AGL Energy Limited
ABN: 74 115 061 375
Level 24, 200 George St
Sydney NSW 2000
Locked Bag 1837
St Leonards NSW 2065
t: 02 9921 2999
f: 02 9921 2552
agl.com.au

Dr Kerry Schott AO

Chair, Energy Security Board

Submitted by email: **info@esb.org.au**

8 March 2018

National Energy Guarantee Consultation Paper

Dear Dr Schott,

AGL Energy (**AGL**) welcomes the opportunity to make a submission in response to the Energy Security Board's (**ESB**) National Energy Guarantee Draft Design Consultation Paper (**Consultation Paper**).

AGL is one of Australia's largest integrated energy companies and the largest ASX listed owner, operator and developer of renewable generation. Our diverse power generation portfolio includes base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources. AGL is also a significant retailer of energy, providing energy solutions to around 3.5 million customers throughout eastern Australia.

In addition, AGL is continually innovating our suite of distributed energy services and solutions for customers of all sizes. These behind-the-meter energy solutions involve new and emerging technologies such as energy storage, electric vehicles, solar PV systems, digital meters, and home energy management services delivered through digital applications.

Electricity generation accounts for approximately one third of Australia's greenhouse gas emissions inventory and represents the single largest source of domestic emissions. The electricity sector has an important role to play in meeting Australia's emission reduction targets, and its longer-term commitments under the Paris agreement.

AGL's position

We believe the piecemeal introduction of carbon reduction and renewables policies without a long-term commitment has produced unintended consequences for wholesale energy markets, as incentives for development and price signals have shifted over time. The lack of a certain long-term mechanism to address emissions reductions has been a significant contributor to increased risks and costs for energy market participants.

AGL therefore welcomes the ESB's proposed approach to integrate emissions reductions policy with energy policy through the proposed design of the National Energy Guarantee (**Guarantee**). With careful consideration given to the detailed design, we believe the Guarantee can contribute to a more sustainable energy market for the long-term benefit of customers in Australia. We look forward to working closely with the ESB and our stakeholders to achieve this critical goal.

AGL has given considerable thought to the future of energy generation in Australia and believes that two fundamental imperatives will drive the energy sector's transition in Australia: decarbonisation and the centricity of customers' unique preferences and expectations.

In our view, a well-structured Guarantee that integrates wholesale market design with climate change policy is worthy of further detailed consideration. A well-designed mechanism with clear objectives could assist in

replacing ageing firm generation with low-emissions technology and complementary infrastructure at lowest cost.

We consider that the design of any mechanism must principally address:

1. Cost - The Guarantee should be designed with the greatest regulatory efficiency possible, which consists of minimal disruption to existing markets and at the lowest net cost to customers.
2. Emissions - The Guarantee should ensure that the NEM achieves its pro-rata share of Australia's international commitment for emissions reductions with a view to ramping up to a potential of net zero emissions by 2050.
3. Reliability - The Guarantee should provide direction on the appropriate mechanisms by which reliability can be maintained as a result of increasing amounts of intermittent generation.
4. Certainty - Objectives of the Guarantee must enhance the existing operation of the market and also consider other market reforms and reviews.
5. Competition - Competitive, transparent, efficient, and liquid markets for energy and other products must be encouraged and enhanced to drive lowest cost outcomes.

We anticipate that the current consultation should be seen as the first stage of a consultative and transparent design process of progressively greater detail. As the ESB progresses with its approach to provide a preliminary design for the Guarantee to the COAG Energy Council, further opportunities to provide input into the design should be afforded to stakeholders.

The development of a high-level proposal by the ESB that can inform policy-makers is a first step to further consultation and discussion on the optimal mechanism to meet the energy sector's objectives, through additional discussions regarding design principles and refinements through subsequent changes to the relevant National Electricity Rules and related procedures.

Guiding energy policy principles

The energy sector is principally concerned with delivering an essential service to consumers, which is the primary consideration in developing effective policy and setting strategic objectives over the long-term. Within this context, however, the integration of energy and emissions reduction policies is also a fundamental imperative, and the mechanisms to achieve emissions reductions in the electricity sector should be aligned and integrated with the design and operation of the energy market.

To meet customers' energy delivery requirements, system reliability must also be maintained at a reasonable price. Within the parameters of prospering in a carbon constrained future and promoting the centricity of customer's requirements, keeping system security and reliability to an acceptable standard while also addressing the cost of energy to end users is a constraint within which energy markets must be operated and managed.

To ensure the sector's smooth transition and ongoing delivery of secure, affordable and sustainable energy, AGL believes that energy policy should be guided by the following principles:

- where feasible, using **competitive markets** to deliver and value energy services;
- utilising **price signals** to encourage efficient investment and operational decisions;
- **allocating risks** to parties that are best able to manage them;
- introducing **regulation only where necessary** to address a market failure, including to ensure system safety, security and reliability.
- ensuring an **equal playing field** where different providers of products and services must compete openly on their merits.

- establishing policy, regulatory and market frameworks that are **technology neutral**;
- establishing **appropriate standards** that support competition, the uptake of new technologies, and economies of scale;
- ensure a framework that is **inclusive of all customers** including vulnerable customers.

Open competitive markets and technology neutrality provide businesses the impetus and latitude to pursue technology and service delivery innovations that meet system needs at efficient cost. Efficient financial markets that are liquid and transparent reduce risks, improve access to financial instruments that can stimulate investment, and improve competition between participants while promoting financial resilience. Introducing regulation only where necessary ensures that market participants can make long-term decisions based on forward price signals that reduce investment risk and leads to greater efficiencies in markets and better cost outcomes for customers.

The National Energy Guarantee

Emissions requirement

The transition to a sustainable NEM that utilises substantial amounts of renewable energy must be orderly. Australia is in serious need of a long-term carbon policy that drives investment in low-emissions sources and can steer the electricity sector smoothly through the process of replacing aging thermal plant with less emissions-intensive generation, while also meeting other electricity sector objectives.

The energy sector has an important role to play in meeting Australia's international commitment to reduce greenhouse gas emissions. While incentives under the current Renewable Energy Target (**RET**) and other State-based targets have delivered investment in new renewable generation, the absence of long-term policy certainty creates risks that Australia will not deliver on its long-term ambitions and magnifies uncertainties for investors looking to make long-term financial commitments in the NEM.

We are therefore supportive of the ESB's proposal to limit emissions on the electricity sector in accordance with targets that align with Australia's international obligations. Irrespective of the precise ambition of the targets that are set, we consider that a mechanism to drive emissions reductions in alignment with a long-term investment trajectory is critical to Australia's energy future.

While there are many ways in which an emissions reduction target could be structured, we support the ESB's recommendation to set a limit on electricity sectors' emissions by imposing a limit on the overall energy emissions of retailers and market customers[1] purchasing energy from the NEM.

In our view, although the obligation to reduce emissions would seem to more naturally sit on generators, as parties who are in direct control of their assets and in the best position to reduce the production of emissions at their facilities, there is a clear nexus between retailers and generators through the underlying contract market that operates in the electricity sector, which can be utilised to drive emissions reductions through retailer obligations.

This connection between electricity market participants, in the form of underlying financial instruments that support the production and supply of electricity, is a key design element of the NEM. Ultimately, retailers are the entities that purchase energy from the wholesale market, and have the capacity (either directly or through financial intermediaries) to enter into agreements for the volume and type of energy that is produced.

[1] The National Electricity Rules use the term 'market customers' to describe participants purchasing energy from the wholesale market. This category includes retailers and large wholesale customers. For the purposes of this submission, unless otherwise made clear, the term 'retailer' includes retailers and large customers. This is the same terminology as the ESB has used in the Consultation Paper.

Through exchange-based financial instruments, retailers are therefore able to stimulate investment in new generation and drive the efficient operation of existing generation facilities through management of financial exposure to wholesale price signals.

The interaction of the Guarantee with the existing financial markets is a key component of the ESB's proposed design. The maintenance of a liquid and transparent market for energy is critical to the Guarantee's success, both in terms of the proposed emissions requirement and the reliability guarantee, as efficient financial markets drive lowest-cost outcomes for consumers.

A detailed design should build on the existing design strengths of the NEM and continue to improve on current levels of contract liquidity in respect of energy market products and derivatives. At its core, any design must maintain and improve the transparency of the forward price curve and other existing market price signals, which are critical to driving investments in generation capacity.

At the same time, we note that the Guarantee may stimulate the development of new exchange-based products that support new investment in low-emissions generation. In this respect, any outcomes in the energy market may need to be balanced against positive investment outcomes due to innovation in financial products that stimulate investment and build resilience in the NEM for participants of all sizes as well as prospective new entrants.

The effect of the emissions requirement on existing markets needs to be considered in detail during further consultations, with designs that seek to lower costs and promote competition among participants prioritised as better solutions for retailers to meet their obligations.

Reliability guarantee

We are generally supportive of the ESB's consideration towards maintaining system reliability through a mechanism that ensures enough dispatchable firm generation remains in the market to meet overall system adequacy settings. However, we consider that there may be alternates to the proposed reliability guarantee which may allow reliability targets to be met at lower cost to customers, which should also be investigated further.

The primary challenge associated with vast amounts of investment in low-emissions generation is its intermittency.[2] Imperative in the design of the Guarantee is due consideration to settings that incentivise investment in generation that supports a level of reliable supply that is acceptable to customers.

In developing a further design for a reliability guarantee, due regard should therefore also be given to the role of existing market settings that already drive investment for greater capacity in the market. Numerous market mechanisms, price signals, and operating paradigms already contribute towards the objective of increased reliability in the NEM, and the Guarantee will need to both enhance and efficiently interact with each of them.

Already, the reliability standard and market price cap set a financial incentive for participants to consider new investments in generation. AEMO's long-term forecasts such as the Electricity Statement of Opportunities (**ESOO**) and market information such as the medium-term and short-term Projected Assessments of System Adequacy (**MT PASA** and **ST PASA**) provide market participants with information about the amount of capacity that may be required in the market across each NEM region. The forward price curve and financial contracts and derivatives markets drive generator availability and bidding behaviour, and AEMO's NEM dispatch engine clears the market at the most efficient price.

[2] While some low-emissions generation is dispatchable, the majority of renewable generation consists of intermittent generation such as wind and solar, which utilise energy sources that cannot be stored.

We encourage the detailed design of the Guarantee to enhance the operation of these existing market mechanisms. While ongoing scrutiny and appropriate reform of these existing incentives (which is occurring through existing market reviews, rule and procedure changes) will provide better long-term outcomes for customers, in our view there may not be a compelling need to make significant structural changes to the existing operation of the NEM to drive better reliability outcomes.

In our view, the best way of reducing wholesale prices over time is by increasing supply through policy certainty on emissions reductions, which may necessitate a further refinement of the existing market settings to ensure market reliability. In meeting these objectives, consideration of a lowest cost approach that utilises improved market settings and existing market infrastructure should be a genuine option for policy-makers to consider.

Ultimately, any mechanism should allow the energy sector to meet its obligations to customers at lowest cost, both in terms of meeting emissions reductions targets and keeping the system reliable.

While we consider that the Guarantee has the potential to deliver on these outcomes, the impact of any new market mechanism on the existing market for energy needs to be considered carefully to avoid any unintended consequences. We look forward to working with the ESB on detailed design elements that keep at its focus this very important principle.

Should you have any questions in relation to this submission, please contact Aleks Smits Manager Policy & Research on 03 8633 7146, Stephanie Bashir Senior Director Public Policy on 03 8633 6836, or myself on 02 9921 2516.

Yours sincerely,

Dr Tim Nelson

Chief Economist

Attachment A – Key principles and response to Consultation Paper

The Emissions Requirement

Obligation to respond to climate change

In 2015, a global climate agreement was signed by Australia at the 21st Conference of the Parties (COP21) in Paris. The Paris Agreement strengthened the global response to climate change by establishing a new framework for parties to address climate change and limit average temperature increase to well below 2°C, while pursuing efforts to keep warming below 1.5°C above pre-industrial levels.

In line with this commitment, Australia has made a nationally determined contribution (**NDC**) to reduce emissions to 26-28 % on 2005 levels by 2030. At a fundamental level, Australia's public policy settings need to establish a durable pathway to meet its current NDC targets and ratchet up ambition over time.

AGL supports the Commonwealth Government's commitment to the Paris Agreement. AGL is committed to playing a leading role in developing a pathway to a modern, decarbonised generation sector. As our Greenhouse Gas Policy elaborates,[3] we have made a strong commitment to a range of measures that will drive the decarbonisation of the energy sector, including the closure of all of our existing coal-fired power stations by 2050 and continued investment in new renewable and near-zero emissions technologies.

In alignment with this policy, AGL supports the development of a robust emissions reduction mechanism that imposes a limit on emissions for the industry over time. The proposal in the Consultation Paper to express this as an average of emissions per MWh (tCO_2-e/MWh) that meets Australia's international obligations seems prudent, although we note that under the Paris Agreement, Australia's obligations include a requirement to ratchet ambition, and as a result we would expect that a well-developed market mechanism may see a significant increase in emissions reduction targets over time.

In seeking to meet Australia's emissions reduction targets, we consider that the energy sector is in a unique position to act first and to unlock substantial emissions reductions in other sectors of the economy.

Substantial emissions are generated by a small number of individual assets. Reductions in other sectors can be linked to the electricity generation sector, as electricity is a viable fuel source for other sectors looking to decarbonise, most notably the transport sector and manufacturing. Within this context, while the proposed setting in the Consultation Paper is for the electricity sector to make a pro-rata contribution to emissions reduction targets, we consider that this may increase over time as other sectors decarbonise and that any mechanism should be flexible enough to accommodate this ambition.

Developing a simple mechanism for emissions reduction

Key to the development of an efficient emissions reduction mechanism is resilience and simplicity. In our view, imposing a limit on emissions for retailers will naturally create a secondary market for retailers to buy and sell entitlements that are tied to emissions, in the event that they significantly outperform or underperform on their requirement.

Allowing an exchange-based contract market to emerge will enable retailers to develop stapled securities that arise from the primary obligation to source a percentage of energy from low emissions generation, where they are not able to enter into primary contracts for the purchase of low-emissions generation, for example, by owning these generation facilities directly.

This is especially the case when the operation of national target is applied to retailers that may not operate nationally. For example, retailers and market customers that operate in Tasmania, which has a historical low

[3] See https://content.agl.com.au/wp-content/uploads/2017/04/AGL_Greenhouse_Gas_Policy.pdf.

level of emissions, are likely to exceed targets. Retailers and market customers that operate in jurisdictions where electricity is sourced from higher emissions-intensive generation facilities are not likely to meet targets without being able to contract for low-emissions generation in other regions. As such, free exchange of a stapled emissions component should be encouraged in an efficient market to produces a lowest-cost outcome for customers.

We strongly support a detailed design that does not restrict the possibility of a secondary market emerging where retailers can purchase entitlements to the emissions component of dispatched low-emissions energy, and similarly sell excess rights to low-emissions energy where a surplus has been found to be sourced.

We consider that industry should be able to establish the means by which they have sourced adequate low-emissions generation, whether that is through directly owned generation, a direct contract with a generation source, or through the purchase of entitlements to the emissions component of energy contracts after those contracts have been fulfilled. Similarly, retailers that overperform on their requirement should be able to trade an excess of stapled securities to other retailers to allow for a lowest-cost outcome through an efficient market for these securities.

Allowing such a mechanism will enable retailers to establish their requirement to meet emissions requirements that align with Australia's international obligations through an efficient market that is both simple and resilient, and leads to lowest-cost outcomes for customers.

Emissions Requirement – Energy Security Board Design Elements

Process to calculate emissions intensity

Where possible, emissions calculations of dispatched energy should be linked to the existing National Greenhouse and Energy Reporting Scheme (**NGERS**), which already comprises a single national framework for reporting and disseminating company information about greenhouse gas emissions, energy production and energy consumption.

To avoid duplication of effort and ensure that no unnecessary costs are borne by customers, the NGERS methodology could be utilised to identify the actual emissions intensity of generation facilities over a financial year based on real data (Question 3.2.1). Utilisation of existing processes will reduce cost and complexity for participants.

Similarly, the calculation of a retailers' load can be observed using existing methodologies employed by AEMO using actual energy dispatched to the market from generators. We are supportive of retailer load being determined by the number of MWh as recorded by AEMO as being purchased by the retailer on the wholesale spot market in the relevant compliance year (Question 3.2.2).

Using NGERS and AEMO settlement data as a base, the process for retailers to calculate the emissions per MWh of their load should again be made as simple as possible, through an ex-post calculation of actual measured emissions and energy dispatched by generators.

As an ex-post calculation of energy actually delivered to the market by generators and purchased by retailers, retailers should be able to provide evidence of fulfilled contracts with generators, including in-house generation (Question 3.3.4), as well as any residual energy purchases from other participants or from the wholesale pool.

We consider that this calculation should be straightforward and mechanical, and in this regard, have no additional comments to make to the proposed methodology provided by the ESB in their consultation paper (Question 3.2.3). We anticipate that further design on the calculation of the emissions component could emerge through a detailed design consultation.

This is equally the case where the generation source cannot be specified. We consider it vitally important that exchange-traded energy or other contracts that are not linked to a physical source are considered in the further design of the scheme. The balance between incentives to enter into physically-backed contracts and maintaining the liquidity of financial contracts for energy needs is critical; any scheme should promote a methodology where obligations can be met without interference in the trade of energy market products and derivatives.

We believe that this should be possible to achieve. Using NGERS data, it should be straightforward to assign an overall annual average emissions intensity to exchange-traded energy, which can then be assigned to participants per their share of consumption (Question 3.3.2). Other alternative approaches should be investigated and looked at through consultation on a detailed design.

Similarly, the emissions intensity of unhedged load could quite easily be ascribed an emissions intensity using NGERS data (Question 3.3.5). We do not consider that it would be useful to assign unhedged load a punitive emissions threshold, as this may drive adverse outcomes and distort market behaviour. While assigning a punitive emissions intensity may seem to also drive reliability outcomes, the choice of retailers to keep a portion of their portfolio unhedged may be a least cost option and may not affect system reliability. As such, it should not be discouraged.

Development of exchange-based low emissions contracts

In our view, the approach to calculate emissions described above is likely to stimulate the development of new financial instruments that are useful for retailers, driving investment in low-emissions generation. For example, we consider that a useful product for retailers to source would be the emergence of a 'wind-firm' style product.

Such a product would see the bulk of contracted energy provided by intermittent wind generation sources, which contribute to a retailer's obligation to meet a prescribed level of emissions intensity. However, the intermittency of the wind generation facility could be supported by a stapled firm generation contract, for example, from a gas-fired turbine, which would contribute to the retailer's obligation to show sufficient firm contracts in periods of projected capacity shortfall.

Where novel products are being developed (for example, a contract that considers plants with different energy sources such as wind and gas-fired generation), it should be relatively straightforward to assess ex-post the portion of energy that was delivered under both limbs of the contract. The contract would of course also instruct the generator to specify if the energy they are dispatching is being provided to a customer in terms of contributing to their emissions intensity obligations, which could then be allocated to the retailer according to NGERS reporting.

In our view, the emergence of these types of products would support competition. We consider that the obligation is likely to stimulate innovation in new financial products that reflect the value of that generation to retailers. The impact on existing markets for contracts that are not physically-backed, however, needs to be considered. We look forward to working with the ESB on further analysis in this regard.

Where an emissions shortfall is projected, new products that specifically consider the value of emissions may emerge. Where emissions targets are likely to be met, exchange-traded products with a nominal emissions baseline may be preferred (Question 3.3.3). The emergence of a market that values these services and reduces transaction costs to procure both low-emissions and reliable generation should provide more open access to retailers to procure exactly the type of energy they need for their portfolio.

Compliance and meeting the requirement

To facilitate an effective emissions obligation, limited borrowing of emissions credits (i.e. using contracted energy from one year to meet obligations in the next) should be allowed to enable dynamic efficiencies in the market for emissions sources (Question 3.4.2). However, borrowing levels should be limited to an amount

that allows for flexibility and lowest-cost outcomes, rather than allowing participants to consistently fall short of their requirement. Consistent with the RET, this should be expressed a percentage of a retailers' load. We consider that 10% would be a reasonable threshold, subject to analysis on the operation of any scheme once a detailed design is proposed.

Similarly, any scheme should enable banking of contracted entitlements to enable dynamic efficiencies in markets and meet long-term targets at lowest cost. Banking of certificates reflects the ease at which the target is being met, and as such could be a useful indicator for ratcheting ambition over time (Question 3.4.2). Participants should be able to sell their entitlements to low-emissions generation to other participants that are unable to source low-emissions generation. In this way, the overall limitation on emissions is met at the lowest cost over time, and smooths out annual variances at lowest cost to customers.

Inclusion of offsets or emissions certificates created outside of the NEM wholesale market to make up shortfalls should be treated cautiously. Primarily, emissions certificates or credits outside of the NEM should not substitute for the progressive decarbonisation of the NEM, and instead should be limited to those which could assist in providing price stability and liquidity and include only those sources considered reputable to industry and relevant market bodies. As a driver for investment, offsets do not carry the same benefit as sourcing low-emissions energy from the NEM (Question 3.4.3).

With regard to compliance, we consider that only the minimum amount of information required to demonstrate compliance should need to be provided to the regulator rather than detail of all financial and contractual positions.

Generation contracts would need only to be disclosed in the event of error from the retailer. Any error is likely to be straightforward to calculate and should be easily identifiable through publicly available data. Similarly, individual data regarding retailers' trading strategies or contract positions should not be published or otherwise made available outside market institutions; however, aggregated information on the emissions intensity of retailers could be published to incentivise compliance without this adding an additional burden on participants.

An ex-post obligation would mean that compliance should be able to be established utilising NGERS reporting and AEMO settlement data in a type of central registry, with calculations and representations to the regulator being straightforward (Question 3.6.2).

In our view, the development of any registry should be a minimum compliance overhead on participants (Question 3.6.3). Administrative requirements should be limited to being able to establish that sufficient low-emissions generation has been sourced from any combination of generation contracts, from the wholesale market pool, or by purchasing entitlements from others with a surplus. Any compliance burden must as a core principle not affect the operation of participants in efficient markets and impose the lowest costs of participants that flow through to end users.

Further information about the detailed design of compliance with the mechanism could be outlined in the detailed design stage. However, as per other obligations under the National Energy Rules, the AER would naturally have significant powers of investigation to assess compliance. We do not consider that these powers would need to be expanded (Question 3.6.4) and that the AER is likely to have at its disposal sufficient powers of information provision, investigation, and audit, to be able to show scheme compliance to a high degree. Consideration, however, should also be given to whether the Clean Energy Regulator is better placed to assess compliance with emissions obligations given their existing role.

We do not consider that the emissions guarantee is likely to have any adverse effect on competition and may in fact lead to the development of new financial products (e.g. wind-firm) and participants. In many respects, limiting any impact on competition can be encouraged by ensuring that the guarantee is simple, transparent, and supported through the operation of competitive markets.

Emissions Requirement – Commonwealth Government Design Elements

Setting and adjusting emissions targets

The process for adjusting any emissions targets should be transparent, independent of Government, and based on predictable principles and commitments, such as energy market demand and Australia's international emissions reduction commitments. Primarily, the target must take into account the objective of ensuring long-term investment stability insofar as that it reduces risk for market participants and improves efficient market outcomes.

In this regard, we support the proposal to set a target for the level of emissions per MWh for retailers in the NEM each year, but ensuring that actual emissions depend on total electricity consumption (Question 4.2.1). We agree that that the trajectory of the electricity emissions targets should not generally be adjusted to account for variations in electricity demand, but rather that an established methodology to calculate emissions obligations should be set that allows retailers to forecast based on predicable inputs what their obligation may be in any given compliance year (Question 4.2.3).

In our view, the proposal to limit changes to the target trajectory by the Commonwealth Government as only applying with five years' notice seems on balance to be a fair setting (Question 4.2.4). We do, however, seek clarity on whether this means that there will in effect be a rolling 5-year window where the target will be reviewed and adjusted starting from 2020, or whether it is intended that the target is not reviewed and adjusted over time but only in extraneous circumstances.

We consider it may be useful to provide information on longer-term ambitions to provide notice to market participants of anticipated trajectories to meet Australia's emissions reduction obligations. The use of longer-term 'gateways' of potential reductions should be considered.

Coverage of the emissions requirement

We consider that the market for emissions trading should be defined as geographically wide as possible; emissions obligations should be set across the NEM and preferably into other Australian grids and regions. A larger market will be more liquid, will have better alignment with Renewable Energy Target (**RET**) scheme obligations, and reflects the national nature of Australia's emission reduction commitments and benefit of national consistent investment signals in the energy sector.

As a commitment that reflects a national obligation, significant efficiencies will be obtained by applying the operation of the requirement as broadly as possible.

Nevertheless, we appreciate that States will continue to set their own emissions reductions targets. While we strongly favour a nationally consistent emissions reduction mechanism, the dynamics of Australian jurisdictional energy policy means that emissions targets need to be compatible with State-based emissions targets, noting that State-based targets operate under other models (Question 4.2.5).

The operation of the Guarantee should not impact on existing RET legislation, including registration of RET-eligible projects, creation and surrendering of certificates, and other compliance obligations relating to RET certificates. The RET obligation should continue to 2030 unchanged. We do not consider that the proposed design of the emissions requirement will interfere with the RET scheme or affect the ability of that scheme to continue through to 2030.

We do not have a prevailing view on emissions intensive trade exposed (**EITE**) customers, and consider that the treatment of EITE exemptions will be a matter for consultation with affected parties based on the perceived benefit to customers in reducing potential costs for other sectors compared to the energy industry (Question 4.3). Nevertheless, exemptions for EITE customers could have an impact for the energy sector in terms of the burden of emissions reductions, and in the long-run may impact upon Australia's international

competitiveness. Complete exemptions may also limit the incentive of large industrial users from engaging in novel approaches to sourcing low-emissions and reliable energy that could have overall long-term benefits for their operations.

Utilisation of offsets

As referred to above, we consider that offsets should be treated cautiously, although there may be a case for allowing retailers to utilise offsets to cover obligations emerging from additional obligations that have been carried over from EITE participants where exemptions have been allowed (Question 4.4). For example, if retailers need to source a greater amount of emissions because of EITE exemptions, it may be an efficient outcome if these additional obligations are sourced through legitimate offsets.

In any event, we consider that the use of offsets should be limited to that which enables a lowest cost outcome while still meeting the overall objectives of the emissions requirement.

Reliability Guarantee

Enhancing the existing design of the NEM

In developing a detail design for a reliability guarantee, due consideration should be given to existing market settings that drive investment and promote reliability. Numerous market mechanisms, price signals, and operating paradigms already contribute towards the objective of increased reliability in the NEM, and the Guarantee will need to both enhance and efficiently interact with each of them.

The spot, contract, and ancillary services markets that value and reward dispatchability and flexibility already provide useful price signals for generation to be dispatched into the market at an efficient price. Forecasting information and the setting of the reliability standard and market price cap provides additional long-term price signals that have created new investment in generation where it has been needed. Finally, the operation of the underlying futures and over-the-counter contract market provides additional options for participants to hedge their exposure to the volatility of the spot market and enter into long-term agreements that reduce risk and help finance new projects.

We consider that substantial changes to the existing wholesale market processes to increase capacity may not be warranted, despite the challenges faced by the energy market transformation. Rather, it is our view that the existing market settings, which are aimed at delivered new capacity to the market, have the potential to operate more efficiently through policy certainty and an increased focus on maintaining the accuracy of long-term price signals through more efficient markets, better and more transparent forecasts, and improvements in system planning and operation. This option may be worthy of investigation prior to more significant market reform.

Along with other recent market reforms that are seeking to improve reliability[4], a number of concurrent reviews are also already addressing market concerns regarding reliability in terms of capacity that is available in the market. For example, AEMO is actively designing a replacement for the Reliability and Emergency Reserve Trader (**RERT**) market operator intervention mechanism, as well as considering a mechanism for demand response and a day-ahead market.

There is a real question as to the problem these reforms are intended to address. Despite perceptions to the contrary, no NEM region has failed to meet the Reliability Standard since 2009, and AEMO's 2017 ESOO

[4] For example, the five-minute settlement rule change, the reliability frameworks review, the frequency control frameworks review, and the generator performance standards rule change.

forecasts that after the 2017-18 summer, no NEM region will fall short of the standard across the outlook period. Furthermore, the Reliability Panel has recommended, in their four-yearly review which contemplates current conditions, no change to the Reliability Standard and settings.

We therefore question the need to finalise a detailed design and introduce a reliability guarantee that may promote market intervention in reliability settings as early as 2019, as proposed by the ESB. We would caution the ESB against an approach that is not adequately consulted upon or does not duly consider other ongoing market reforms and their likely effect, to ensure unintended consequences do not eventuate.

While ongoing examination of the existing reliability framework is important and supported by AGL, vast changes to reliability settings at short notice, such as the impact of an intrusive strategic reserve or day-ahead market, are likely to add significant risks to the investment landscape and adversely impact on the operation of existing markets that drive investment and promote NEM reliability. A strong case will need to be made for the implementation of new frameworks, which we consider may not be apparent in the current landscape.

Nevertheless, AGL understands that following closure of generating plants, the 2017 ESOO does forecast tightening conditions in the market. As such, we do consider that certain aspects of the proposed reliability guarantee are worth exploring as a useful addition to the existing market settings to ensure that adequate capacity remains in the market to meet customer's needs.

For example, the reliability guarantee could potentially act as a safety mechanism to respond to capacity shortfalls and address concerns about the increased penetration of non-firm intermittent generation or the loss of existing thermal generation from the market without adequate notice.

However, the operation of this obligation should not impact on the ability for market participants to manage their own risks and provide lowest cost outcomes to customers. This includes managing their wholesale portfolio in a way that adequately balances exposure to price risks in a cost-effective way.

Any mechanism must principally recognise that shortfalls of capacity need to be addressed in a way that comes at lowest cost to customers and does not adversely impact the operation of existing efficient markets for the trading of energy that already reduce long-term costs for retailers.

At a high-level, we are doubtful that requiring participants to show a physical backing to the entirety of their load (following one proposal in the Consultation Paper) is likely to provide an efficient and lowest-cost reliability outcome.

Rather, we consider that simpler principles to ensuring sufficient capacity is available should be developed in the first instance; namely, more accurate forecasting and dispersion of information to the market, and processes that are more transparent and efficient to procure and dispatch reserves of last resort in the event that unexpected capacity shortfalls are identified.

Reliability Guarantee Design Principles

A more robust forecasting process

Concern about the reliability of the NEM has mostly arisen from events that were not well forecast or signalled to the market. For example, the downturn in demand over the last decade was not anticipated by the market operator's forecasts. Similarly, under-utilisation of several coal plants, leading to their closure on a timeframe that was earlier than was expected, has led to an unexpected period of tight supply in recent years.

While most market participants also develop their own forecasts, it is principally the market operator's forecasts which are often used as the benchmark for public policy decisions, and confidence in those public forecasts is essential to the operation of the reliability settings more generally.

Through its existing MT PASA and ESOO processes, AEMO provides information to market participants on the outlook for supply and demand and the likelihood of breaching the reliability standard in each region over two years for the MT PASA and 10 years for the ESOO. These forecasts use a combination of industry inputs as well as modelling of supply and demand.

AEMO then undertakes a forward assessment of the amount of capacity that is forecast to exist in each NEM region on a 10% POE[5] day, based on its projections, at various points in the future. This takes into account closure announcements by participants, the likelihood that a particular resource will be there in a peak period, and other information provided by market participants in relation to planned maintenance and outage. Importantly, AEMO also considers the amount of demand forecast for a 10% POE day.

In our view, this existing ESOO and MT PASA methodology should be leveraged as much as possible to determine a gap for the reliability guarantee, as this is already the purpose for which those reports are prepared. However, as the basis for potential market intervention, the strength of these forecasts needs to be reviewed in detail and improved significantly.

Although these reports currently consist of information that is compiled by AEMO on the basis of information provided by participants, their accuracy in recent years has been poor, with forecasts incorrect by a wide margin.[6]

While we consider that existing forecasting methodology could be bolstered by all participants providing input into the calculations, there is a strong case to put in place more safeguards for accurate forecasting. Further obligations and incentives on AEMO to improve forecasting would be prudent, including the possibility of third-party reviews or additional input from the Reliability Panel on the appropriateness of methodology and inputs into the forecasting process.

It may be the case that industry participants (generators, networks, retailers, and independent experts) could provide combined forecasts based on better information to improve the accuracy of the ESOO and MT PASA (Question 5.3.2). AEMO should also investigate more accurate forecasting methods, such as new and innovative methods of forecasting intermittent generation. We consider that irrespective of the further design of the guarantee, there is a strong argument that more accurate forecasting will improve reliability and reduce costs for customers. The reliability guarantee fundamentally relies on accurate forecasts and this should be a primary issue that should be addressed.

Additionally, one of the most significant distortions to future capacity is the sudden closure of thermal plant, which may be difficult to predict. We consider that there is strong merit to an obligation for advance notice of generator closure, where participants must signal intentions to the market early to provide sufficient time for natural investment signals to cover any emerging gap.

Even so, we consider that ultimately, as participants who are exposed to a lack of future financial cover, retailers are in the best position to accept the risk and most accurately predict future market conditions. In this sense, we consider that future forecasting should not entirely be left to a party that may have an incentive to over-estimate demand, which could lead to unnecessary investment in under-utilised generation and network assets, leading to increased costs for customers.

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[5] POE, or probability of exceedance, refers to the likelihood that a demand forecast will be met or exceeded. For example, a 10% POE forecast refers to that level of demand that is likely to be exceeded only once in every 10 years, and therefore indicates demand under 1-in-10 year conditions

[6] For example, the 2010 ESOO predicted a medium-case case for demand in 2015 that was approximately 40,000 GWh (or more than 20%) more than the actual NEM demand of ~190,000 GWh. This is a significant degree of error.

Response to forecasts

Large forecast supply shortfalls in the near term are likely to be unexpected events, perhaps as a result of withdrawal of thermal plant without notice. In the event of a robust 10-year ESOO with shortfalls, we consider that participants are likely to invest in the right mix of generation as signalled by the market settings for investment in capacity.

However, at any stage from the long-term projection to the point of dispatch, changes may occur in the market that lead to a lack of firm generation being available. As such, we suggest that it is not the timing of the trigger but rather the conditions of the shortfall and the steps taken in response that are critical in identifying a trigger point for the reliability obligation to bind (Question 5.5).[7]

However, there would firstly need to be a condition that forecasts are accurate and able to be interrogated prior to triggering the next stage of the reliability guarantee.

Each trigger of the reliability guarantee that was based on an incorrect forecast would come at significant cost to consumers. In an energy-only market, if investors over-build capacity then it is they who suffer the consequences, not energy consumers. However, if the broader market is directed to build capacity or enter into contracts that are not subsequently dispatched, this may flow through to customers in the form of increased prices.

Therefore, in the event of forecast supply capacity shortfalls, it may be the case that the first step would be for AEMO to gather further information to assess the validity of any concerns and to make more regular forecasts based on the emerging problem and subsequent market response. (Question 5.4).

This function may be best undertaken by a third party or existing independent expert body, such as the Reliability Panel, to improve the efficiency of the Guarantee and minimise unnecessary market costs. We consider it imperative that the response to forecasts is not able to be influenced or controlled by parties that do not have as their primary consideration the efficiency of the market and the impact on customers both in terms of reliability and cost.

The development of generation is an intensely high capital cost for businesses that comes with significant risks. This risk needs to be considered carefully in any design of a mechanism that triggers a market intervention. In our view, any mechanism should be developed such that the risk of market intervention is very low, reducing costs of risk for market participants that may eventually flow through to consumers.

Any forecast should take into account these considerations and ensure that calculations represent realistic dispatch of facilities in the NEM without dictating capacity requirements on participants that may never be dispatched to recover their upfront capital costs.

Reaction to forecast capacity shortfalls

If indeed there is no forecast shortfall, there will be no work for the reliability guarantee to do, and existing market settings will provide the signal for new generation to be built. The current market price signals and settings will ensure that energy is dispatched efficiently in accordance with market price settings, and that unserved energy is limited to the amount that is set by the reliability panel. In this respect, the reliability guarantee will overlay the existing market and not add additional costs unless real risks to reliability are forecast.

[7] There is also mathematical consideration to consider in the calculation of a reliability standard using capacity. Where reliability is being measured through a calculation of available capacity (including interconnectors, constraints, availability, and other factors), generally a greater amount of nameplate capacity will need be required to meet theoretical peak demand based on probabilistic determinations of generator availability.

However, if there is a serious forecast capacity shortfall that does not receive an adequate market response, the reliability guarantee will be triggered, by ensuring that retailers source a proportion of their energy from firm and reliable generation sources, or from reductions in demand through contracted demand response.

In our view, the reliability guarantee should also only address the forecast supply gap rather than the market in its entirety. This will mean that resources to address any shortfalls will be deployed to solve the problem at hand rather than influence outcomes in the broader NEM.

Some element of pragmatism will therefore be required in assessing how to trigger the reliability guarantee and what the subsequent steps to that trigger might entail. Each scenario of forecast shortfall will vary, and the suitable market response and subsequent compliance requirements on participants will be dependent on the problem that the forecast gap has identified.

However, we consider that there is a serious conflict that needs to be addressed in the proposed trigger outlined by the ESB in their consultation paper. As the national system planner and body responsible for connection of generation, we argue that AEMO cannot also carry the right to compel participants to build new generation facilities or enter into contracts. This a serious conflict that is likely to result in centralised, non-market driven outcomes that are inevitably likely to come at much higher costs to customers.

We therefore strongly favour a response to capacity shortfalls that is transparent and market driven, as this is likely to come at the lowest cost to customers.

In our view, the cheapest way to meet one in ten-year POE obligation for retailers is likely to be demand response, which may not be able to be procured many years in advance. Significant long-term shortfalls are likely to see an effective market response, as there will be a natural incentive to cover exposure; smaller shortfalls may be managed through more flexible options like procuring firm contracts or a suite of demand response contracts to be triggered at short notice. A balance of flexibility and predictability in the trigger is critical and market intervention should be a last resort.

The very existence of the trigger is likely to stimulate action and lead to a positive outcome, irrespective of if it is ever brought into action. Retailers will not want to be subject to market intervention, which is likely to be difficult to predict and come with uncertain cost. This will add an additional incentive to the existing market price signals, stimulating markets for firm cover both on the supply-side and the demand-side.

We consider that a well-functioning reliability guarantee will never need to be triggered, as the steps that will be taken before retailers are forced to seek cover will lead to an adequate market reaction that addresses any forecast problem. This will be a good outcome that is likely to drive a lowest-cost scenario for customers.

Nevertheless, for the purposes of this review, the triggering mechanism does need to be considered in detail, and an eventual scenario where capacity shortfalls remain through to the point of dispatch need to be examined.

Qualifying instruments to establish the guarantee

In terms of qualifying instruments, the list proposed by the ESB is broad, and we would support this approach in any eventual design. Critical to the successful operation of the Guarantee is the incorporation of innovative approaches to meeting reliability through the development of new generation, the creation of new financial instruments for reliable energy, and the emergence of innovative products such as demand response that can meet point-in-time reliability at the lowest overall cost (Question 5.6.1).

Primarily though, we consider that investments in capacity should be made through the existing financial incentives that participants have in the energy market to avoid exposure to high prices at times of tight demand.

We therefore strongly support an approach that allows purely financial caps and swaps to be considered qualifying instruments, as well as any new contractual forms that may emerge which can be may be physically defended or backed, as well as physical ownership of assets and specific physically backed contracts.

We share the ESB's opposition to a sole requirement for physically backed contracts, and we would oppose a requirement for certification of all financial contracts. Both approaches are likely to affect the current operation of the contract market and reduce the liquidity of futures.

Conversely, allowing financial contracts to qualify would ensure the reliability obligation does not damage the liquidity or competitiveness of the existing financial markets that support affordability in our electricity system. These instruments could continue to be sold by any party comfortable with the risk involved, although this would not prevent the creation of additional products that are physically backed that may emerge depending on market requirements.

It must be a fundamental design principle that any change to market structures (energy or financial) should preserve or enhance contract liquidity. The design of the mechanism should not favour any incumbent retailers and must consider the risks faced by new entrants to the market. Operation of the mechanism should consider the impact on all market participants as well as the operation of intermediaries that provide financial services to all retailers.

Any impacts on competition should be resolved by adjustments to market mechanisms and not through direct action or limiting how retailers may choose to cover their exposure to wholesale price risks. For example, the operation of the Guarantee should not impact on the ability for retailers to own and operate generation to satisfy their obligation, or to invest in additional generation to provide contracts to other retailers.

Similarly, we do not consider that the Guarantee should dictate how a retailer structures their portfolio, for example, by requiring retailers to be fully hedged as a response to shortfalls. Such adjustments are likely to adversely impact on the efficient operation of the contract market and may have significant unintended consequences.

The satisfaction of any obligations under the Guarantee should primarily be met through efficient markets without distortions. This is a further driver for the trigger of the obligation to be as a last resort only, as the potential for the guarantee to be triggered itself could possibly act as a significant distortion to the market. There should be no incentive for participants to reserve capacity with the intention of recovering costs through the reliability guarantee; primarily, the incentive to be available and to dispatch should be through the efficient operation of the contract market.

The cost of reliability

If a failure to establish sufficient qualifying instruments continues to leave a forecast ‘gap’, then the cost of meeting any risk to reliability needs to be considered. The assessment of the value of reliability is already operationalized through the 0.002% reliability standard and the setting of the market price cap, which currently sits at $14,200/MWh.

As outlined in AEMO’s 2017 ESOO, this threshold is unlikely to be exceeded in the next 5 years, and the reliability panel has acted in accordance with this view by not adjusting the current reliability settings. The cost of closing the reliability gap in the event of a projected capacity shortfall could be significant, and should not come at a cost to customers that is excessive.

Furthermore, the party that should be responsible for responding to the capacity shortfall should be the party that is best able to manage the risk associated with a lack of firm coverage in the market. Despite any forecast from AEMO on perceived shortfalls, parties should still be able to manage their own positions in the market and respond to their own perceived risk modelling based on their portfolio of contracts, available generation, and demand response.

In our view, there is a strong argument to prevent AEMO from intervening significantly in this regard. Requiring generation to be built based on imprecise forecasts may come at significant cost. There may be significant risks associated with requiring retailers to be fully hedged in terms of the unintended impacts on the energy market. We would therefore recommend strongly that the benefits of pulling a reliability trigger are balanced against these possible unintended consequences in the financial and derivatives market, and

that a lowest cost and outcomes based approach is taken to designing a mechanism that balances competing objectives.

Nevertheless, if AEMO (or any other authorised body) does intervene in the market, we consider that every available opportunity should be made by participants to seek an appropriate market solution at the lowest available price, including facilitating demand response contracts, developing storage, acquiring generation external to the NEM, or recovering mothballed generators. Intervention that forces a party to acquire additional supply at significant expense should only be a last resort solution, and even then, we consider should be used exceedingly sparingly (Question 5.7.3).

A comparison is perhaps the current operation of the RERT mechanism and the design of the proposed strategic response. There is cost associated with procuring reserves in the market, which may in fact never be called on to be dispatched. Similarly, if they are dispatched, it may not be clear after the event if in fact sufficiently capacity to avoid any load shedding was available without them.

Allocation of risk

This dilemma could perhaps be resolved by allocating risk to parties in accordance to the incentives they can best manage. AEMO, in charge of forecasting and dispatching available supply to meet demand, may be required to procure reserves at its own cost, although as outlined before, the process to procure reserves should occur through a transparent market-driven process that reaches a lowest-cost outcome, and not through market intervention that forces the development of generation in accordance with AEMO's central planning function, as this creates a serious conflict for the market operator.

If reserves that are procured by AEMO on the basis of their forecast are not dispatched, then AEMO should be responsible for meeting that cost. We note, however, that the ultimate cost of procuring reserve will be passed through to consumers through participant market fees and therefore this cost should be minimised. Again, we note that the best way of minimising this cost might be by ensuring that more risk is carried by participants, who are naturally exposed to the risk on not being adequately covered to the energy market.

This would incentivise adequate cover from all retailers, and further incentivise the procurement of reserves that have a very low availability cost for AEMO but a high dispatch cost (much higher than the market price cap). This preserves the operation of the existing contract market.

This model is similar to how a strategic reserve or RERT may operate, and indeed, we consider that there are many parallels to the operation of the reliability guarantee with proposals regarding these mechanisms, as they are principally concerned with market interventions to ensure sufficient capacity is available in the market. The development of a reliability guarantee must be considered in parallel with the operation of a strategic reserve or reserve trading mechanism, as care needs to be taken to ensure that there is no duplication in the objectives of each mechanism that may distort the market.

The treatment of each circumstance where a capacity shortfall is not adequately addressed is likely to be different, depending on whether AEMO's forecasts consider a significant shortfall over a period or a small shortfall that may in fact not eventuate, or can be covered by last-minute reserves such as demand response.

If the shortfall is more significant and requires investment in generation or a mothballed generator to be returned, we consider that a market for procuring services is likely to emerge, from which participants with a shortage of qualifying instruments will be able to seek financial cover. We consider the may lead to a lowest-cost outcome for new capacity to be procured, from which all retailers would be able to access products that suit their portfolio and risk profile.

AEMO could facilitate this market and seek to lower transaction costs for retailers requiring additional firm contracts. All retailers would be able to procure any number of innovative contracts for demand and supply-side services from the market at the best available price and meet their requirements for establishing the terms of the reliability guarantee and the emissions requirement.

Governance

Incorporation in the National Electricity Law

We agree with the ESB that stable and effective implementation of the Guarantee will provide certainty for market participants about its operation, and allow for long term investment decisions to be made in the electricity sector.

We support the intention to legislate much of the Guarantee through amendments to the Australian Energy Market Agreement (AEMA), the National Electricity Law (NEL) and the National Electricity Rules (Rules).

Embedding the emissions requirements and the reliability guarantee into the broader energy governance framework allows the mechanism to be fully integrated with the broader energy rules, which is a key design principle of the Guarantee. This approach does improve the consistency of the legislative framework for energy market obligations and promotes the clear delineation of responsibilities to AEMO, the AEMC, and the AER as required. This will reduce complexity and compliance costs for market participants.

At the same time, the ESB has identified that many key design principles, especially as they relate to the emissions requirements, are likely to be set by Commonwealth Government policy.

We support a mechanism that is flexible enough to accommodate changes to Government policy over time, insofar as it addresses the overall emissions reduction target, the treatment of offsets, and exclusions for EITEIs. Nevertheless, the design of the Guarantee must be flexible enough to accommodate changes to policy without structural changes being required to the regulatory framework.