.4%.[17] A survey of stakeholder perceptions of the barriers to DSP and found that

[13] http://www.climatespectator.com.au/commentary/abdication-climate-policy

[14] Chris Dunstan et al., *The NEM Report Card: how well does the National Electricity Market serve Australia* (2012) vii.

[15] David Crossley, *Demand-Side Participation in the Australian National Electricity Market: A Brief Annotated History* (2011).

[16] See Futura Consulting, *Power of choice – giving consumers options in the way they use electricity* (2011).

[17] See Chris Dunstan, Nicole Ghiotto & Katie Ross, *Report on the 2010 Survey of Electricity Network Demand Management in Australia*.

the lack of an environmental criterion in the NEO was one of the biggest barriers to increased DSP, second only to the lack of coordination between the state and federal levels of government.[18]

The pace of reform, both regarding DSP and other areas of the NEM, is hampered by the lack of an environmental objective. For example, the AEMC commenced its Power of Choice review into the lack of DSP in the NEM in 2008. This review concluded in late 2012, but it is expected that it will take two more years to develop and implement the recommendations as Rule changes, and some years after that for there to be any measurable effects.

Feed-in Tariffs (FiTs) are a further example. FiTs are widely acknowledged to be one of the most effective methods for increasing renewable energy generation, but the approach in Australia has been fragmented and intermittent, resulting in perverse outcomes, creating dangerous boom-bust cycles for the fledgling PV industry and undermining consumer confidence.[19] These fractured and inadequate state-run FiTs do not recognise the true value that grid-connected solar systems contribute to the electricity system, as well as to the economy as a whole and the reduction of greenhouse gas emissions. At present, many states have eradicated mandated FiTs, instead leaving consumers at the mercy of retailers, who are free to set their own FiT, or not to offer one at all.

Connection of large-scale renewable energy projects has also proved problematic in the absence of an environmental sub-objective. At present, large-scale generators have to negotiate on a commercial basis with the TNSP for connection to the network, and are at the mercy of these monopolies in respect of the speed, cost and conditions of connections. The Ministerial Council on Energy asked the AEMC to look into a rule change to allow large-scale renewable generators to share network augmentation and connection costs, but, in the absence of environmental considerations, the AEMC failed to deliver a rule change that can significantly improve the connection process.[20]

The NEO, efficiency and the primacy of the interests of consumers

The NEO is essentially an efficiency-based goal. The emphasis on economic efficiency reflects the regulatory environment in the 1990s when the current electricity market was created. This occurred in the context of a global paradigm shift in the dominant model for provision of essential services, from a vertically integrated, state-based model, to a market model aiming to provide essential services cheaper and more efficiently.

While the AEMC claims to take a broad approach to the NEO, acknowledging that "improvements in economic efficiency and the long term interests of consumers may not coincide",[21] it appears that in fact efficiency is now the driving rationale and end goal for the NEM.

The expert panel reviewing the Limited Merits Review Regime noted that the regulatory framework is not currently ensuring primacy of the long term interests of consumers and is instead focused too heavily on efficiency as an end in itself, making the "manifest economic error that promoting economic efficiency necessarily serves this purpose".[22] The panel called for this to be rectified, saying that the long term interests of consumers is "the ultimate test" and that "there should be no displacement of ends (consumer

[18] Chris Dunstan, Katie Ross & Nicole Ghiotto, *Barriers to Demand Management: A Survey of Stakeholder Perceptions* (2012).

[19] http://theconversation.edu.au/set-reasonable-pv-feed-in-tariffs-or-expect-perverse-outcomes-11054

[20] Glen Wright, "Facilitating efficient augmentation of transmission networks to connect renewable energy generation: the Australian experience" (2012) 44 *Energy Policy* 79–91.

[21] AEMC, personal communication, December 2012.

[22] George Yarrow, Michael Egan & John Tamblyn, *Review of the Limited Merits Review Regime: Stage Two Report* (2012) 4.

interests) by means to those ends such as economic efficiency, not least because not all efficient outcomes are in consumers' interests".[23]

The environment, electricity and consumers

The environment relates to consumers in two overlapping ways. Firstly, because the existing NEO criteria are increasingly related to environmental outcomes, e.g. because the carbon price and other 'green schemes' contribute to price increases, and because DSP has both environmental and price benefits.

Consumers are also aware of these linkages. A 2012 Newspoll survey,[24] commissioned as part of TEC's DSP Communications Project, found that consumers are aware that price rises are increasing, and correctly identify rising network charges as the primary cause. Consumers also overwhelmingly believe that they can do more to reduce their energy consumption, but believe that it should be a shared effort, with suppliers and governments also playing their part. More generally, in spite of fluctuations, there remains a high level of community concern about climate change and other environmental issues.[25]

Secondly, the environment forms part of the long term interests of consumers. There is a high engagement with renewable energy and energy efficiency schemes. AGL estimates that in the 2008-2012 period, there were almost 2 million solar PV installations in Australia.[26] Rising prices are boosting solar PV uptake,[27] and, contrary to the perception of solar panels being a middle class subsidy, solar PV is installed by a range of consumers, predominantly lower-income consumers and those in 'mortgage-belt' suburbs.[28] Almost 25,000 Australians have signed a petition calling for a national gross FiT.[29]

There are also 747,229 solar hot water systems installed,[30] and close to 800,000 customers, mostly residential, that have made the choice to pay more for their electricity in order to ensure that it is generated using renewable energy through the Greenpower scheme.[31]

In spite of fluctuating government support, [32] most consumers support energy efficiency,[33] and close to 90 per cent of Australians are already taking steps to limit their personal electricity use.[34] Gathering statistics on the uptake of specific energy efficiency measures by consumers is difficult because the approach to policy in Australia has been piecemeal and overlapping.[35] However, the Victorian Energy Efficiency Target resulted in 932,511 energy efficiency installations over the 2009-2012 period,[36] while the South Australia

[23] Ibid 4.

[24] Newspoll asked 702 adults across the 5 main capital cities a range of electricity-related questions.

[25] See e.g. Department of Environment Climate Change & Water (NSW), 'Who Cares about the Environment in 2009? A survey of NSW people's environmental knowledge, attitudes and behaviours'.

[26] http://aglsolarenergy.com.au/solar-news/2012/12/uptake-of-solar-power-in-australia-infographic/

[27] http://www.energyfarm.com.au/news/general_solar/solar-power-uptake-in-australia-boosted-by-electricity-price-hikes/

[28] http://www.theaustralian.com.au/news/far-from-being-middle-class-welfare-solar-panel-uptake-is-surprisingly-strong/story-e6frg6n6-1226509846413

[29] See http://www.feedintariff.com.au/.

[30] http://www.climatechange.gov.au/en/government/initiatives/~/media/government/initiatives/solar-hot-water/rebs-final-report-pdf.pdf

[31] 737,263 small consumers and 47,832 commercial consumers. See National GreenPower Accreditation Program, Quarterly Status Report, Q2 2012 http://www.greenpower.gov.au/News/GreenPower-Quarterly-Report-Published/~/media/A7F771C46AE347E9A2F24A000BAE1AAD.pdf

[32] The International Energy Agency notes that Australia "has not consciously or explicitly targeted world best practice in energy efficiency policy and, by comparison with other countries, has significant gaps in its energy efficiency policy armoury" (http://www.climatechange.gov.au/~/media/submissions/pm-taskforce/report-prime-minister-task-group-energy-efficiency.pdf 36).

[33] http://www.climatechange.gov.au/~/media/submissions/pm-taskforce/report-prime-minister-task-group-energy-efficiency.pdf 100.

[34] http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4626.0.55.001main+features42011-12

[35] http://www.climatechange.gov.au/~/media/submissions/pm-taskforce/report-prime-minister-task-group-energy-efficiency.pdf 37

[36] https://www.veet.vic.gov.au/Public/Pub.aspx?id=295 20

Residential Energy Efficiency Scheme benefited 166,819 premises in 2009-2011.[37] Other discrete energy efficiency programs have been successful, e.g. the Federal Government's insulation program, which became a victim of its own success as 2 million homes took advantage of the program.[38]

Calls for change

The Institute for Sustainable Futures notes that "the choice of which criteria should be included in the NEO has been contentious since the establishment of the NEM",[39] and a range of consumer, environmental and business groups have called for a change to the NEO to better reflect environmental and social concerns. In 2007, a coalition of seven such groups came together to issue the *Power for the People Declaration.*[40] These organisations involved stated that they had 'strong misgivings' about the current structure of the NEM and:

> *believe that it does not address deep seated environmental and social concerns held by the Australian community… [M]arket regulators cannot take social or environmental issues into account [and] it is clear that the market, left to its own devices, will not produce good social and environmental outcomes.*

As electricity prices and concern for the environment rise, there is increasing doubt that the NEO is able to deliver win-win outcomes for consumers and the environment. Most recently the Review of the Limited Merits Review process called for amendment of the NEO and a Senate Select Committee on Electricity Prices recommended that the AEMC "consider how the NEO could be amended in a way that would ensure operation and regulation of the electricity market in ways consistent with broader environmental policy objectives".[41]

Reforming the NEO: potential outcomes

Changing the NEO could result in a number of potential outcomes, which can be described as falling into two categories:

- Outcomes resulting from the pervasive nature of the NEO, i.e. a change in the NEO changes all NEM decision-making. The overall change would be that environmental considerations would be factored into all decisions.
- Outcomes resulting from proposed reforms that are difficult to justify in the absence of an environmental objective – e.g. a national FiT.

The outcomes are potentially wide-ranging, from relatively minor changes to broader reforms affecting the whole market. We present a number of possible outcomes along this spectrum below.

Improved transparency

At the very least, the current lack of transparency surrounding environmental outcomes would be improved if the NEO had an environmental sub-objective. For example, in late 2012 TEC commissioned the ISF to undertake the first stage of a project to disclose the fuel mix of retailers in the NEM. Retailers are not

[37] http://www.escosa.sa.gov.au/library/120629-REES_2009-2011SummaryReportCard.pdf

[38] http://www.brisbanetimes.com.au/queensland/insulation-scheme-a-victim-of-its-own-popularity-20100210-nrvz.html

[39] Chris Dunstan et al., *The NEM Report Card: how well does the National Electricity Market serve Australia* (2012) v.

[40] Total Environment Centre et al., *Power for the People Declaration* (2007).

[41] The Senate Select Committee on Electricity Prices, *The Senate Select Committee on Electricity Prices: Reducing energy bills and improving efficiency* (2012) 4.81.

required to disclose the fuel mix that they use to provide consumers with electricity, limiting consumers' ability to make choices based on environmental considerations such as whether or not retailers have investments in coal seam gas.[42] Without an environmental criterion in the NEM, it is difficult to justify a rule change to improve transparency, even though this would clearly benefit consumers.

Improved connection process for large-scale renewables

As discussed above, the current process for the connection of renewable energy generators is not fit for purpose, resulting in delays or a decision not to invest. Having to account for the environment would start to rewrite the out-dated norms of the NEM, favouring renewable energy development, rather than the entrenched generators for whom the rules were original written.

Nationally-harmonised FiT

A national FiT would bring many benefits beyond those that relate to the environment, yet a FiT is still perceived as an environmental measure. The inclusion of the environment in the NEO would provide a strong impetus for a national FiT.

Aligning the NEM with environmental policy

The NEM is not aligned with national environmental measures such as the RET and the price on carbon, meaning that the outcomes of the NEM are often not in line with federal policy. A report commissioned by TEC in 2009 noted that

> *The lack of alignment between climate change, energy efficiency and NEM policies would be transformed into a first order issue if an environmental or carbon objective were to be incorporated into the NEM objective. This could also provide an incentive for greater alignment between the climate change and energy portfolios.*[43]

Economic regulation of networks

The inclusion of the environment in the NEO would likely provide great improvement to the economic regulation of networks, which have been proven in recent years to be adept at exploiting regulation that is skewed toward capital investment in order to extract high profits ("gold-plating"). As seen in a recent Rule change proposal, the AER feels that it has little power to curb such expenditure.[44]

While current assessments of network expenditure are based only on narrowly conceived economic efficiency, the addition of an environmental sub-objective would allow the AER to make a broader and more holistic assessment of proposed projects. It is very likely that such considerations would result in the conclusion that many projects represent a poor environmental outcome and that a non-network alternative is available that could meet demand forecasts, while maintaining economic efficiency.

Similarly, the RITs, discussed above, would become much more than a tick-box exercise under a more complete NEO. The regulator, rather than simply approving the plans of NSPs, would assess them for their environmentally suitability. Many highly capital-intensive projects would not pass such an assessment.

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[42] Jenni Downes et al, Electricity Retailer Fuel Mix Disclosure: Briefing note for TEC, ISF, January 2013.

[43] Jim Stockton, "Role of the NEM in responding to climate change policies" (2009).

[44] http://aemc.gov.au/Electricity/Rule-changes/Completed/economic-regulation-of-network-service-providers-.html.

Inclusion of environmental externalities in wholesale price

Ultimately, there is potential for an environmentally-inclusive NEO to result in the inclusion of environmental costs in the wholesale price of electricity. This would mean that the true costs of current generation patterns were made clear, providing a level playing field for renewable energy sources, and paving the way for a transition of the NEM from an unsustainable centralised system, to an electricity system based on distributed renewables, DSP and energy efficiency.

Options for reform

Option one: a new NEO

The most straightforward way of rectifying the issues with the current NEO would be to introduce an environmental sub-objective to the NEO, reflecting the intention throughout the development of the NEM that environmental considerations would play a role in NEM decision making.

A reformed NEO would address:

> *the long term interests of consumers of electricity with respect to—*
>
> *a) price, quality, safety, reliability, **environmental sustainability** and security of supply of electricity*

Environmental sustainability could in turn be defined as

> *Contributing to achieving ecologically sustainable development, having regard to the effect on the environment of the generation, transmission, distribution, supply and use of electricity and related activities, including achieving a permanent reduction in annual greenhouse gas emissions from the electricity sector (tonnes CO2e/year), a reduction in greenhouse gas intensity of electricity supply (kg CO2e/MWh) and an increase of renewable energy as a proportion of total electricity generation (% of total MWh).*

As the NEO is contained in a piece of legislation, this legislation would need to be amended, i.e. it is not a case of simply commencing a rule change through the AEMC's usual Rule change process. The NEO was implemented through an Act passed in South Australia, then replicated in all other states pursuant to a COAG agreement. Changing the NEO would therefore require agreement of all jurisdictions, through SCER and/or COAG, followed by the passing of legislative amendments in all jurisdictions.

Option two: reinterpreting the current NEO

Option two is to broaden our interpretation of the NEO. Two key aspects of the NEO leave open the possibility of interpreting it more broadly so as to include environmental and social concerns:

- "the long term interest of consumers"; and
- "efficient investment in, and efficient operation and use of, electricity services"

Long term interest of consumers

What constitutes the long term interest of consumers is defined in five sub-objectives. In theory, these criteria could be taken to be an indicative, rather than exhaustive, list. In the NEM Report Card, the Institute for Sustainable Futures considers this approach noting:

> *the objective is not clearly defined. The limited set of criteria included in the NEO creates potential conflicts both with other relevant criteria which are excluded and with the broader "long term interests of consumers".*[45]

However, legal advice provided to TEC suggests that this approach is not likely to carry legal weight.

Efficiency

There are two facets to the reinterpretation of efficiency in the NEO. Firstly, there is a need to ensure that it the interests of the consumer, not efficiency in itself, that is the central consideration. The Review of the Limited Merits Review process recommended a simple amendment to ensure that efficiency does not supersede the interests of consumers and become an end in itself. The panel suggested a small amendment of the NEO from "*efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers"* to "*efficient investment in, and efficient operation and use of, electricity services* ***in ways that best serve*** *the long term interests of consumers".*[46] While TEC considers this change to be insubstantial, it does emphasise the need both to reconsider the NEO and to consider what is mean by efficiency.

Secondly, the NEO must be interpreted as requiring a balancing of different types of efficiency. While efficiency broadly refers to making the best use of resources among competing ends so that economic and social welfare is maximised over time, there are a number of types or facets of efficiency:

- Allocative efficiency: the most efficient allocation and use of resources
- Productive efficiency: producing outputs at least cost
- Dynamic efficiency: new or innovative ways to produce outputs, but also recognising that decisions about investment have long term impacts
- Social efficiency: maximization of social welfare

Any assessment of efficiency will typically require a balancing of different kinds of efficiency. There are trade-offs among these various dimensions that must be resolved by balancing or weighting of the different elements. This balancing requires a value system beyond the notion of pure economic efficiency alone. This is what the reference to 'for the long term interests of consumers' in the NEL is intended to mean and the NEO must therefore be reinterpreted to ensure that this balancing takes place. In environmental terms, this would require a consideration of dynamic efficiency to ensure that decisions taken today do not lock in poor long term environmental outcomes.

The intersection of price and environmental issues provides a pertinent example. The current interpretation of price is the short-run marginal cost of producing electricity, i.e. $/MWh to generate electricity at a given moment in time. However, if pricing is to be genuinely reflective of cost, long term externalities should be included in the price of electricity. The Australian Academy of Technological Sciences and Engineering, in their 2009 study *The Hidden Costs of Electricity: Externalities of Power*

[45] Chris Dunstan et al., *The NEM Report Card: how well does the National Electricity Market serve Australia* (2012) iii.

[46] George Yarrow, Michael Egan & John Tamblyn, *Review of the Limited Merits Review Regime: Stage Two Report* (2012) 38.

Generation in Australia,[47] estimates that, based on a CO2 cost of $31/tonne, "greenhouse gas damage costs for currently deployed fossil fuel technologies in Australia range from $A18/MWh for natural gas to $A39/MWh for brown coal".[48] By contrast, the externality costs for renewables varied between $1.50 for wind to $5 for solar PV.

However, as discussed above, the AEMC does not support internalising environmental externalities.

Option three: ignore the NEO

The third option represents TEC's current approach to NEM advocacy: focusing on win-wins for consumers and the environment, within the current structure of the NEO. This also represents the 'do nothing' option for policymakers, with no reform taking place.

Within the current framework there opportunities to improve energy efficiency, for example through external interventions such as the proposed National Energy Saving Initiative, increasing peak demand reduction activities and securing fair payment for solar PV generation that is exported to the grid.

However, there are drawbacks to this approach. Firstly, it is clear that this will always be limited: without changing the driving rationale for the NEM, the environment will always be marginalized and externalised. Secondly, short-term consumer and environmental interests do not always coincide. For example, the carbon price, while benefiting consumers in the long term, results in short-term price increases. Likewise load shifting reduced peak demand and lowers prices over time, but may result in some short-term loss of amenity.

Reforming the NEO: common concerns

The main concern expressed by opponents of a reformed NEO is that an environmental criterion will conflict with other criteria of the NEO, resulting in difficulties in decision-making. However, the NEO already has competing criteria (especially price versus reliability), and there is no reason to believe that the institutional framework and regulatory bodies are incapable of balancing a further consideration.

Price and reliability provide a pertinent example of how opposing criteria can be mediated. Increasing reliability ultimately results in an increase in prices, meaning that there has to be some trade-off between the two. As a result of discontent regarding rising prices, the NEM is currently undergoing a process to determine how best to balance reliability outcomes and price,[49] reviewing the way reliability standards are set and trying to ensure that states are not setting excessive reliability standards.

There is a second concern that adding an environmental criterion would introduce an unnecessary external factor into the NEM framework. This is fallacious for two reasons. Firstly, environmental sustainability is inextricably linked to electricity supply, and is no more 'external' than the other factors included in the NEO. For example, safety[50] could equally be seen as external and left to be regulated through external channels, e.g. OH&S laws.

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[47] Australian Academy of Technological Sciences and Engineering, *The Hidden Costs of Electricity: Externalities of Power Generation in Australia* (2009).

[48] Additional to the existing wholesale price.

[49] AEMC, Review of the national framework for transmission reliability and Review of the national framework for distribution reliability, <http://www.aemc.gov.au/Market-Reviews/Open/review-of-the-national-framework-for-distribution-reliability.html> and <http://www.aemc.gov.au/Market-Reviews/Open/review-of-the-national-framework-for-transmission-reliability.html >respectively.

[50] Assessed in the NEM Report Card using the metric of 'lost time injury frequency'

More importantly, as stated earlier the NEM already has an environmental mandate via the Australian Energy Market Agreement (2006) which refers to an "open and competitive national energy market [that] will contribute to improved economic and environmental performance".[51] The problem is not that the environment is external to the NEM, but that decision makers have not been conscientious in delivering on the full mandate of the NEM outside the current narrowly-defined NEO.

It is worth noting, in response to each of the concerns outlined above, that a number of jurisdictions overseas have successfully implemented provisions similar in function to the NEO, and do not appear to have had substantial difficulty in doing so. A number of these are outlined in an annex to this paper.

Where to from here?

TEC believes that the current period of reform of the NEM is the ideal time for an open discussion about the inclusion of environmental, and social, criteria in the NEO. Further research is required into what impact such a reform would have and the ways it could best be approached. In the meantime, and until the will to make these necessary reforms exist, our best option is to aim for reforms that sit within the current NEO and represent win-wins for both consumers and the environment.

[51] Australian Energy Market Agreement, (2006).

Annex one: overseas examples

The UK

"Ofgem's duty to contribute to the achievement of **sustainable** development was introduced in 2004. In 2008, the Energy Act promoted this duty, placing it on an equal footing with our duties to meet reasonable demand and financing authorised activities. The Act also highlighted that our principle objective, to protect the interests of consumers, refers to future as well as existing consumers. These changes underline Ofgem's important and developing role in shaping the future of gas and electricity industries in a sustainable manner."[52]

Canada

The National Energy Board of Canada regulates "pipelines, energy development and trade in the Canadian public interest" which is "inclusive of all Canadians and refers to a balance of economic, environmental and social considerations that changes as society's values and preferences evolve over time."[53]

The US

The US Federal Energy Regulatory Commission's goal is:

> *Reliable, Efficient and Sustainable Energy for Customers: Assist consumers in obtaining reliable, efficient and sustainable energy services at a reasonable cost through appropriate regulatory and market means.*[54]

The EU

> *Member States shall ensure, on the basis of their institutional organisation and with due regard to the principle of subsidiarity, that, without prejudice to paragraph 2, electricity undertakings are operated in accordance with the principles of this Directive with a view to achieving a competitive, secure and environmentally sustainable market in electricity, and shall not discriminate between these undertakings as regards either rights or obligations.*[55]

New Zealand

The Electricity Commission is a Crown entity set up under the Electricity Act to oversee New Zealand's electricity industry and markets. Under the Electricity Act 1992, the principal objectives of the Electricity Commission are "to ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable, and environmentally sustainable manner; and to promote and facilitate the efficient use of electricity."[56]

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[52] UK (Department of Energy and Climate Change, 'Electricity Market Reform: Consultation Document' (The Stationery Office, December 2010).

[53] National Energy Board, 'Strategic Plan' (2011) available at http://www.neb-one.gc.ca/clf-nsi/rthnb/whwrndrgvrnnc/strtgcpln-eng.html.

[54] Federal Energy Regulatory Commission, 'About Us' http://www.ferc.gov/about/about.asp.

[55] Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity.

[56] Section **172N.**

California

The Warren-Alquist State Energy Resources Conservation and Development Act[57] contains a number of provisions similar to an environmental objective, including the following at § 25000.1:

> *in addition to their other ratepayer protection objectives, a principal goal of electric and natural gas utilities' resource planning and investment shall be to minimize the cost to society of the reliable energy services that are provided by natural gas and electricity, and to improve the environment and to encourage the diversity of energy sources through improvements in energy efficiency and development of renewable energy resources, such as wind, solar, and geothermal energy.*

This section also promulgates a DSP objective:

> *in addition to any appropriate investments in energy production, electrical and natural gas utilities should seek to exploit all practicable and cost-effective conservation and improvements in the efficiency of energy use and distribution that offer equivalent or better system reliability, and which are not being exploited by any other entity.*

Finally, the Act also refers specifically to the internalisation of environmental externalities:

> *In calculating the cost effectiveness of energy resources, including conservation and load management options, the commission shall include a value for any costs and benefits to the environment, including air quality.*

[57] http://www.energy.ca.gov/reports/Warren-Alquist_Act/