

A few
words.

4 November 2015

Mr John Pierce
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Dear John,

Ref SEA0002- AGL's submission to the AEMC's Integration of Energy Storage discussion paper

AGL Energy (**AGL**) welcomes the opportunity to make a submission on the Australian Energy Market Commission's (**AEMC**) Integration of Energy Storage discussion paper (**Discussion paper**).

AGL is one of Australia's leading integrated energy companies, operating across the supply chain with investments in coal-fired, gas-fired, and renewable electricity generation and upstream gas exploration, storage and production projects. AGL is Australia's largest private owner, operator and developer of renewable generation in Australia and is also a significant retailer of energy, providing energy solutions to over 3.7 million customers in Victoria, New South Wales, South Australia and Queensland. AGL has also established the New Energy Services division (New Energy Services), focused on distributed energy services and solutions to all end use customers.

Within New Energy Services, we are able to offer customers with beyond the meter energy solutions. This includes solar PV systems for both residential and business customers and new technologies such as batteries and other energy storage solutions. New Energy Services works with customers of all sizes to understand their energy requirements and design solutions tailored to their lives, needs and goals.

In general, AGL commends the AEMC's vision and efforts to date on the Power of Choice (PoC) and establishment of a regulatory framework that enables consumers to make informed choices about the way they use electricity through the provision of appropriate information, education programs, incentives and technology. AGL also supports reforms which provide the right market structure and incentives for Network Businesses, Retailers and other parties, to ensure that efficient Demand Side Participation (DSP), customer choice and competition is promoted, without applying unnecessary administrative and/or compliance costs.

We applaud the AEMC's recent analysis of energy storage and its uses across the sector and we strongly support the following key preliminary views:

- for the purposes of network regulation, storage should be considered a contestable service;

- market arrangements should promote customer choice while providing a level playing field for market participants;
- customer choice should be based on clear price signals which drive innovation, at minimum cost, from service providers seeking to provide a compelling value proposition to the consumer;
- economic regulation should only be contemplated where competitive forces cannot deliver customer benefits and innovative service offerings. Considering the number of competitive players entering the Australian storage market, regulation should not be necessary;
- strict ring fencing provisions should apply to Network Businesses looking to install energy storage behind the meter:
 - Network Businesses should not be able to install storage in contestable markets, including behind the meter, unless they do so through a separate ring fenced business.
 - in the course of performing its regulated activities, Network Businesses will collect commercially sensitive information and data. Ring fencing should also address use of such information and ensure that this sensitive information is not used to provide a Network Businesses with an unfair advantage in contestable markets.
 - Network Businesses should not be able to restrict access to infrastructure or provide access on less favourable terms than to its affiliate.

In addition to the above AGL is of the view that the following policy objectives are needed to further competition and customer choice in the uptake of DSP.

Network Regulation

AGL agrees with the AEMC that for the purposes of network regulation, storage should be considered a contestable service and the regulatory framework and market arrangements must promote customer choice and provide a level playing field for market participants.

In conjunction with this principle, AGL therefore concurs with the AEMC's position that Network Businesses must adhere to strict ring fencing provisions if they wish to participate in the competitive market.

However, AGL believes that the provision of energy storage services at the grid level should occur on an open and competitive basis to maximise the efficiency of network investment. A lack of competition in the storage space would mean that any solution will be limited to options that are available to or chosen by the network, and will be priced only on the basis of the cost to the Network Business of providing that service.

Although Network Businesses should always consider energy storage for network management solutions as an alternative to traditional network investment, they should not be allowed, as monopoly businesses, to utilise their regulated funding for technologies and offers to customers for non-network solutions. AGL considers that this would be contradictory to the AEMC's POC recommendations to ensure that demand side technologies and services are provided under a competitively neutral basis, which is fundamental for customer choice and ensuring customer engagement and participation.

Clearly, the development of storage service options by Network Businesses at the customer level would also see a reduction in customer choice in technology and energy supply options, as customer options may be restricted through monopoly arrangements relating to mandated demand management activities.

Further, AGL points out that the economic incentive for storage by retail customers centres on the ability to draw on the various value streams by maximising self-consumption and minimising exports. As such, a retail customer who installs storage in reality would be complimenting their local Network Business by reducing their dependence on the grid and its infrastructure. In other words, by installing storage, the customer reduces the burden on the network system and the augmentation works imposed on Network Businesses.

Grid Connection

Although AGL acknowledges the improvements to the grid connection for, embedded generation through the establishment of NER Chapter 5A, AGL considers that the processes implemented by Network Businesses are inconsistent, inefficient and generally lack transparency. As a result, we note that a number of customer requests for solar across residential and business customers have been delayed and/or rejected/modified, in most cases without a clear rationale from the network businesses. Although we believe that the connection process could apply to storage applications, we consider that further improvements are necessary to address these issues.

AGL also notes that Network Businesses play a gate-keeper role for all grid connections for contestable services on their network. We believe this is inefficient and unfair, especially as a number of Network Businesses have acknowledged their interests in competing in these contestable markets. To remain as gate-keeper will provide Network Businesses with an inequitable market advantage, and also potentially introduces a level of bias in the processing of applications.

We therefore propose that an independent gate-keeper, an existing authorised body, such as the Australian Energy Market Operator (AEMO) or Australian Energy Regulator (AER), should be appointed to administer and approve all grid applications, to ensure a fair, efficient and streamlined process for customers who seek to install embedded generation. We welcome the opportunity to work with the AEMC to further develop this proposed market role.

Further, AGL also believes that an automatic approval threshold should be applied to connection applications which do not require network upgrade or augmentation works. We consider that this threshold for retail customers should be initially set at 5kW, and applied to all systems that meet the requirements set out in AS4777. Although we acknowledge that an increased penetration rate of solar PV may increase the risk to network infrastructure during times of peak load, these are generally few and far between, and would be offset through the installation of storage. AGL welcomes the opportunity of Network Businesses to discuss alternative arrangements to address these risks, without impacting customer systems, reducing customer choice or preventing market competition which drives innovation.

Appropriate technology standards

AGL believes that appropriate technical standards need to be established as a key priority when looking at energy storage. Safety is paramount for AGL and we therefore encourage the AEMC and Standards Australia to address this issue as a priority. However, we also believe that all standards should remain agnostic of current and future regulation and, where possible, be based on international standards. This is fundamental to ensure that standards do not introduce barriers to customer choice, or limit investment and innovation which is critical in reducing costs.

A key example of standards development is AS4777. In our view this standard should only set out the technical and safety specifications of inverter energy systems for grid connection purposes. However, the recently published version of AS4777.2¹ has the ability to implicitly mandate another Australian Standard, AS 4755, which sets out a control framework for grid connections. This arrangement may lead to anti-competitive outcomes to the market, by enabling Network Businesses to control the demand response of any inverter system connected to their network, where they consider it necessary to curtail load. This action risks impacting customer choice and use, and will limit the ability of market parties to develop innovative offerings.

Furthermore, AS4777 does not align with the principles and recommendations of the PoC and instead enables actions which are in fact contradictory to delivering these outcomes. AGL believes that changes to the NER are required to counter any undue risk to customers, by obligating Network Businesses to notify a customer where it has identified a network load issue, and to provide suitable financial compensation for the customer's lost value stream. Where this obligation cannot be introduced, we consider that the NER should at a minimum, restrict Network Businesses from interfering with a retail customer's inverter system (i.e. override AS4777 network control provisions) without explicit consent from the customer.

Registration of a generation unit and load

AGL believes that while the overall framework supports storage, the framework was primarily developed for larger size customers and generators. However, with the increase of small scale distributed energy solutions and in particular storage, the registration process will need to be reviewed and streamlined.

The need to register storage in multiple categories will need to be carefully assessed against "fit-for-purpose" criteria, as the operation and functionality of storage devices as a generator or customer or both, will evolve over its life cycle as market and customer needs change.

Current registration processes for each category are designed for proponents who have resources and expertise to deal with regulatory and technical complexities. AGL believes this needs to be simplified and standardised to account for the registration of a storage device, without any unnecessary complications associated with other types of generation, such as frequency

¹ Grid connection of energy systems via inverters – Part 2: Inverter requirements; published 9 October 2015

issues. In addition, the criteria for generator and customer registration need to be reviewed based on the size and complexity of the connection to ensure that registration processes do not create barriers for entry and the uptake of these new technologies.

AGL also notes the importance of cost-reflective/ demand pricing to drive market transformation and the uptake of new energy storage products and services. Setting up a sustainable pricing framework which allows for the entry of new technologies, along with providing confidence for customers will be an essential complementary element of policy reform to many of the issues raised within this discussion paper.

As distributed energy solutions provider in the NEM, including energy storage solutions, we welcome the opportunity to work with the AEMC further on this initiative.

Our detailed responses to the questions posed by the AEMC are in the attached appendix A.

Should you have any questions in relation to this submission, please contact me on 0402 060 120.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Stephanie Bashir', written over a faint, light blue circular watermark.

Stephanie Bashir
Head of Policy and Regulation, New Energy

Appendix A

End Users and aggregators using Storage

Consultation questions

- Connection processes are new and still being implemented. Do you anticipate any issues with the connection process associated with storage?
- Do connection processes represent a barrier to storage? If so, what specifically is the issue?
- Should DNSPs be required to have a connection offering that separately addresses the connection of micro storage capability?

AGL notes that the AEMC introduced changes to Chapter 5, including Chapter 5A, of the NER in October 2014, which aimed to increase the flexibility provided to generation connecting to the grid, particularly micro Embedded Generation (EG). We believe that the past year has provided sufficient time for Network Businesses to implement an efficient and transparent arrangement for grid connection, which meets the NER requirements.

However, we do not consider that the connections process implemented by Network Businesses are as efficient and transparent as they should be, specifically with respect to the connection of solar photovoltaic systems (PV Systems). Specifically, we are concerned that there is:

- information asymmetry and minimal incentives on Network Businesses to negotiate fair and equitable connection terms, particularly for commercial or residential systems which require (or opt for) a negotiated connection agreement;
- insufficient regulatory arrangements which prevent Network Businesses taking on a gatekeeper function for contestable markets in which they also wish to compete. As a result, we believe that no suitable incentive exists which encourage, or require, Network Businesses to improve their connections processes, only recover efficient costs, or implement network requirements which support EG uptake; and
- minimal compliance and enforcement management provisions in the NER with respect to the grid connection process, which provides suitable incentive to Network Businesses to generally meet their obligations and requirements.

AGL agrees that the existing EG connection process set out in the NER should be sufficient for application to storage, taking into account the difference in technical and/or safety requirements applied by Network Businesses. However, we note that the above concerns need to be addressed to ensure that the connections processes for all forms of EG is consistent, transparent and efficient across NEM

jurisdictions. AGL believes this is particularly important for retail customers seeking to install storage which, will be more technically complex and therefore will likely be assessed with greater rigour.

AGL notes that Network Businesses currently apply the same connection process and regulatory arrangements to all retail customers, irrespective of whether the customer is seeking to install exporting and non-exporting systems. We believe this introduces unfair risk, cost and installation delays to customers, and that only systems which pose an impact to the network's infrastructure should be assessed.

In particular, we point out that there may be a tendency to treat AC-coupled storage as an additional inverter and therefore apply a greater stringency in the requirements for such connection. This is because Network Businesses could argue that storage may be used by customers as a tool for arbitrage (i.e. buying from grid at low prices and selling back at high prices) or as a large-scale depository when combined with solar (i.e. consuming minimal electricity generated, storing all surplus electricity generated and selling back this additional energy during times where market prices are high). Networks could argue that the effect of such customer use would put strain on network assets during times of peak loads and as such, they currently either augment their Network or require customer's to reduce their system when connecting to the Grid.

However, AGL points out that the economic incentive for storage by retail customers centres on the ability to draw on the various value streams it provides, by maximising self-consumption and minimising exports. This is because the cost to generate and/or consume storage electricity would, in the majority of cases, be cheaper than drawing on grid-supplied electricity. As such, a retail customer who installs storage, in reality, would be complementing their local Network Business by reducing their dependence on the grid and its infrastructure. In other words, by installing storage, the customer reduces their demand, and therefore the overall burden on the network system.

Further, we believe that storage should be considered by the NER as a distributed energy resource (DER) tool which contributes to network stability. Therefore, we encourage the AEMC to acknowledge that a customer with storage only has the incentive to export when being paid for the service. The primary beneficiary/customer for retail customer export will be Network Businesses and as such we consider that Network Businesses should be more flexible with their connection requirements and provide a support provision within their connection agreement.

AGL believes that Network Businesses should provide retail customers who choose to export and therefore reduce their own generation demand with a suitable market-based FiT. This would promote the National Electricity Objective by encouraging greater efficiency in market investments and operation, which are in the long term interest of customers.

AGL also considers that the NER should set out the requirements for a separate connection standard for storage in the NEM. This is necessary to address the complexities of storage, including the different connection requirements (technical and safety), which are more apparent compared to other forms of EG.

This connection standard should also link to a purpose-designed Australian Standard (once developed) which sets out minimum installation guidelines, safety and technical requirements, grid protection requirements and supports a broad range of storage architectures.

AGL acknowledges that AS4777 applies to all grid connected inverter energy system, including storage. However, we consider that this standard is not specific enough across technologies and therefore a standalone battery standard is required to provide industry with certainty on the requirements for storage.

Consultation questions

- Do connection costs represent a significant barrier to storage? If so, what specifically is the issue?

No – connection costs do not represent a significant barrier to storage where they are applied efficiently. However we note that there are other financial costs that impact on the installation of storage. For example, if a retail customer adds battery storage to an existing PV system, an inverter upgrade may be necessary.

The new AS4777 requirements introduced in September 2015 would therefore be applicable and may impact on the customer's ability to add storage either because the:

- network imposes a manual connections process which sets out cost prohibitive requirements; or
- cost of the new inverter outweighs the value of storage to the customer.

These same impacts and the application of AS4777 will also apply to new combined solar/storage installations and standalone storage.

Consultation questions

- Would a separate industry standard for the connection of small or micro storage assets to a distribution network be appropriate? If so, what should be included?

As our response to the previous question, based on the complexity associated with storage, AGL's preference would be for an industry wide connection standard to be mandated across the NEM – this would improve awareness of the process and general requirements across jurisdictions.

Retail Authorisation and Aggregator

It is clear that storage technology challenges the traditional model of electricity retailing, and indeed the traditional and established regulatory framework that applies to electricity retailing. Despite the challenge to established energy market principles, AGL strongly supports the development and innovation of new products and services in the energy market.

Under the National Energy Customer Framework, providers that sell energy to a person or business for use at premises are required to hold a retail authorisation or an exemption from the AER. It is important to note that this framework applies to providers that “sell energy”; this can take many forms and not all forms of technologies involve the sale of energy. Indeed, storage may or may not involve the sale of energy in particular circumstances. With respect to storage involving the sale of energy, AGL considers an exemption rather than a retail authorisation is the most appropriate means of regulation.

AGL’s firm view is that it is not appropriate for businesses that are offering storage solutions to end users be required to hold a retailer authorisation. Retail authorisations are very rigid and do not offer the required flexibility for regulating non-traditional business models. Further, retail authorisations could be seen as a barrier to entry that may stifle innovation, and many of the obligations of an authorised retailer are not appropriate for storage providers and their customers.

AGL notes the AER’s recent revised approach to the exemption framework, outlined in the AER’s Draft (Retail) Exempt Selling Guideline (version 4 dated September 2015). AGL supports the AER’s approach to regulating alternative energy sellers, including storage providers, through an exemption framework. In particular, AGL strongly supports the AER’s finding that the exemptions framework is the most appropriate mechanism to regulate alternative energy sellers, as this will allow for a flexible principle-based approach to regulation that will be able to accommodate the rapid changes we expect to see in the energy market in the coming years. The regulation of providers must be underpinned by a principles-based. We believe this will facilitate the development of a smart and flexible regulatory framework that allows alternative energy selling business models to evolve and support a customer driven market, while maintaining a level playing field amongst all energy providers.

AGL submits that the following six principles should underpin the development of any regulatory framework that applies to storage businesses selling energy:

- Ensuring adequate and appropriate consumer protections and promoting informed consumer choice.
- Encouraging innovation in the energy market.
- Ensuring competitive neutrality to allow different products and services, and different providers within markets, to compete openly on their merits.
- Avoiding cross subsidies between consumers.
- Developing a nationally consistent approach with the implementation of both policy decisions and direction applied consistently across all states. This includes rules, industry guidelines and technical standards.
- Providing safe, secure, and reliable supply of energy to consumers on fair and reasonable terms.

Consultation questions

- Do storage systems have characteristics, either individually or in aggregate, that mean regulation through the retail exemptions framework set out above is inappropriate for the relevant value stream? For example, there is no limit on the number or size of generating units a small generation aggregator can aggregate and so sell into the wholesale market. Does this present a concern?
- Aggregating parties would be required to register with AEMO if they intend to participate in the NEM. Will this provide any kind of barrier?

AGL does not hold concerns in relation to this point, because the definitions of small and large embedded generators are clearly defined in the NER and generators have a choice to become an aggregator and sell to the wholesale market.

Ultimately, it is the aggregator's choice to decide whether to obtain registration and therefore pay the associated market fees. Given the market is contestable, we agree that all aggregate parties, including small generators should have the ability to become a small generator aggregators.

Standards for the Installation, Connection and operation of storage devices

Consultation questions

- Does standard AS 4777 represent a potential barrier to the deployment of storage by providers other than networks? What elements of the standard are problematic?

AGL strongly supports the AEMC's concerns that Network Businesses should not have an ability to control a customer's inverter energy system, including minimising the value that storage provides to retail customers by imposing onerous connection processes or through indirectly controlling the inverter system.

In our view, AS4777 should only set out the technical and safety specifications of inverter systems for grid connection purposes. However as currently published, the standard has the ability to implicitly mandate the voluntary AS 4755 (i.e. a control framework for grid connections) standard. To do so would encourage anti-competitive attributes to the market, by enabling Network Businesses to control the demand response of inverter systems that are connected to their grid network. This would impact customer choice and limit the ability for parties to develop innovative offering to market.

We believe that changes to the NER are required which obligates Network Businesses to notify a customer where a network load issue has been identified, and provide suitable financial compensation for the customer's lost value stream. Where this obligation cannot be introduced, the NER should restrict Network Businesses from alterations to a retail customer's inverter system (i.e. override AS4777 network control provisions).

Consultation questions

- **Should aggregators be able to offer FCAS? If no, why not?**
- **What are the technical or data requirements that would need to be addressed?**

Yes – small generator aggregators should have the ability to offer frequency control ancillary services, which is a type of non-market ancillary service. They already are liable for ancillary service charges, where they provide the service, so the NER restriction should be lifted.

Consultation questions

- **Do you agree with these preliminary findings?**
- **Are there other issues which should be considered?**

AGL broadly agrees with the AEMC's findings, particularly that:

- the existing connections process can accommodate storage applications;
- a new basic connection offering (i.e. an automatic connection approval for certain storage systems based on size) should be offered by networks, and the connection service model terms and conditions should be approved by the AER;
- technical requirements for storage should be standardised, and that a new technical Australian Standard for storage should be developed. This would include a review of AS4777 and consideration on whether the standard provides networks too much control over inverter systems;
- registration of a new small generator aggregator class for storage; and
- small generator aggregators should be able to offer for FCAS.

The regulation of services provided by storage

Consultation questions

- Do stakeholders agree that there may be tensions and ambiguities within the distribution service classification framework that would benefit from clarification?
- Do these issues relate in particular to the potential for development of competition in the provision of energy services from storage?
- How should network business-controlled storage on the network be regulated - as standard or alternative control, or other?

AGL believes that the AEMC has accurately assessed the distribution service classification framework and agrees with the AEMC on the likely classification of the different functions under the AER's regulation. That is, the use of energy storage to provide:

1. network support, an alternative to network augmentation in addressing network capacity or constraint issues, is a standard control service;
2. quality and reliability of supply where a network uses energy storage to manage voltage imbalance or other power quality functions would also be a standard control service;
3. any Market ancillary services used by AEMO should be an unclassified service; and
4. energy trading services are competitive and should also be unregulated and unclassified services.

The classification of these network services is predominantly to determine how a network business would recover its costs, namely how the revenue recovery is determined, what level of oversight and regulation is needed and which customers groups should be paying for the service.

Unfortunately, the AEMC preliminary findings suggest that networks can directly invest in energy storage for network support or for improving quality of supply as with other network assets despite one of its overarching principles being the development of competition in energy storage services. This flaw means that the service classification becomes a critical issue as the AER will need to assess the cost efficiency of a network's internal investments in energy storage despite there being a competitive market at hand.

In AGL's view, the costs of energy storage programs is largely uncontroversial if the regulatory framework is established that requires all energy storage services to be accessed through the competitive market rather than through in-house investments. This would ensure that any energy storage options are provided at the lowest cost with a greater range of possible industry benefits included.

As the investment costs are competitive and efficient then the service classification of energy storage becomes a secondary issue as the AER only has to regulate revenue recovery for the network, i.e. which customers should be paying for the service delivery?

Network revenue regulation and energy storage

The AEMC believes that there is potential for network businesses to utilise energy storage to provide an alternative to existing network asset augmentation, as well as a means for maintaining or improving service quality and reliability.

AGL agrees that there is significant potential for cost effective energy storage to be used to provide regulated energy services but does not believe this potential will be recognised if the AEMC persists with the current framework outlined in the discussion paper.

Consultation questions

- Do stakeholders agree that the current rules applicable to networks are capable of integrating storage?
- Is the incentive framework for distribution and transmission businesses creating any barrier to the deployment of storage where it is cost effective to do so?
- Given the relatively unproven nature of battery storage should it be treated differently to other assets?
- Are any of the timelines associated with regulatory processes likely to be problematic?
 - For instance are the lead times in the planning process sufficiently long to capture the value of an incremental storage solution as a substitute for traditional network investment?

AGL believes the AEMC should be examining the future delivery of energy storage services in relation to network businesses based on three objectives:

Incentivising the use of innovative non-network options;

1. Ensuring the services are delivered efficiently, which includes cost efficiency and integrating all potential benefits to industry; and
2. Developing a competitive market for energy storage.
3. The AEMC's approach of only utilising the current rules applicable to networks fails to meet these objectives.

Incentives

AGL recognises the AEMC made a rule change for the Demand Management Incentive Scheme in order to remove any network bias towards expenditure on network capital investment over non-network options because of the financial incentives for non-network options including energy storage solutions were limited.

This rule change will provide some financial incentives for networks to use non-network options. However, although distribution businesses will always be the decision makers with regard to whether a network or non-network option provides the most efficient solution to address a constraint on their networks, it is pertinent to query whether they are well placed to provide possible non-network solutions.

AGL believes if these energy storage services are produced in-house as part of a network's capital investment program then the options likely considered and

implemented by the networks will be largely generic and lacking innovation. This is to be expected when a business has little day to day experience with a new product.

Efficient delivery

The AEMC recognises that there will be a competitive market for energy storage products so it must recognise that there will be other parties in a position to provide services at the grid level at a competitive cost to the distribution businesses.

We note the AEMC's underlying expectation that network businesses will, in their day-to-day operations, consider the most efficient means of delivering regulated services. AGL does not agree with this expectation as given the existing regulatory framework, Network businesses currently explore options that are directly available to them and price their services on this basis.

More importantly, an energy storage option, even for network support purposes may also provide a range of additional benefits to consumer, retailer, network or wholesale market participant that the distribution business may not be aware of or cannot access easily. A successful non-network option will capture and assess these benefits in conjunction with cost of delivery.

Competitive market

The AEMC has designated use of energy storage beyond the meter as a competitive market and therefore can only be conducted by a network through associated, ring-fenced entities.

However, it has proposed that the regulated networks do not have to access a competitive market for energy storage before the meter. This seems incongruent with the treatment of other contestable services such as metering and is reliant on network business behaviour to avoid the many issues we've outlined above.

DNSP ring fencing guidelines and their applicability to energy storage

AGL strongly agrees with the AEMC that it will be very important that strict ring-fencing provisions are in place for network businesses looking to set up separate entities to install storage behind the meter. These provisions must prevent any ability of the network to favour affiliated businesses or provide advantage to the affiliate in areas like connection processes. Strong enforcement and compliance obligations will also be required to give the market confidence that a level playing field is being maintained. This is also applicable to transmission businesses looking to enter contestable markets.

Consultation questions

- Would current ring fencing guidelines address any concerns about a TNSP being able to impact the wholesale market or does storage raise unique issues? If changes are required, what are they?

Consultation questions

- What will be required in the ring fencing guidelines to maximise the benefit of network use of storage?
- What will be required in the ring fencing guidelines to minimise a network business's ability to unduly impact a contestable market?

AGL is of the view that the regulatory framework and market arrangements must promote customer choice and provide a level playing field for market participants.

In conjunction with this principle, AGL therefore concurs that networks:

- should not be able to install storage behind the meter unless they do so through associated entities; and
- such associated network businesses must adhere to strict ring fencing provisions if they wish to participate in the competitive market.

However, AGL believes that these principles should be extended to all storage activities and not just limited to behind the meter investment.

The provision of energy storage services at the grid level should occur on an open and competitive basis to maximise the efficiency of network investment.

Efficient delivery of energy storage should primarily occur through an open competitive market, and any incentive to deploy such activities should be either completely avoided or implemented such that it does not stifle innovation and the development of lowest cost solutions.

The lack of a competitive process means that any solution will be limited to options that are available to or chosen by the network, and will be priced only on the basis of the cost to the distribution business of providing that service.

Although distribution businesses should always consider energy storage for network management solutions as an alternative to traditional network investment, they should not be allowed as monopoly businesses to utilise their regulated funding for technologies and offers to customers for non-network solutions. This is contradictory to the AEMC's Power of Choice recommendation to ensure that demand side technologies and services are provided under a competitively neutral basis, which is fundamental for customer choice and ensuring customer engagement and participation.

Clearly, the development of storage service options by distribution businesses at the customer level would see a reduction in customer choice in technology and energy supply options, as customer options may be restricted through monopoly arrangements relating to mandated demand management activities.

We strongly support the establishment of a nationally consistent ring fencing guideline, developed and enforced by the AER, to address the structural and financial separation of Network Businesses wishing to participate in contestable markets. AGL believes also that ring-fencing should apply to access and use of information (customer and network data) that is collected and maintained for the purposes of network operation from being used to support contestable activities by network businesses. This arrangement will ensure that competitive neutrality between market participants is maintained.

We recommend that once these arrangements are in place, that there is a compliance monitoring arrangement in place.

AGL also agrees that the existing network planning requirements and investment tests should lead network businesses to consider storage as an alternative to traditional network solutions. However, AGL is of the view that:

- For the purposes of network regulation, storage should be considered a contestable service;
- Storage services behind the meter should be excluded from any network regulated services existing or new;
- Market arrangements should promote customer choice while providing a level playing field for market participants;
- Storage at the grid level should be done through a competitive tender.

Ownership and Control

Consultation questions

- Are the connection requirements that are being imposed by different distribution businesses for consumer- or retailer-controlled storage being used as a barrier? If so, how?
- Does the ongoing degree of control that is being required by distribution businesses for consumer- or retailer-controlled storage represent a genuine safety, security or reliability need, or is it more appropriately a network interest that should be negotiated or signalled through prices?

Although AGL acknowledges the improvements to the grid connection for embedded generation through the establishment of NER Chapter 5A, we consider that the process implemented by Network Businesses are inconsistent, inefficient and generally lack transparency. As a result, we note that a number of customer requests for solar across residential and business customers have been delayed and/or rejected/modified, in most cases without clear rationale from the network businesses. Although we believe that the connection process could apply to storage applications, we consider that further improvements are necessary to address these issues.

AGL also notes, that Network Businesses play a gate-keeper role for all grid connections for contestable services on their network. We believe this is inefficient and unfair, especially as a number of Network Businesses have acknowledged their interests in competing in these contestable markets. To remain as gate-keeper will provide Network Businesses with an unfair market advantage, and also introduces a level of bias in the processing of applications.

We therefore proposes that an independent gate-keeper, an existing authorised body, such as the Australian Energy Market Operator (AEMO) or Australian Energy Regulator (AER), should be appointed to administer and approval all grid applications, to ensure a fair, efficient and streamlined process for customers who seek to install embedded generation. We welcome the opportunity to work with the AEMC to further develop this proposed market role.

Further, AGL also believes that an automatic approval threshold should be applied to connection applications which do not require network upgrade or augmentation works. We consider that this threshold for retail customers should be set at 5kW, and applied to all systems that meet the requirements set out in AS4777.

Although we acknowledge that an increased penetration rate of solar PV may increase the risk to network infrastructure over times of peak load, these are generally few and far between. AGL welcomes the opportunity of Network Businesses to discuss alternative arrangements to address these risks, without impacting customer systems or reducing customer choice.

Competitive Neutrality

AGL supports competitive neutrality as a first principle and we believe contestable markets should not provide an unfair advantage to any market participant. This is fundamental in order to focus on the long term interest of consumers.

- All parties, including Network Businesses, using private equities, should be able to compete openly on their merits to provide different products and services to customers within an open and transparent framework.
- However, interference by regulated network businesses will distort competitive markets, both new and existing, if allowed to draw on regulated funding for products and services behind the meter such as solar PV, battery storage, and other technologies.

As a result we strongly support the AEMCs preliminary findings particularly:

- Storage is a contestable service and participation of network businesses in this market must be done on a level playing field with other market participants. The market-led installation of storage is most likely to lead to efficient outcomes.
- It will be important to monitor the impact of ring-fencing requirements to ensure the vertical disaggregation of the electricity supply chain between regulated monopoly and competitive activities is maintained.

Storage at the wholesale electricity level

Consultation questions

- Is more clarity required in the definition of a 'generating unit'? If so, what changes would be necessary? How would such changes be necessary to preserve the registration requirements and eligibility criteria currently in place for generators?
- Are current registration requirements appropriate for storage that may be used both as generation and load? Should a person operating storage to both buy and sell electricity through the spot market be required to register as both a market customer and a generator?

Definition

AGL believes that a clearer definition of "generator" is required. A revised definition should take into consideration that centralised large scale source, which

could be retired over time, as smaller scale distributed sources become more prevalent.

Without such a change, the application of associated terminology like 'generating units', 'aggregation of generating units', 'dis-patchable units' are likely to take on different meaning and create unnecessary complexity and confusion in the registration process.

Non-Scheduled

AGL believes it is important to ensure that as non-scheduled storage facility operating largely as an export device grows in volume and size over time, it does not distort the competitive market process for scheduled and dis-patchable units (i.e. when it has an impact on spot prices). However, the need for market transparency should be a balanced approach to avoid regulatory over-burden on data and reporting frequency. Additionally, any aggregated storage facilities of over 30 MW across NMIs should not be required to register as a scheduled generator as the aggregation is primarily for ease of settlement, not a coordinated dis-patchable unit.

Generator Classification, Exemptions and Registration

As indicated earlier, AGL believes that current registration process is skewed towards larger and medium size generating units. The current classifications process and criteria for a generator may not be "fit-for purpose" and onerous for a storage device. For instance, all generators must go through a detailed technical assessment with significant submissions of data and modelling requirements either to AEMO or network service providers. While AGL is not advocating a less rigorous technical assessments, there is certainly room for a review of the process to ensure any unintended barrier is removed for smaller devices which has lesser impact on the power system and market outcomes. Any inefficient assessment will increase cost and regulatory burden and hence on the uptake of emerging storage facilities.

Consultation questions

- Do you see any issues with the current connections framework? For storage as a generator? For storage as a load?
- Do performance standards represent a barrier to storage connection? For storage as a generator? For storage as a load?

As per previous responses, we believe that the current connection process has been based on connecting large generation units or large customers which is complex and requires simplification. The current process and approach is not likely to facilitate uptake of smaller storage facilities with added confusions over jurisdiction control over the technical and connection requirements. This should be addressed on a national basis removing inconsistencies and inefficiencies.

Additionally, as storage could be both importing and exporting electricity, costs of connecting and operating the facility should be optimized through flexible connection terms both commercially and technically.

Consultation questions

- Is there anything unique about the use of storage devices that makes the existing arrangements regarding fees/charges for participation in the NEM not fit for purpose?

In AGL's view, current structure of charges is reasonable for storage.

AGL suggests that there should be a fair charge for the registration of "generator" connection so that it is not excessive for smaller market registration. The registration costs should be calibrated for different capacities so that charges for the registration of a 100MW generator registration is equitable with charging the connection of a 10MW generator.

For TUOS or DUOS charges, consideration should be given on the recently proposed tariff reform to send the right price signals for the investment of emerging technology like storage especially where price arbitrage is a key commercial driver. This should also include the entitlement for the payment of avoided TUOS to storage proponents with a more transparent and auditable process of assessment by network.

Consultation questions

- Do you agree with these preliminary findings?
- Are there other issues which should be considered?

AGL generally concurs with AEMC that the overall approach to the structure of registration for storage is reasonable but would strongly encourage AEMO to review the detail mechanism of market registrations.