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

Ms Claire Richards

Project Leader

Australian Energy Market Commission

Submitted online: www.aemc.com.au

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Dear Ms Richards,

Distribution Market Model, Draft Report

AGL Energy (**AGL**) welcomes the opportunity to respond to the Australian Energy Market Commission's Distribution Market Model, Draft Report (**Distribution Model Draft**), June 2017.

AGL is one of Australia's leading integrated energy companies and 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 over 3.7 million customers throughout eastern Australia.

In addition, AGL is continually innovating our suite of distributed energy services and solutions for customers of all sizes (residential, business and networks). These 'beyond 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.

AGL strongly supports the Commission's ongoing work on the Draft Distribution Model project as a crucial focal point for the development of fit-for-purpose regulatory responses to support the inception of distributed energy resources (**DER**) and the associated evolution to a more decentralised provision of electricity services.

In principle, AGL supports with the Commission's established Framework to assess how DER might drive the evolution of the electricity market, incentives and disincentives and necessary regulatory and market design reforms. AGL notes that the Framework comprises the overarching National Electricity Objective and principles of good model design, namely to:

- facilitate effective consumer choice;
- promote competition;
- promote price signals that encourage efficient investment and operational decisions;
- enable technological neutrality;
- prefer simplicity and transparency; and
- regulate to safeguard the safe, secure and reliable supply of energy, or where it would address a market failure.

AGL also supports the Commission's vision of the multiple DER value streams, which demonstrates a clear understanding of the value of optimisation and coordination that could enable greater efficiency through co-optimisation between multiple markets.

Further, AGL believes that new technologies present both opportunities and challenges for the management of the electricity system. The trajectory of technology innovations, cost movements and deployment cannot be predicted with certainty, and will be influenced by changing customer preferences and other external factors such as government policy in specific areas (e.g. carbon reduction, tariff reform). Although technical characteristics are known, it is often only when deployment reaches scale, that the full extent of system impacts become apparent.

In AGL's view, effectively managing uncertain system impacts of new technologies (and maximising their efficient deployment) requires commitment to several principles including:

- where feasible, using **competitive markets** to deliver and value energy services;
- establishing policy, regulatory and market frameworks that are **technology neutral**;
- establishing **appropriate technology standards** that do not contradict broader policy objectives and are based, where possible, on international standards to avoid unnecessary overheads, promote customer choice, support competition and encourage economies of scale;
- 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.

AGL would like to take this opportunity to elaborate our views on the core elements that AGL envisages are required for the modernisation of the grid that support customer choice, innovation and technology neutrality.

Promote customer choice: customer preferences and expectations are a core driver of change

Customers are seeking to exert more control over their energy supply arrangements than ever before. Australia leads the world with small-scale solar PV installations. Across the country, approximately 17% of households have a solar PV system installed. This number exceeds 25% in some jurisdictions. Installations are expected to continue to grow, and will increasingly be accompanied by the installation of a battery energy storage system. Although currently primarily the domain of so-called 'early adopters', expected cost declines and associated reductions in the length of pay-back periods for battery energy storage technology are anticipated to see an acceleration in take up. Bloomberg New Energy Finance predicts that by 2040, 24% of residential buildings will have a storage system installed.[1]

Smart appliances, smart inverters and intelligent control systems are also entering the market. In combination with solar PV and battery systems, these technologies enable the creation of small-scale electricity ecosystems 'behind-the-meter' - that is, on the customer side of the meter, with a single

[1] Bloomberg New Energy Finance, Annabel Wilton, *Australia Behind-the-Meter PV and Storage Forecast*, 22 February 2017.

connection to the grid. These systems and their interaction with the electricity distribution network can be closely monitored and intelligently controlled. They can be dispatched individually or as a fleet to respond to changing network conditions or conditions in the wholesale market.

These developments mean that utilisation of the grid is changing dramatically. A customer with solar PV will draw less electricity from the grid than a customer without, and a customer with a solar PV plus battery energy system even less so. It also means that customers increasingly see the grid as much as a means to export, as import, electricity. Customers are also becoming interested in understanding how they can share energy locally (for example, through a peer-to-peer trading program) or participate in wholesale or network services markets. Thus, the grid is increasingly becoming the gateway to a range of other markets and additional value streams for customers.

At the same time, these developments are presenting new challenges for the safe and reliable management of distribution networks. Distribution networks were originally designed for one-way flows and expenditure may be required to accommodate the increasingly bi-directional nature of energy flows. If not managed, reverse flows can cause voltage, protection and thermal network problems.

Therefore, AGL supports the Commission's view that initial market reform should promote consumer choice, while providing a level playing field for market participants. AGL agrees with the Commission that service providers should be incentivised to provide services that are valued in the long-term and to innovate in response to demand. AGL also supports the Commission's view that market arrangements should enable consumers to monetise as many potential sources of revenue as possible.

Multiple platform energy framework

Although increasing levels of distributed generation are creating new technical challenges for distribution businesses, the advanced control and communications capabilities built into many new distributed energy technologies means they can also be a key part of the solution. By modifying the overall volume and shape of demand, distributed energy technologies can be deployed to avoid or delay more expensive augmentations to the network. Further, smart inverters and local sensing devices enable the provision of voltage and frequency regulation services back to the distribution network.

AGL is supportive of the ongoing reforms being managed by the Commission which seek to ensure that competitive demand response and other non-network solutions are considered for the widest practicable range of network investment decisions.

The distribution network will increasingly become the platform across which customers expect to be able to connect and transact. Competing energy service providers are beginning to trial and offer innovative products and services which leverage the grid to provide customers with access to other markets and value streams.

Rather than simply enabling the consumption of electricity delivered from centralised plant, the grid has an increasingly important role facilitating a range of other service markets. These include markets for grid stability services (frequency, voltage), markets for services which support the network in constraint conditions, markets for wholesale demand response at times of tight supply and 'peer-to-peer' energy trading.

There will not be a single business or delivery model to enable these mixed interactions and respond to the broad spectrum of customer needs and preferences. Reflective of the heterogeneity of customer needs

and preferences, AGL expects product and service offerings from a board mix of energy service providers to be similarly heterogeneous. The grid should provide a 2-way energy platform upon which competing energy service providers can build their product and service offerings. The distributed energy ecosystem of the future may involve multiple distributed markets and service platforms co-existing and interacting. Energy service providers will invest, test, learn and innovate their offerings, and bear the risks and rewards associated with these endeavours.

AGL's SA Virtual Power Plant offers a useful example of a program which seeks to enable the 'stacking' of multiple values. Over a 3-year period, AGL plans to have one thousand smart, connected energy storage devices installed behind-the-meter at homes and small businesses across Metropolitan Adelaide. When aggregated, the batteries will act like a 5 MWhr energy asset. The project will demonstrate at a commercial scale the value that distributed energy technologies (solar and batteries in particular) can provide three groups:

- Consumers can use the batteries to self-consume more of their solar power by storing energy produced during the day that might otherwise be exported to the grid;
- Networks can benefit from peak load shaving and voltage management services that potentially avoids further infrastructure expenditure; and
- Retailers can benefit from their reduced wholesale exposure during peak demand periods, and through the use of the battery to provide synthetic inertia and frequency balancing services.

Importantly, all grid users stand to benefit from such an arrangement through the reduced spending on network infrastructure and improved grid stability.

Co-optimisation and multiple-use

AGL strongly supports the Commission's conception of an optimisation function provided by electricity retailers or energy service companies. AGL supports the Commission's understanding that the optimising function is best carried out by a party that is independent and exposed to financial incentives. AGL agrees with the Commission that it would not be appropriate for network businesses to take on an optimising function. AGL also agrees that a particular optimisation business model should not be preferred, enabling the competitive market to deliver optimal solutions.

By modifying the overall volume and shape of demand, DER can be deployed and operated to avoid or delay more expensive augmentations to the network. Further, smart inverters and local sensing devices enable the provision of voltage and frequency regulation services back to the distribution network.

However, a network support or grid stability service might only be required on a limited number of occasions per year, and this is similarly the case with demand response to meet a wholesale supply constraint. The remainder and majority of the time, customer-owned DER installed behind-the-meter (**BTM**) is likely to be employed directly for meeting the comfort and consumption needs of the customer. Accordingly, an efficient deployment and use of DER will enable co-optimisation across these multiple uses and value streams. It will also recognise that it is ultimately a customer's choice as to how their BTM resources are deployed and what compensation or reward they expect for participating in different service markets (including providing network support).

AGL sees competition and innovation in technology and business models as the primary means for meeting this co-optimisation challenge and allying the interests of energy service providers with those of the customers they serve. To enable efficient 'value stacking' requires the need for (location, size) of grid

support services and their value to the network to be made explicit, so that products and services can be designed by competing energy service providers to address these and build those values into the commercial model. This will directly benefit customers investing in DER by ensuring the least cost deployment and highest value use of those assets are made, and by promoting the availability of a range of retail offers and bundled products to meet distinct customer preferences. Importantly, it will indirectly benefit all customers by ensuring investment in assets or services which support reliable network operation are efficient, thereby ensuring the efficiency of overall network costs.

Procurement of services to support network operation

AGL is of the firm view that network businesses should be required to test the competitive market for the provision of demand response and other non-network solutions before developing their own programs or directly investing in distributed energy technologies and including such expenditure in the regulated asset base. To facilitate the development of viable competitive products which address network needs, network businesses should also make available sufficient and useful data about the characteristics and location of those network needs and the costs of alternative network investments.

AGL believes that rapid technological advancements, increased availability and declining costs associated with DER may mean that, over time, non-network solutions increasingly become more suitable investments than further network investments. Indeed, the market inception of DER-related services and solutions will make future patterns of network demand uncertain. Assumptions that non-network solutions will not be suited to particular applications may, in time, be challenged by these developments.

Networks operate monopoly infrastructure and are the monopsony purchasers of demand response and other non-network solutions. Consequently, if networks are permitted to circumvent the competitive market, deploying non-network solutions without the involvement of competitive energy service providers, the market's ability to address the co-optimisation challenge will be substantially undermined. The market's capacity to develop innovative products and services that build upon multiple values to address the unique preferences and need of customers will be severely curtailed.

Pricing access to the grid

The effective modernisation of the electricity grid requires ongoing reform to network pricing and the continued transition to more cost-reflective network tariffs. Network pricing that reflects the variable costs placed on the network by different patterns of use will promote more efficient investment in and use of distributed energy technologies (and deter inefficient grid substitution), promote better network utilisation and lower network costs for all users. Care in the design of network cost-recovery and pricing frameworks is also key to mitigating potential equity issues that arise where those without the ability to adopt distributed generation technologies are left to bear a disproportionate share of remaining network costs.

However, the increasing instances of grid substitution (where some customers rely on the grid only as a back-up to their behind-the-meter installation which supplies their primary energy needs) also means there is a direct need to address the treatment of network assets that are becoming partially stranded. With overall declining grid utilisation and spare capacity in many networks, there is a question as to whether the policy intent behind the introduction of cost-reflective pricing can be achieved without a clear policy on the treatment of the existing regulated asset base. It is unlikely to be socially acceptable, or indeed sustainable, to expect customers to continue to fund these assets. It will be even less acceptable should those

households without the ability to install grid substitutes be required to fund a disproportionate share of those stranded assets.

Removing barriers to customers under connections framework for DER

Customers expect to be able to easily connect new distributed technologies behind-the-meter. However, there are different application processes and technical criteria applying across different distribution zones. These cumbersome and lengthy application processes create a barrier to the easy connection of new distributed technologies. These challenges were recently highlighted in the joint ClimateWorks and Seed Advisory report 'Plug & Play: Facilitating grid connection of low emissions technologies'.[2]

Further, in order to manage the technical challenges posed by increasing levels of distributed generation on networks, distribution businesses have resorted to export limitations on new connections and are increasingly requiring that inverters include specific demand response capabilities (i.e. AS4775) to allow networks direct control. The application of these limits and control schemes impacts the ability of customers to extract full value from the technologies they are installing. For example, customers increasingly size systems to match their own load with implications for the extent to which their distributed generation can be available to participate in programs which address broader system needs.

AGL encourages the AEMC to review this connections framework in light of the energy market transformation and key policy direction underway to ensure that the connections framework is not being used as a disincentive for the connection of customer investments in DER.

Clear separation of monopoly businesses from competition markets

AGL is concerned by the Commission's view that networks will continue to own and operate the networks beyond the full co-optimisation of DER. AGL considers that in a future scenario of high DER penetration, there may be a case for formally separating network asset management and network operation functions to minimise the potential for conflicts of interest to occur.

In AGL's view, the future role of regulated distribution network service providers needs to be clarified. Network providers will continue their vital role providing a safe, reliable and well maintained network. Indeed, this network provides the foundations upon which other layers and platforms will be built. As the distribution network become more dynamic, network providers are likely to also require increased visibility of activity on their network. However, it is important that networks do not seek to become market makers or participants in markets enabled by DER, in a role which conflicts with their status as a provider of regulated monopoly services.

Networks operate monopoly infrastructure and are the monopsony purchasers of demand response and other non-network solutions. Therefore, it will be critical to maintain a clear focus on the role of distribution businesses through the grid modernisation process. In AGL's view, network businesses should be required to test the competitive market for the provision of demand response and other non-network solutions before developing their own programs or directly investing in distributed energy technologies and including such expenditure in the regulated asset base.

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[2] ClimateWorks and Seed Advisory, '*Plug & Play: Facilitating grid connection of low emissions technologies*', Consultation Summary Paper, February 2017, http://climateworks.com.au/sites/default/files/documents/publications/climateworks_seed_plugplay_consultation_report_final_20170228.pdf.

There is a natural requirement on firms operating in the competitive market to maintain a definite customer focus in the products and services they develop, and to innovate and extract efficiencies and additional values where possible, so that the product delivered to the end-customer addresses their needs and preferences while being price competitive. Without this competitive discipline and with a singular focus on network benefits, programs delivered directly by distribution businesses are unlikely to result in the most efficient deployment of distributed energy technologies.

However, the current regulatory framework does not require network businesses to draw on competitive markets to deliver network support and demand management solutions. Instead network monopolies can (and are sometimes encouraged to) directly invest in technologies installed behind-the-meter provided this is ostensibly to assist in the management of the network. This creates a barrier to the development of well-functioning markets in products and services enabled by distributed energy technologies, including demand management programs. Without effective competition in the delivery of such services, the efficiency of network spending, customer choice and innovation will all be negatively impacted.

AGL refers the Commission to KPMG's *Distribution Market Models: Assessment of Supporting Frameworks Report for the Australian Energy Council May 2017* (**KPMG Report**). The KPMG Report was commissioned by the Australian Energy Council and provides an independent assessment of the ability of the ENA/CSIRO Electricity Network Transformation Roadmap (**Roadmap**) to facilitate the development of competitive markets in DER services. KPMG approached its assessment on the basis that efficient investment in and operation of DER is best achieved through competitive markets, where the owner of the DER asset is free to offer its services to whichever party places value on that service.

Whilst the Roadmap places network businesses at the centre of the future network support services market, the KPMG Report identifies three key risks under the Roadmap that could impede the development of competitive markets in DER, namely:

1. the ability of DER to be co-optimised across multiple value streams could be constrained by the arrangements proposed by the Roadmap;
2. the ability of network businesses to procure DER directly from customers is likely to impede the development of competitive DER markets and limit the ability of DER to capture the full value of its services; and
3. potential conflicts of interest for the network businesses especially if the distribution system operation role remains integrated within the distribution network service provider, as proposed under the Roadmap.

Information exchange

AGL notes the Commission's interest in considering a range of information collection and management issues to enable more efficient investment and operation of DER.

The technology and data landscape is fast evolving. In the energy sector, as in other industries, new technologies are having an impact on the volume of data created and the means for transmitting, synthesising and using such data. As the capabilities of DER advance and customer adoption increases, there will also be increasingly complex interactions between DER and various energy service markets. DER may participate beyond the home in network support, wholesale demand response, grid stability

markets and/or ‘peer-to-peer’ trading markets. Advanced software platforms may enable real time monitoring and control of DER performance.

AGL recognises that the availability of information on DER is likely to have an impact on the range of market actors with an interest in DER, network and market data. This might include the Australian Energy Market Operator (**AEMO**), network service providers, and a range of existing and new energy service providers (aggregators, orchestrators, retailers). As a result, more dynamic distributed data exchanges may prove to be lower cost, lower risk and more suitable means for accessing and sharing data between those who need it compared to a centralised model. These data exchange technologies and platforms are already in use in other sector, which have moved away from centralised data systems.

Coordination and policy guidance

AGL notes that the Draft Distribution Model project is a component of a larger suite of reform processes currently underway. These include:

- the introduction of more cost-reflective network tariffs;
- the implementation of more stringent electricity distribution network ring-fencing;
- modifications to the regulatory investment test via the Australian Energy Regulator's replacement expenditure rule change proposal;
- the contestability of energy services rule change proposals launched by COAG Energy Council and the Australian Energy Council; and
- the Commission's review of the economic regulatory framework as this applies to network businesses.

In AGL’s view, it is imperative that these reform processes are effectively coordinated and a national focus is maintained for resolving issues relevant to the transformation of Australia’s electricity system. AGL is keen to ensure that governance and regulatory frameworks evolve to deliver benefits to energy users into the future, within the context of rapidly advancing technology and community expectations.

Feedback in response to specific questions raised by the Commission

AGL’s feedback in response to the specific questions raised by the Commission is set out in Annexure A.

Should you have any questions in relation to this submission, please contact Kurt Winter, Policy Advisor, on 03 8633 7204 or myself on 03 8633 6836.

Yours sincerely,

Stephanie Bashir

Senior Director, Public Policy

Annexure A – Issues to be addressed

Question 1	**Do stakeholders consider that there are any other barriers to the development and implementation of cost-reflective network tariffs? How material are these barriers? Are there other means for them to be addressed?**

In AGL's view, the current economic regulatory framework still biases capital expenditure programs at the expense of efficiency in network investment and management, whether that entails a network or non-network solution. There are a range of factors that have led to this outcome. As AGL noted in its recent submission to the Australian Energy Regulator on the demand management incentive scheme and innovation allowance mechanism,[3] these include the allowed rate of return, the long term stability of returns on capital investments (particularly under a revenue cap), and comparatively less familiarity with demand management programs. Although there are schemes in place intended to neutralises biases between opex and capex (such as, the Capital Expenditure Sharing Scheme (**CESS**) and the Efficiency Benefit Sharing Scheme (**EBSS**)), there are inherent difficulties in forensically examining the outcomes of these schemes and the benefits which flow to customers given material information asymmetries between the regulated businesses and their regulator.

Although AGL strongly supports the principle of incentivising networks to provide standard control services as efficiently as possible, it believes the economic regulation of the networks as it stands is overly complicated and distorted by the multi-layered incentive schemes that are currently applied. In our experience, these schemes have not encouraged more efficient capital and operating expenditure by networks but have simply resulted in questionable annual accounting practices, highly variable reported expenditures during regulatory periods, followed by tenuous expenditure proposals by networks in the subsequent period. These schemes are highly susceptible to gaming, very difficult for the regulator to critically assess, and provide opportunity for underperforming networks to engineer their spending and accounts to mitigate inefficiencies into the future.

AGL refers the Commission to the findings of the KMPG Report on the setting of network tariffs. KPMG considered that, in order to achieve market competitiveness and efficiency in DER-related products and services, market and regulatory design needs to accord with the following principles in relation to setting network tariffs:

1. Provide compensation for network value delivered by DER;
2. Promote efficient investment in DER;
3. Allocate costs based on use and causality;
4. Customers are provided with tariffs which they understand and are able to respond to; and
5. Alignment of risks and rewards.

AGL supports the Commission's focus on cost-reflective network tariffs (comprising both temporal and locational components) as a key initial reform in the evolution of the distribution system. AGL welcomes

[3] AGL, Submission in response to the Australian Energy Regulator's Demand management incentive scheme and innovation allowance, Consultation Paper (3 March 2017), Available at http://aglblog.com.au/2017/03/submission-to-the-demand-management-incentive-scheme-and-innovation-allowance-consultation/.

the Commission's consideration of near terms actions to address this, including the appropriateness of the 'totex' model or aspects of it, bearing in mind that any proposed reforms must be fit-for-purpose for the Australian market.

AGL also urges the Commission to consider the additional potential constraints and risks identified in the KMPG Report. In particular, further consideration is needed to understand:

1. how best to structure residual network charges for all customers, to remove the negative distribution effects on those consumers who cannot afford to own DER resources and to reduce the incentive to go-off grid; and
2. the appropriate charging framework for DER, including peer-to-peer transactions. The *National Electricity Rules* (**NER**) present impediments to creating true peer-to-peer charges, as networks cannot easily provide transactional based, cost reflective tariffs. In the first instance, it may be prudent to reform clauses 6.1.4 and 6.18.4 of NER (see further AGL's response to Question 4 below).

Question 2	**Do stakeholders consider that there are any 'missing markets' or 'missing prices' beyond those that will be implemented through cost-reflective network tariffs? If so, what are these?**

Provided the Commission progresses the reforms discussed in AGL's response to Question 1 above, AGL does not envisage any further material missing markets or prices to be addressed at this stage.

Question 3	**Do stakeholders consider that an open access regime will continue to be appropriate in an environment of increasing uptake of distributed energy resources and more constraints on distribution networks? If not, what principles or considerations should be taken into account in determining whether a different access regime is more appropriate?**

AGL believes that the future distribution system should support a competitive platform that enables co-optimisation of multiple value streams by independent and financially incentivised entities.

In AGL's view, the grid should provide a two-way energy platform upon which competing energy service providers can build their product and service offerings. The distributed energy ecosystem of the future may involve multiple distributed markets and service platforms co-existing and interacting. Energy service providers will invest, test, learn and innovate their offerings, and bear the risks and rewards associated with these endeavours.

Rather than simply enabling the consumption of electricity delivered from centralised plant, the grid has an increasingly important role facilitating a range of other service markets. These include markets for grid stability services (frequency, voltage), markets for services which support the network in constraint

conditions, markets for wholesale demand response at times of tight supply and 'peer-to-peer' energy trading.

There will not be a single business or delivery model to enable these mixed interactions and respond to the broad spectrum of customer needs and preferences. Reflective of the heterogeneity of customer needs and preferences, AGL expects product and service offerings from a board mix of energy service providers to be similarly heterogeneous.

AGL sees competition and innovation in technology and business models as the primary means for meeting this co-optimisation challenge and allying the interests of energy service providers with those of the customers they serve. To enable efficient 'value stacking' requires the need for (location, size) of grid support services and their value to the network to be made explicit, so that products and services can be designed by competing energy service providers to address these and build those values into the commercial model. This will directly benefit customers investing in DER by ensuring the least cost deployment and highest value use of those assets are made, and by promoting the availability of a range of retail offers and bundled products to meet distinct customer preferences. Importantly, it will indirectly benefit all customers by ensuring investment in assets or services which support reliable network operation are efficient, thereby ensuring the efficiency of overall network costs.

As the KPMG Report underscores, the value of DER is maximised when it is able to be co-optimised across multiple value streams. The role and behaviour of network business prescribed by under the Roadmap in relation to DER could limit the ability to 'stack' the incremental values a DER may provide to the wholesale market, distribution networks, retailers and customers. Network businesses' own interests may misalign with the broader interests of market efficiency.

Question 4	**Is there support for the Commission's proposal that the deletion of clause 6.1.4 of the NER be explored?**

AGL also notes that clause 6.18.4 of NER requires that consumers deemed to have a similar connection and usage profile be treated on an equal basis (for example consumers with "micro-generation" facilities are to be treated no less favourably than consumers without those facilities and with a similar load profile).

As the KPMG Report has elaborated, whilst the current environment may support the inclusion of clauses 6.1.4 and 6.18.4 (which ensure fair and equitable outcomes between consumers), the increasing penetration of DER and the evolution of market DER products and services may mean that both of these clauses become outdated. Indeed, their operation may prevent consumers with a DER from sharing in its value in the form of a lower tariff. These rules may also undermine the development of possible platforms to support peer-to-peer transactions by preventing participants from calibrating export charges to better reflect the actual proportion of network used in such transactions.

AGL believes that the Commission should undertake a thorough and balanced analysis of the charging framework. The Commission should consider reforming clause 6.1.4 (as well as clause 6.18.4) to the extent that these clauses may undermine the future development of a competitive, efficient and equitable market for DER.

Question 5	Are there any other aspects of the development of Australian standards that are relevant and should be considered?

AGL supports the Commission's view on the important role that Australian standards play in supporting the safety and integrity of the technologies that underpin Australia's energy systems, as well as in the particular context of the installation and operation of DER.

Nevertheless, AGL also notes the Commission's view that while standards are important to mandate minimum technical requirements, they should not be used to resolve issues that may be better addressed using market signals. AGL is concerned that the current NER rules governing micro embedded generator connections, which incorporate Australian Standard AS47777 (Parts 1 and 2) and of Australian Standard 4777.2:2015 Grid connection of energy systems via inverters – Inverter requirements, empower distribution networks to independently determine the take-up of DER technologies through their isolated view of technical requirements, with limited transparency and justification. Although the Commission has limited powers in the development of technical standards, it should ensure that any standard adopted through the NER strikes the right balance between market efficiency, safety/security of networks in their connection agreements, and customer preference/choice. As the KPMG Report identifies, the current framework may not necessarily promote the right outcomes for the market and this could hamper the uptake of DER and the creation of new competitive service markets more broadly.

Further, in AGL's view, any new standards or regulatory framework introduced in relation to DER should accurately reflect market-wide consideration to promote the National Electricity Objective, rather than the potentially narrower interests of network businesses. Consistent with the conclusions drawn in the KPMG Report, AGL believes that simple, fair and transparent connection rights, obligations and standards are required to ensure that all DER can connect to a distributor's network with minimum transaction costs. Going forward, AGL believes the Commission should develop more considered governance and connection frameworks that appropriately separate the assessment of network connection and network operation.

More broadly, the following market design and regulatory principles set out by KPMG should guide future consideration of standards to ensure market competitiveness and efficiency for DER-related products and services:

1. Access to the network is on an open and non-discriminatory basis;
2. Connection and access standards need to be fair, transparent and promote efficient deployment and use of DER;
3. Network access and connection policies do not unduly constrain the ability of DER to deliver a full range of services; and
4. Access and connection requirements support market operations of commercial platforms.

Question 6	Do stakeholders see value in the AEMC (or other party) reviewing the technical requirements that DNSPs apply to the connection of distributed energy resources?

AGL strongly supports the Commission's proposal for an independent review of the technical requirements that DNSPs apply to the connection of distributed energy resources. As noted above, AGL is concerned that in certain circumstances network businesses may set limitations on DER specifications with limited justification that may ultimately impact upon the growth of DER.

AGL reiterates that the regulatory framework needs to ensure safety and security without unnecessarily curtailing the ability for DER to connect to a distributor's network with minimum transaction costs. AGL notes the observations made in the KPMG Report that providing network businesses with discretion to strike the right balance between market efficiency and safety/security of networks in their connection agreements may not promote the right outcomes for the market more broadly.

AGL would urge that any such independent review consider some of the future work programs envisaged in the KMPG Report, including:

- Development of new connection standards for DER;
- Development of a transparent framework for managing DER connection requests;
- Consideration of the role of reliability standards under a high DER scenario and, in particular, whether some form of "export reliability standard" is required; and
- An assessment of networks' current ability to manage an increase in DER penetration and whether to develop threshold tests to identify where DER penetration could have a material impact on distribution network security and power quality.