10 August 2018

Dr Stuart Johnston
General Manager Network Transformation
Energy Networks Australia
Unit 5, Level 12, 385 Bourke St
Melbourne VIC 3000

info@energynetworks.com.au

Dear Dr Johnston

Open Energy Networks

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Operator (AEMO) and Energy Networks Australia (ENA) on their joint consultation on *Open Energy Networks* Consultation Paper. This submission is provided by Energy Queensland, on behalf of its related entities Energex Limited (Energex), Ergon Energy Corporation Limited (Ergon Energy), Ergon Energy Queensland Limited (EEQ) and Yurika Pty Ltd (Yurika).

Energy Queensland welcomes AEMO and ENA's collaboration with network businesses in producing the Open Energy Networks Consultation Paper to explore options for improving the electricity system to ensure that growing residential technologies such as solar and storage work in harmony with the wider system while also delivering the optimal value to customers. Specifically, we acknowledge that the Consultation Paper lays the foundations for the establishment of an agreed framework to facilitate increased levels of Distributed Energy Resources, and its integration and optimisation with the system, and sets out some initial 'straw man' frameworks. Energy Queensland is eager to support ENA and AEMO by exploring how these proposed frameworks will interact with the existing National Electricity Market wholesale market.

Should you require additional information or wish to discuss any aspect of this submission, please do not hesitate to contact either myself on (07) 3851 6416 or Trudy Fraser on (07) 3851 6787.

Yours Sincerely

Jenny Doyle
General Manager Regulation and Pricing

Telephone: (07) 3851 6416
Email: jenny.doyle@energyq.com.au

Encl: Energy Queensland's submission to the Consultation Paper

Energy Queensland Submission on the Open Energy Networks

Consultation Paper

Energy Queensland Limited
10 August 2018

About Energy Queensland

Energy Queensland Limited (Energy Queensland) is a Queensland Government Owned Corporation that operates a group of businesses providing energy services across Queensland, including:

- Distribution Network Service Providers (DNSP), Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy);
- a regional service delivery retailer, Ergon Energy Queensland Pty Ltd (Ergon Energy Retail); and
- affiliated contestable business, Yurika Pty Ltd.

Energy Queensland's purpose is to "safely deliver secure, affordable and sustainable energy solutions with our communities and customers" and is focussed on working across its portfolio of activities to deliver customers lower, more predictable power bills while maintaining a safe and reliable supply and a great customer service experience.

Our distribution businesses, Energex and Ergon Energy, cover 1.7 million km^2 and supply 37,208 GWh of energy to 2.1 million homes and businesses. Ergon Energy Retail sells electricity to 740,000 customers.

The Energy Queensland Group also includes Yurika, an energy services business creating innovative solutions to deliver customers greater choice and control over their energy needs and access to new solutions and technologies. Yurika is a key pillar to ensure that Energy Queensland is able to meet and adapt to changes and developments in the rapidly evolving energy market.

Contact details

Energy Queensland Limited
Jenny Doyle
General Manager Regulation and Pricing
Email: jenny.doyle@energyq.com.au
Mobile: 0427 156 897
PO Box 1090, Townsville QLD 4810
Level 6, 420 Flinders Street, Townsville QLD 4810
www.energyq.com.au

Energy Queensland Limited ABN 96 612 535 583

1 Introduction

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Operator (AEMO) and Energy Networks Australia (ENA) on their joint consultation on Open Energy Networks (Consultation Paper). This submission is provided by Energy Queensland, on behalf of its related entities Energex Limited (Energex), Ergon Energy Corporation Limited (Ergon Energy), Ergon Energy Queensland Limited (EEQ) and Yurika Pty Ltd (Yurika).

Energy Queensland welcomes AEMO and ENA's collaboration with network businesses in producing the Open Energy Networks Consultation Paper to explore options for improving the electricity system to ensure that growing residential technologies such as solar and storage work in harmony with the wider system while also delivering the optimal value to customers. Specifically, we acknowledge that the Consultation Paper lays the foundations for the establishment of an agreed framework to facilitate increased levels of Distributed Energy Resources (DER), and its integration and optimisation with the system, and sets out some initial 'straw man' frameworks. Energy Queensland is eager to support ENA and AEMO by exploring how these proposed frameworks will interact with the existing National Electricity Market (NEM) wholesale market.

As DER technology penetration continues to grow, it is increasingly influencing the way our customers use our network and source energy. For instance:

- We have already seen Queensland integrate the highest penetration of residential solar photovoltaics (PV) in Australia, with South-East Queensland having one of the highest penetrations in the world. Currently, there are just over half a million stand-alone houses with solar PV in Queensland which, at 1.95 GW, makes it the equal largest collective generation source in the state. We anticipate continued growth in solar PV, both at a residential level and in business and commercial customer sites, and have also recently seen a significant increase in applications to connect large-scale solar (at a distribution level), particularly in our rural areas. Currently, Ergon Energy and Energex have a significant number of large scale export generation projects in various stages of progress, mostly for solar PV farms.

- There is significant activity around the development and deployment of complementary battery storage technology, with over 1 MWh of residential energy storage installed in Queensland over the last twelve months.

- While the electric vehicle market is still in its infancy in Australia, there are now over 1 000 electric vehicles in Queensland, with a 60/40 split between plug-in hybrid and battery electric vehicles.

In the future, solar PV is expected to continue to accelerate, while batteries and electric vehicles are also expected to emerge in growing penetrations as costs continue to fall and customers are able to benefit from these technologies.

Furthermore, the uptake of large-scale embedded generation on distribution networks is in many cases, but most particularly in Queensland, continuing at a rate and volume greater than that experienced by the corresponding transmission network service provider.

Regional and rural Queensland in particular have seen significant growth over the last three years in the number of large-scale generation connections, largely attributable to the State's high solar irradiance, the available and affordable land mass and Queensland's renewable energy target. Energy Queensland currently has a pipeline of committed large-scale solar and wind generators at 1200 MW total connected to its network and renewable generator connections are expected to continue to increase, with forecasts suggesting that by 2030 there could be as much as 8.3 GW of renewables connected in Queensland. A significant proportion of those renewables will be connected to Energy Queensland's distribution networks.

Energy Queensland recognises the potential to optimise and coordinate these technologies for the benefit of all parties. As noted in the Electricity Network Transformation Roadmap[1], appropriate coordination and optimisation will help to realise significant financial benefits through avoided network investment and lower household electricity bills. We look forward to working with the ENA and AEMO to develop a framework which will help to unlock this potential.

The following section highlights a number of areas which Energy Queensland believes warrant further investigation, while section 3 addresses the specific questions raised in the Consultation Paper.

Energy Queensland is available to discuss this submission or provide further detail regarding the issues raised, should AEMO or ENA require.

---

[1] CSIRO and Energy Networks Australia 2017, Electricity Network Transformation Roadmap: Final Report

2 Specific comments

2.1 Enhancing the value to customers

Energy Queensland recognises that our customers are increasingly exploring ways to optimise their investment in energy and that there is a significant role for DSNPs to play to support this. We believe that educating our customers on the role of the network and the benefit that they derive from it will help encourage increased integration between the DER and the network to maximise the benefit for both customers and networks.

While economic drivers are likely to be motivating customers' decisions to invest in DER, we recognise that there may also be external factors, such as a reduction in environmental impacts or also freedom of choice, independence or the ability to participate in emerging electricity markets. Notwithstanding, an appropriate coordination and education framework will help to ensure that customers invest at a prudent level and avoid inefficient investment in DER which could not only impact on the network but also produce negative returns to the customer, through long pay-back periods which exceed the reduction in their electricity bill or feed-in tariff returns. Evidence suggests that many customers want to lower costs simply, and with streamlined and efficient engagement with market entities (such as retailers and aggregators). The establishment of appropriate price signals between all market participants will play a key role in enabling the industry to ensure the optimal mix of electricity investment occurs.

We can also assist our customers by providing improved connection contracts which give customers better guidance on what to install that will enable them to participate and derive the most value.

The future success of the integration of DER in the NEM will ultimately depend on the value individual end users, particularly residential and rural domestic customers will receive as a result of volunteering their DER for participation in the NEM. If the governance framework is too restrictive or makes it difficult to participate, customers may derive more value from simply reducing their energy through the connection point.

We are also investigating ways to ensure that our vulnerable customers, and customers without DER, are not disadvantaged as the penetration of DER grows. For example, we are enabling a number of PV installations to be connected on public housing in selected locations across Queensland, as part of the

Queensland Government trial to deliver cheaper energy to public housing tenants.

2.2 Distribution level market functions

Energy Queensland proposes that an additional distribution level market function be included as the chronological first of the key functions in DER optimisation: DER Connection. This stage is quite critical as it will set expectations in terms of how DER will behave on the network. This function would set the parameters and processes for installing and integrating DER into the grid, and would encompass Australian and International standards which describe the connection requirements, and ensure the observance and execution of regulations around DER connections.

2.3 Low voltage monitoring and management capability

As noted in section 1 above, Queensland DNSPs are experiencing a large volume and concentration of DER connections as well as increasing applications to connect large-scale solar which is continuing at a rate and volume greater than that experienced by the corresponding transmission network service provider. Furthermore, in western Queensland where there is no transmission network, there is currently more than 1GW of solar connected. As such, system limitations such as capacity and voltage will often exist at the distribution network level.

Furthermore, traditional approaches to transmission monitoring are not fit for purpose at the 11kV and Low Voltage (LV) level due to the orders of magnitude of complexity in the distribution networks. For example, a model of one 11kV feeder in Queensland is 10 per cent of the size of the entire NEM model in terms of size and complexity.

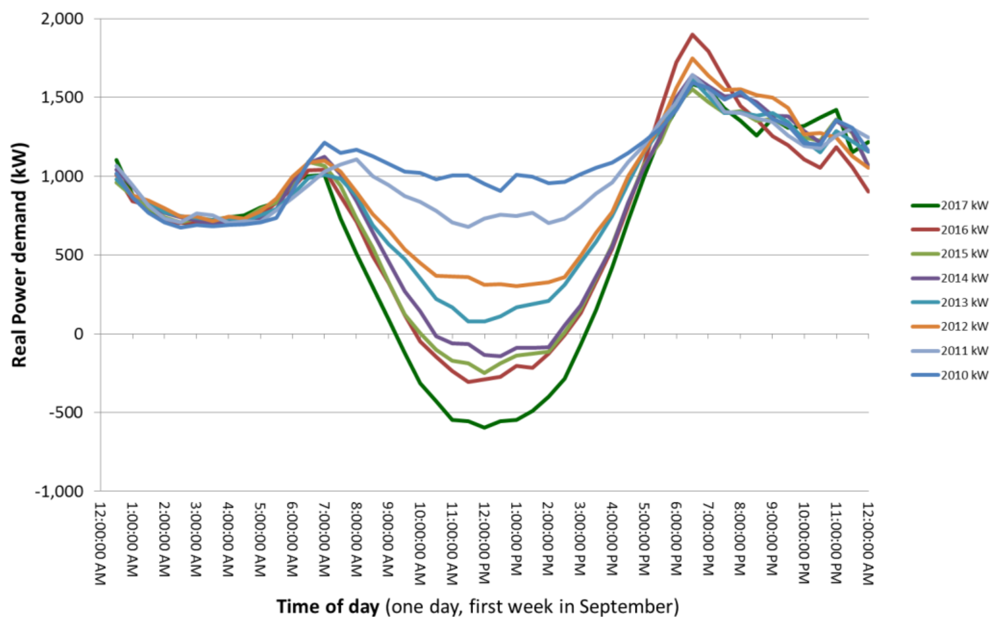
Energy Queensland believes that increased levels of LV monitoring and management capability are required to enable any optimisation of DER at a distribution level and also to manage the expected growth of more localised system limitations. We note that the Consultation Paper recommends that expanded network modelling and LV monitoring capabilities will be required to support active management and visibility of LV networks, regardless of the preferred DER optimisation framework. We support this as a ‘no regrets’ immediate action that can be implemented to streamline the DER transition and this is consistent with Energy Queensland’s LV strategy to improve LV visibility and monitoring.

3 Table of detailed comments

Consultation Paper Feedback Question	Energy Queensland Comment
Issue 1: Pathways for DER to provide value	
1. Are these sources of value comprehensive and do they represent a suitable set of key use-cases to test potential value release mechanisms?	*Value to customer* Energy Queensland suggests there are benchmarks which could be used to compare the customer value against, including future state models where no orchestration emerges (collective orchestration, and individual orchestration). As noted in section 2.1 above, customers may derive value in addition to the financial values mentioned in the Consultation Paper, such as the freedom of choice, ability to participate in the market, or intrinsic values associated with enhanced environmental outcomes. *Value to service providers* Active DER devices can provide monitoring data of the customer connection point and beyond the meter elements, to provide more informed decision making by those that can access it. At a primary level this benefits the customer themselves, but also the retailer or energy service provider whom the customer chooses to share this information with (allowing better product/service offerings, or guidance on efficiency opportunities) and the network (supporting better forecasting, network current state assessment etc.) where Advanced Metering Infrastructure (AMI) is not available or with insights in excess of AMI capability.
2. Are stakeholders willing to share work they have undertaken, and may not yet be in the public domain, which would help to quantify and prioritise these value streams now and into the future?	Subject to appropriate confidentiality agreements, privacy rules and corporate approval, high level information on battery trials, modelling and analytics, and other aligned work may be made available. Energy Queensland looks forward to working with the ENA and AEMO in developing the White Paper and providing supporting evidence where appropriate .

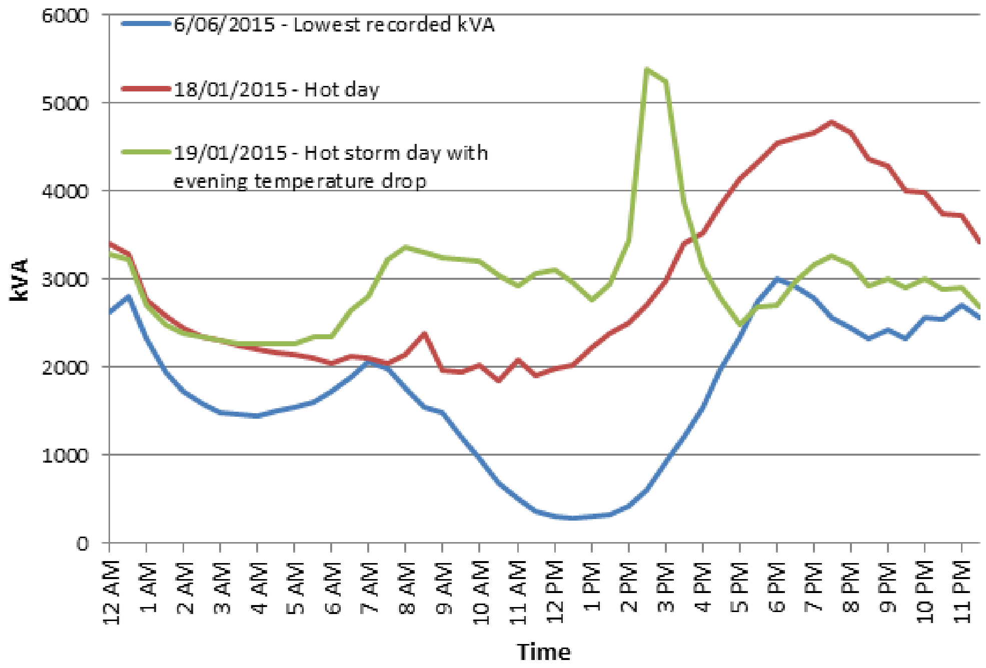
Issue 2: Maximising passive DER potential	
1. Are there additional key challenges presented by passive DER beyond those identified here?	*Network security* Energy Queensland notes that the security challenges facing South Australia and Western Australia referenced in the Consultation Paper are related to oversupply at a system level. However, the challenge in Queensland is anticipated to be attributed to system strength and limitations in the sub-transmission, distribution and especially in localised LV networks in coordinating and integrating DER in the system. For example, solar PV is impacting load profiles, asset utilisation, load forecasting and load volatility. The change in load pattern, as the penetration of solar PV systems on a feeder has increased, is illustrated in Figure 1. This figure shows the daily load pattern on a residential feeder in Burrum Heads over six consecutive years for the first week in September. The daytime generation of solar has increased to the point that the feeder back-feeds through the zone substation. This increase in daily variance makes it more challenging to keep the network voltage within statutory limits, and can also result in decreased asset life as voltage regulation devices operate more frequently.

Figure 1: Burrum Heads Feeder Profile: Annual changes observed for September 2010 - 2017



The increase in embedded generation on our feeders make it challenging to identify underlying load growth, as additional daytime load can be offset by local generation. Variation to energy-use patterns or growth in load only becomes apparent when an unexpected event causes the solar PV systems to stop generating. Figure 2 highlights that on the occasions when solar PV generation is not available, such as during an afternoon thunderstorm, the full customer load is supplied from the network, which can result in large and rapid variations in energy flows. As networks are designed for supplying the maximum demand required by our customers, increasing penetrations of intermittent embedded generating units will significantly increase the complexity of planning and operating networks. These network volatility events could result in excessive voltage drops, overloading of components, protection operation issues and loss of supply if not appropriately managed.

Figure 2: Dundowran Feeder: Storm event exposing hidden demand



Governance for tactical DER device management

At a tactical level, successful DER orchestration lies in managing and understanding the current DER installation base. As noted in section 2.1 above, enhanced connection agreements, including data gathering requirements will assist in successful DER orchestration. We also note that the currently proposed DER register will also improve data management and visibility, which is key to determining hosting capacities of the network, particularly at the LV level. However, detailed Power System Computer Aided Design modelling is also required to identify system strength limitations at the HV level.

2. Is this an appropriate list of new capabilities and actions required to maximise network hosting potential for passive DER?	*Capabilities at the prosumer level* It is important to remember that customers will be both a generator and a load, and the level of capability will depend on the appliances at their home, which are increasingly controllable or "active". *Capabilities as a DNSP* Energy Queensland notes that hosting capacity is dynamic, influenced by factors such as load, temperature and weather, system strength, changes in impedance of network (i.e. reconfiguration) which influences load flows. As noted in section 2.3 above, the several orders of magnitude of complexity due to the quantity of nodes in the LV and distribution networks means that traditional transmission approaches are not fit for purpose at lower distribution network levels. As such, we suggest the capabilities around advanced planning should be expanded to note this will require increased sophistication and automation, especially given the role of LV and Medium Voltage (MV) network constraints in overarching system outcomes. Technologies which may increase advanced planning and management capabilities include: • Weather forecasting and monitoring devices (such as CSIRO's cloud cameras); and • Active voltage control (Utility Batteries such as Ergon Energy's Grid Utility Support System unit, LV STATCOMs and power transformers). Furthermore, we believe that state estimation will also play a significant role, both in terms of real time state and forecast state. We note that the Distribution Management System (DMS) is also anticipated to play a role in managing the integration of static data and real time monitoring data into a network model to enable advanced planning and operation. While this will be true for MV distribution networks, this will not be the case for LV networks, whose complexity and nodal quantity will dictate the need of a stand-alone system for automated management.
3. What other actions might need to be taken to maximise passive DER potential?	From a network perspective a NEM wide expansion of forecasting capability and visibility of related data by all entities will be required to maximise DER potential, but in particular, DNSPs will need to make a concerted effort to transition from the current state – moving towards dynamic, bottom up capabilities at all nodes (i.e. state estimation / forecasted state). At a tactical level, this would include auditing and compliance of settings to ensure prescribed settings have been applied to enable accurate modelling of performance (e.g. PV could have increased voltage set points in or in different voltage control modes).

	With the appropriate policy, economic and technical settings customers will make an optimised level of investment for themselves in DER. As noted earlier, improved connection agreements will assist customers in realising the benefit of the network which may result in better utilisation of the network while also empowering customers with the freedom of choice and ability to participate in emerging electricity markets.
Issue 3: Maximising active DER potential	
1. Are these the key challenges presented by active DER?	There is currently significant regulatory reform occurring up to 2021 that will impact the industry requirement to change systems and processes, including the 5 minute settlement rule, the roll out of digital meters (impacting data management), National Energy Guarantee (NEG) reforms, Global Settlements, as well as continual improvements to enhance customer protections and information. There is a great expectation to significantly exceed the global rate of electricity market decentralisation. Effective price signals are imperative to ensuring this is well controlled and prevents heightened costs to be borne by the customer. Furthermore, Energy Queensland notes that the Consultation Paper highlights capacity and thermal limits as key challenges for networks for both active and passive DER. However, we believe that voltage limits will arise earlier in the Energy Queensland distribution networks. As the voltage swings from low load/high generation periods, to low generation/high load periods, it will become challenging to maintain voltage within safe statutory limits. In addition, the speed (and frequency throughout the day) in which these voltage fluctuations can occur from active DER will cause increased aging of plant such as Online Tap Changes or Voltage Regulators. Increased momentary excursions from safe limits will also cause increased aging of consumer appliances and equipment failure (such as motor start issues). Improved standards to enable inverter manufacturers to provide suitable devices are required as a matter of priority. Furthermore, DNSPs will require enhanced organisational capability and data/software system capability to support more active DER as well as plug-in DER such as electric vehicles.
2. Would resolution of the key impediments listed be sufficient to release the additional value available from active DER?	Energy Queensland suggests that further investigation into potential costs and benefits of proposed strawmen transitions will be required to ensure that full benefits are realised to the community, consistent with the proposed principle for framework design to deliver the best overall value, considering economic, social and environmental factors.

3. What other actions might need to be taken to maximise active DER potential?	Effective price signals to support the integration of DER into emerging electricity markets are imperative. A prerequisite for fully integrated pricing is the digital meter rollout into the NEM, implementation of the 5 minute settlement rule, changes to network tariff signals and retail prices reflecting the wholesale market and improved data. Considering how these price signals could be integrated in the context of the existing price signalling is suggested as important. Energy Queensland also notes that Active DER would need to be able to receive control signals from a remote party (such as AEMO or the Network) in order to adjust inputs and outputs in emergency conditions. However, we suggest that DER connections and performance could be maximised by enabling this functionality more frequently than just emergency conditions. A standard for active DER connection could have dynamic export setting based on local constraints, feeding inputs such as LV monitoring and state estimation to manage network constraints in smaller localised networks. For example, constraints on DER connections could potentially be avoided if a centralised, active device at a customer premise communicated with active DER to keep it within limits that would be able to be dynamically controlled (based on localised constraints). This could also provide the customer or aggregators with improved understanding of localised constraints to export for market purposes. Conversely, there is the potential that access to consumer DERs will be increasingly dynamic, and there will be a balance of local control (potentially through settings), and remote control (through automated responses for network and system security), as well as the market services the DERs then act within. Regardless of how these capabilities emerge, improved channels of communication between the DNSP and the Aggregator or DER owner, including new communication channels and improved forecasting will be critical to maximise DER potential. Where possible, this will also include prior notice of an event for aggregators and DER owners which will ensure mutually beneficial outcomes for all parties. We also suggest consideration be given to aligning Australian standards, including: • the requirements for interconnecting DER with electric power systems (IEEE1547:2018); and • the Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), and End-Use Applications and Loads (IEEE2030), which is the standard a utility would use to communicate with an aggregator to leverage the value of the IEEE1547:2018 compliant devices.

4. What are the challenges in managing the new and emerging markets for DER?	*Customer experience* Energy Queensland strongly suggests engaging with and encouraging customers to actively participate in the DER market, without imposing punitive or non-cost reflective tariffs, which will involve a high level of community education to realise the full value of DER. We support making the framework for emerging DER markets easy to understand and user friendly so DER owners can focus on their main core business without worrying about what their DER is doing in the market. For many customers, DER is a tool to reduce their power bill and access some additional benefits. Therefore, participation will be low if it is so complicated that it takes the DER owner away from their core business, and is also likely to result in an inefficient level of investment. *Network management* We suggest that consideration be given to which system or network constraints should be prioritised, beyond a contracted value (i.e. as a condition of connecting). For instance, DER in Queensland is currently required to have power quality modes (e.g. non-unity power factor or other reactive power support activated) as condition of connection. Emerging technologies may find participation in the market challenging, where standards and control protocols have been locked down or designed to suit particular or existing technical solutions. Furthermore, consideration should also be given to what emergency situations at either a system or network level would override the market response (as exists now such as in Under Frequency Load Control).
5. At what point is coordination of the Wholesale, FCAS and new markets for DER required?	Energy Queensland suggests coordination will be required when the aggregator behaviour of DER has a material impact physically and financially in those markets.
Issue 4: Frameworks for DER optimisation within distribution network limits	
1. How do aggregators best see themselves interfacing with the market?	Analysis into the value chain of the aggregator is required to ensure viability, including consideration of how different frameworks may impact the value of ancillary services, in the context of increasing decentralised generation, and considering the potential introduction of the NEG.
2. Have the advantages and disadvantages of each model been appropriately described?	As the model architectures are further defined, advantages and disadvantages will become more evident. It is also feasible that other models may emerge in light of customers' engagement to extracting the value from their DER for providing market and distribution system support. Across all three models, DNSPs will be required to make expanded investment in LV visibility and improved forecasting capabilities, and it will be important to include an effective emergency override across all scenarios in the case of system and localised limits being exceeded. As highlighted above,

	managing LV constraints in areas of high penetrations of DER will become increasingly complex, growing the importance of local DNSP process in any preferred approach or framework. Furthermore, unified guidelines and principles will also be required for all 3 models proposed.
3. Are there other reasons why any of these (or alternative) models should be preferred?	All solutions must involve the active participation of the DNSPs. Customers will have little tolerance for a “loss of access” or reduction in the “quality of supply” because of market participants pursuing market driven outcomes. The final solution needs to be easy to understand and user friendly to maximise participation of aggregators or DER owners. If processes between different parties are seen as overly complex then it may defer potential participants away from the model.
Issue 5: Immediate actions to improve DER coordination	
1. Are these the right actions for the AEMO and Energy Networks Australia to consider to improve the coordination of DER?	Energy Queensland believes the actions proposed in the Consultation Paper underline the investment requirement for DNSPs to better monitor and understand their LV networks, as noted in section 2.3 above. This would align with the need for increased network monitoring devices and an LV platform (outside of DMS as DMS is a platform for MV / HV networks). While the current AS4777 may be sufficient, we suggest that the capability being included in IEEE1547 also be considered as an indication of what is required to enable orchestration. Notwithstanding, we suggest the actions outlined in the Consultation Paper assume active and engaged participation by end use customers. As mentioned in section 2.1, many customers want streamlined and efficient engagement with market entities, and in control of their DER. There is the potential that many customers will defer their engagement to market participants (such as aggregators), rather than taking active control over their DER. This means customers may find themselves facing difficulties in achieving meaningful levels of DER control – both physically and financially, at a local level in a distribution network.
2. Are there other immediate actions that could be undertaken to aid the coordination of DER?	Energy Queensland suggests the following actions would aid the coordination of DER. *1. Expansion of funding to accelerate innovation* Expansion of funding mechanisms to coordinate efficient collaboration of piloting and testing of the capabilities to deliver the Distribution System Operator (DSO) (in any of the scenarios) is needed beyond what is currently provided through the demand management innovation allowance or other sources available to DNSPs. An initial benchmark may be the approach taken by Ofgem or New York Reforming the Energy Vision (NYREV) as an example to help provide greater resources to support the development and collaboration of this transition. The current Australian Energy Regulator

	Determination approach does not best allow networks to fund this, and with the exception of the Australian Renewable Energy Agency, no other funding sources are open to other parties. *2. Supporting standards, contracts and legislation are required to streamline and maximise value* The small-scale renewable energy scheme is critical in facilitating DNSP awareness of Solar PV connections to the NEM and ensuring the use of suitably qualified installers, with suitably certified products. No similar “carrot” exists for batteries or other DER (in particular the elements that will be retrofitted to enable active DER) and as a result very few battery systems are known of by DNSPs. Consideration should be given as to how to improve compliance, beyond the existing obligation for the proponent/customer in the National Energy Rules . Energy Queensland suggests a review of registration categories be considered, with the view to removing the ‘non-scheduled’ classification. Furthermore, we recommend the development of connection contracts, which appropriately identify customers as both load and generation customers. Most customers are moving towards being both, and having two different contracts (and separate standards) already contributes to slow and poor customer connection processes and solutions. For example, a new customer connecting will often know they want both a load and DER (and in the future active DER) connection. Consideration needs to be given to enable and assess this connection for both load and generation together. Consideration may also be needed to be given to potential penalties if the DNSP/DSO are unable to override control of DER in emergency network conditions, or where active DER do not respond appropriately to these signals. While additional DER can be connected where active DER is available, if the DER does not perform to emergency signals there could be resultant damage to the network or customer assets connected to the network. As such, we suggest potential penalties be appropriate and enforceable to ensure compliance results in continued network safety and security. New Australian standards may also be required to unlock innovation in active DER markets. *3. More of a customer focus is required to encourage continued participation on the NEM* Whilst the Consultation Paper demonstrates significant value across the NEM, future success needs to be tested by what individual end users, and in particular residential and rural domestic customers, will receive as a result of offering their DER for participation in the NEM. As noted in section 2.1 above, if the governance framework is too restrictive or makes it difficult to participate, customers may derive more value from simply reducing their energy through the connection point potentially resulting in economically inefficient outcomes for the electricity system as a whole, which our customers ultimately pay for.