

Dr Kerry Schott
Chair, Energy Security Board
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13 July 2018

Re: Energy Efficiency Council Response to Draft Detailed Design Consultation Paper - National Emissions Guarantee

Dear Dr Schott

This paper sets out the Energy Efficiency Council's (EEC) response to the National Energy Guarantee (NEG) Draft Detailed Design Consultation Paper.

The EEC sees the potential benefits for the NEG in aligning policies that reduce the emissions intensity of energy supply and improve reliability. Accordingly, the EEC has written to Australia's governments encourage them to collaborate in good faith on the development of the NEG.

However, the EEC strongly recommends that the Energy Security Board (ESB) complement the NEG with a series of measures to improve the management of energy demand and better align energy demand and energy supply by:

- Driving priority energy market reforms, including allowing consumers and intermediaries to sell demand response into wholesale energy markets. An effective demand response mechanism will create low-cost dispatchable capacity in the wholesale energy market that can both support the Reliability Obligation if it is triggered, and avoid the triggering of the Reliability Obligation;
- Setting up a process to unlock the potential of energy management both through National Electricity Market (NEM) rules and processes, and through policies that are outside the NEM (e.g. appliance standards); and
- Recommending that the COAG Energy Council properly fund and implement the National Energy Productivity Plan (NEPP).

The way that energy is used has significant impacts on both emissions and reliability, but governments and institutions have consistently paid insufficient attention to energy management since the formation of the NEM.

The EEC congratulates the ESB for the efforts that it has already made to raise the profile of managing energy use, and we welcome the focus on demand response in the NEG's Reliability Requirement. While the Emissions Requirement solely focuses on generation, we believe this is appropriate **as long as there are complementary mechanisms that reduce emissions by driving improvements in energy efficiency**. The NEG must be *explicitly* complemented by other measures to have a positive impact on the NEM.

If Australia's approach to reduce emissions in the electricity sector ignores the potential for low (and negative) cost greenhouse gas abatement through energy efficiency it will massively increase the cost of reducing emissions while missing out on huge opportunities to improve economic productivity, equity and community health.

Energy management, which includes both energy efficiency and demand response, is the largest and cheapest form of reliable capacity in the electricity sector (see Attachment A). The International Energy Agency (IEA) estimates that energy efficiency has delivered more capacity to global energy markets than any other fuel or type of generation. This means that tapping the potential of energy management is central to reliability and affordability.

Energy management is also the largest and cheapest form of greenhouse gas abatement in the electricity sector. The IEA estimates that energy efficiency delivered 75 per cent of abatement in the global energy sector between 2014 and 2016. Going forward, ClimateWorks estimates that energy efficiency can deliver as much abatement in Australia as the shift to renewable generation. Attempting to reduce emissions in the electricity sector while ignoring energy efficiency will fail to deliver abatement at the lowest cost.

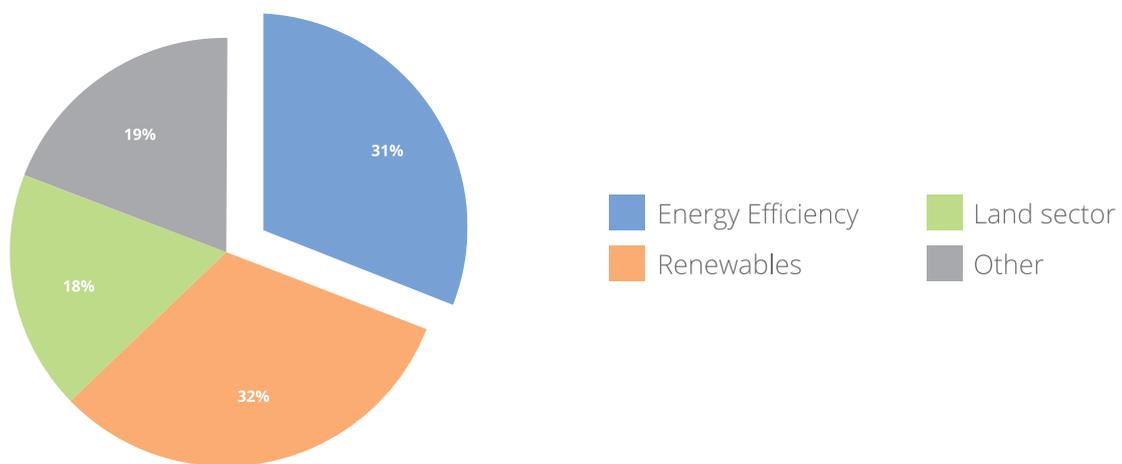


Figure 1. Abatement potential in Australia to 2030

Source: ClimateWorks Australia and WWF 2015, *A prosperous, net zero pollution Australia starts today*.

CSIRO’s 2017 *Low Emission Technology Roadmap* considered a number of scenarios for the future of Australia’s energy market. CSIRO found that scenarios with ambitious energy productivity (a measure of energy efficiency) improvements resulted in lower wholesale electricity prices and delivered lower energy bills to households than any other scenario. This was partly because the degree to which Australia improves its energy productivity determines the speed that generation needs to transition to low-carbon generation.

The EEC’s believe that the ESB has a major role to play not only directly facilitating demand response and energy efficiency, but also advocating for programs outside the NEM, such as minimum standards for buildings and appliances. If we fail to unlock the huge potential of energy management and coordinate it with supply-side measures, we will fail to ensure that electricity is reliable, sustainable and affordable.

The EEC recommends that the ESB:

1. Meet with the EEC and its members to discuss energy policy

The EEC seeks a meeting with the Chair and Deputy Chair of the ESB as soon as possible.

2. Drive priority energy market reforms to enable demand response

In order to ensure that the Reliability Guarantee isn't triggered, the ESB needs to reform the NEM to unlock the potential for demand response during normal operation of the energy market. In particular, we urge the ESB to ensure the rapid introduction of two measures that were recommended by the *Finkel Review* and are currently being considered by the Australian Energy Market Commission's *Reliability Frameworks Review*, specifically:

- A mechanism to facilitate energy users, aggregators and retailers selling demand response into the wholesale energy market; and
- A strategic reserve that can be used in instances of generator or network failures.

3. Set up a program to unlock energy management without and outside the NEM

The reforms discussed above would substantially improve demand side participation in the NEM, but more reforms are required. Numerous reviews have identified a serious supply-side bias in the NEM, such as the 2002 *COAG Energy Market Review* led by Warwick Parer AM. On page 174, the *Parer Review* states:

"The Panel found that there is a relatively low demand side involvement in the NEM because:

- *the NEM systems are supply side focussed*
- *the demand side cannot gain the full value of what it brings to the market*
- *residential consumers do not face price signals."*

A comprehensive program of reforms is required to address these market distortions.

4. Advise COAG to fund and enhance the National Energy Productivity Plan

The current design of the NEG's Emission Guarantee aims to drive improvements in the emissions intensity of generation and won't deliver increased energy efficiency. However, we know that the NEG needs to either directly drive energy efficiency or be complemented by other policies to ensure that energy bills remain affordable during the transition in the electricity sector.

The COAG Energy Council's NEPP sets out measures to improve energy efficiency, but has fallen off track. The NEPP currently lacks both the funding and governance model it needs to ensure that we meet even the current target to improve energy productivity by 40 per cent by 2030, let alone the more ambitious target that we need to transition our energy sector at lowest cost.

The ESB should recommend that the COAG Energy Council commit funding and set up an effective governance model to deliver an enhanced NEPP. If the ESB doesn't recommend an enhanced NEPP and work to ensure synergies between the NEPP and the NEM, the Emissions Guarantee will have to be completely redesigned.

It is deeply concerning that there has been limited progress in addressing the barriers to demand management in the last 16 years. The ESB has a major opportunity to improve the functioning of the NEM by correcting these well-known supply-side biases in the market, and we strongly recommend that the ESB make this a major priority.

In addition to driving changes in the energy market, the ESB should collaborate with other organisations (e.g. building regulators) to address issues that are outside the energy market but impact on the NEM. This will unlock the full potential of energy management and ensure that it is delivered in a way that delivers the maximum benefit to the NEM.

Summary

The EEC looks forward to working closely with the ESB to develop the NEG and associated energy management measures. I can be contacted directly on 0414 065 556 or via rob.murray-leach@eec.org.au.

Yours sincerely



Rob Murray-Leach
Head of Policy

Attachment A – Energy Management as Capacity

The way that homes and businesses use energy has a profound impact on Australia’s electricity system. While this point is self-evident, the demand-side of the energy market has often been an afterthought in energy policy, with negative impacts on the reliability and affordability of our electricity system.

A number of major reports have recently concluded that improvements in energy efficiency are critical to energy security, affordability, economic growth and sustainability. The International Energy Agency’s *Energy Efficiency Market Report 2017* found that:

- Energy productivity accounted for 75 per cent of the stabilisation of global greenhouse gas emissions from the energy sector in 2014-16. In contrast, investments in renewable generation and the shift in generation from coal to gas collectively delivered less than 25 per cent of the global stabilisation of emissions.
- Energy efficiency improvements since 2000 have reduced household energy bills in many developed nations by an average of 10 to 30 per cent.
- The UK and France were only able to meet their gas security targets due to improvements in energy efficiency.
- Global improvements in energy efficiency in 2016 increased global GDP by an estimated AUD \$2.8 trillion – twice the size of the entire Australian economy.

Both the Finkel Review and CSIRO’s *Low Emission Technology Roadmap* came to similar conclusions. The COAG Energy Council has already endorsed Recommendation 6.10 of the Finkel Review, namely:

Governments should accelerate the roll out of broader energy efficiency measures to complement the reforms recommended in this Review.

The NEG or any other mechanism that attempts to improve the reliability and sustainability of the NEM must consider how it will either directly support or positively interact with the demand-side of the market.

Homes and businesses don’t directly consume electricity - they use it for ‘energy services’ such as warm showers, cool homes and computing. Using energy efficiently reduces the amount of electricity that is required to deliver these energy services. For example, an LED light delivers the same service (light) as an old ‘incandescent’ bulb but uses over 80 per cent less energy. Similarly, altering the pattern of energy use (e.g. demand response) can deliver energy services with dramatically lower costs.

Put simply, energy management is a form of electricity capacity. Different forms of energy management provide different forms of capacity, in the same way that different forms of generation provide different forms of capacity. For example:

- Baseload - Improving the efficiency of an appliance that operates 24 hours a day delivers baseload capacity. Minimum standards for fridges alone deliver the equivalent capacity of half of the former Hazelwood generator.
- Variable - Improving the energy efficiency of appliances that operate during some periods of the day, such as residential air conditioning, provides capacity that varies over the day but in highly predictable ways.
- Peaking - Demand-response provides capacity in periods when demand significantly exceeds supply, such as heatwaves and periods of low output.

Calling energy management ‘capacity’ isn’t a poetic turn of phrase. Demand-side measures are formally considered as part of the energy market in many jurisdictions. Demand response provides around 10 per cent of the capacity in several large electricity markets, and even more in some smaller markets. Improvements in the way that energy savings are measured and verified means that other forms of energy management are now starting to be formally considered as capacity, with around 6 per cent of the capacity market in New England being delivered just by energy efficiency.¹

However, energy management delivers far more capacity than has been formally integrated into energy market mechanisms. Analysis of 11 IEA member countries from 1974 to 2010 found that energy efficiency investments had avoided 64 exajoules of energy consumption, which was larger than the supply provided by electricity and natural gas combined (see Figure 2).² As a result, the IEA now terms energy efficiency ‘the First Fuel’.

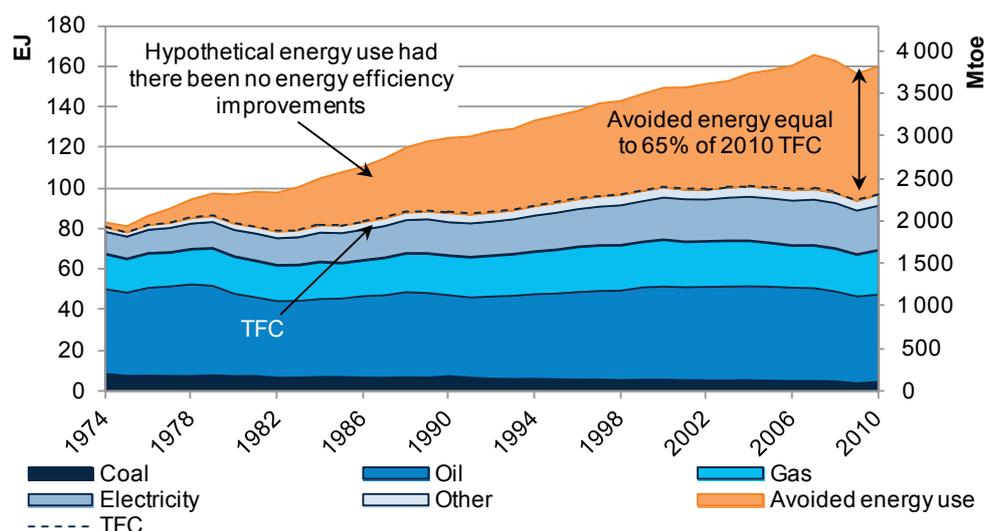


Figure 2. Energy efficiency in 11 countries provided more ‘capacity’ than any other fuel

Source: IEA 2013 Energy Efficiency Market Report 2013, Paris

¹ Liu, Y. (2017), Demand response and energy efficiency in the capacity resource procurement: Case studies of forward capacity markets in ISO New England, PJM and Great Britain, in Energy Policy 100, pp. 271-282.

² IEA 2013 Energy Efficiency Market Report 2013, Paris

The extraordinary potential for energy management to deliver capacity is only just starting to be understood. For example, following tsunami damage to the Fukushima Daiichi Nuclear Plant in 2011, Japan closed almost all of its nuclear generation capacity. Emergency energy conservation measures gradually transitioned to energy efficiency and demand response measures that delivered energy services with far less energy input. As a result, Japan managed to replace around 12 per cent of its electricity capacity by reducing demand in just a couple of years – an extraordinary feat.

Australia could meet homes and businesses needs for energy services at much lower cost by unlocking our untapped energy savings potential. Tapping this potential will improve both the affordability and reliability of our electricity system during the transition to lower emission forms of generation.

Many policy makers view energy management as an autonomous response by consumers, but it strongly influenced by market rules and regulations, and energy management strongly impacts the market. Therefore, governments around the world are increasingly not just facilitating energy management, but actively planning for it through '*integrated resource planning*'. Under this approach, policy makers use markets and other policies (e.g. minimum standards for buildings) to drive investment in the optimum combination of demand-side and supply-side capacity.

The ESB has a critical role in ensuring that Australia invests in the appropriate level of energy management to deliver to ensure that electricity services are affordable, reliable and sustainable. This will require:

- **Measures within the electricity sector**, such as demand response mechanisms and energy efficiency schemes. The ability to formally include energy management in energy markets is increasing with the increased sophistication of metering, measurement and verification; and
- **Measures outside the electricity sector**, such as energy efficiency standards for appliances, which the ESB should encourage.