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

Joel Aulbury

Australian Energy Market Commission

PO Box A2449

Sydney South NSW 1235

15 October 2020

Dear Joel,

Integrating energy storage systems into the NEM consultation paper

AGL Energy (**AGL**) welcomes the opportunity to comment on the Australian Energy Market Commission's (**AEMC**) consultation paper on the integrating energy storage systems into the NEM rule change request submitted by AEMO in August 2019 ERC0280.

AGL is one of Australia's leading integrated energy companies and the largest ASX listed owner, operator, and developer of renewable generation. Our diverse power generation portfolio includes base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources. AGL is also a significant retailer of energy and provides energy solutions to over 3.6 million customers in New South Wales, Victoria, Queensland, Western Australia, and South Australia.

AGL supports the development of storage and firming capacity including grid scale batteries to enable greater levels of variable renewable energy in the National Electricity Market (**NEM**), consistent with the Australian Energy Market Operator's (**AEMO**) 2020 Integrated System Plan[1]. In August 2020, we announced our plans for an 850 MW multi-site grid-scale connected battery system, which AGL targets to develop by FY24[2].

Our support for innovation in storage technologies in the **NEM** extends to our investment in, and delivery of, multiple products and projects improving the value our customers can draw from their distributed energy resources (**DER**). Including our leading-edge Virtual Power Plant (**VPP**) that was established through our trial in South Australia with the Australian Renewable Energy Agency (**ARENA)** that commenced in 2016[3]. In 2020 we enrolled our VPP in the AEMO VPP Demonstrations to test accessing and sharing in wholesale Frequency Control Ancillary Services (**FCAS)** value[4]. We have developed a range of insights through these trials on customer participation and the technical integration of VPP's, including on API integration with AEMO to provide FCAS services and exploration of network support service provision with distribution network businesses.

[1] P12 AEMO ISP 2020
[2] https://www.agl.com.au/about-agl/media-centre/asx-and-media-releases/2020/august/agl-gets-on-with-the-business-of-transition-with-integrated-battery-system-plan
[3] For further information regarding AGL's Virtual Power Plant, currently available to customers in New South Wales, Queensland, South Australia and Victoria please refer to https://www.agl.com.au/solar-renewables/solar
[4] See further AEMO VPP Demonstrations, Available at https://aemo.com.au/en/initiatives/major-programs/nem-distributed-energyresources-der-program/pilots-and-trials/virtual-power-plant-vpp-demonstrations.

The rule change request from AEMO seeks to address issues it has identified with how grid scale batteries, aggregation of smaller batteries, and new business models, including hybrid facilities, register and participate in the NEM[5].

The consultation seeks feedback on the importance and urgency of the identified issues, and whether they require a regulatory solution. This consultation also offers the opportunity for storage technologies to be specifically recognised in the NER.

AGL acknowledges AEMO's concern that the absence of a specific NER definition for grid scale storage facilities may lead to a lack of clarity for various factors, including registration, technical and operational challenges, issues with fees, charges and non-energy cost recovery, including Transmission Use of System charges (**TUOS**) and Distribution Use of System (**DUOS**) charges. AGL however has not experienced significant issues to date with these factors.

In developing appropriate policy solutions to assist the energy market transition, we believe it is important to make fact based and 'no-regret' regulatory changes to the energy market framework. In terms of the broader wholesale market reform program, we welcome AEMO's technical insights on how grid scale storage facilities and 'hybrid' facilities might choose to operate in the market.

We consider that it may not be clear at present how participants might want to register and participate in the market in the future. With only five grid scale batteries in the NEM and currently no registered hybrid facilities, the proposed rule change will have the most impact on future participants rather than existing storage units in the NEM. Therefore, we suggest the AEMC ensure this rule change request provides clarity and delivers both flexibility and broader reform coordination, in a way that benefits the future registration and operation of new energy storage facilities in the NEM.

AGL suggests the AEMC also consider if there are any complementary changes that could be made to the existing regulatory framework, for example broadening the scope of existing categories to better allow for flexibility in the way grid scale storage registers. AGL has not experienced significant issues with its grid scale connected battery and therefore does not currently see the need for the creation of a new battery storage category at this stage. However AGL is supportive of the introduction of a hybrid facility model if the AEMC determines that a new participant category is necessary to provide clarity in the registration process for hybrid facilities because currently the regulatory framework assumes participants control only one type of technology behind a connection point.

For more detailed assessment and feedback on specific consultation questions outlined, please refer to the **Attachment.**

If you have any queries about this submission, please contact Shevy Moss Feiglin on (02) 86337880 or smossfeiglin@agl.com.au

Yours sincerely,

Elizabeth Molyneux

General Manager Energy Markets Regulation

[5] AEMC Consultation paper, Integrating Energy Storage Systems into the NEM, P i August 20, 2020

Attachment

Definition and Registration

AEMO is concerned that the NER does not adequately recognise storage and bi-directional flows because they do not contain a specific definition for storage. AGL appreciates the concern that the NER is ambiguous and may complicate the registration of large grid scale batteries. However, AGL considers that AEMO's 'bi-directional resource provider' proposed definition could limit the way large scale batteries might want to operate and participate in the NEM in the future, and that this may create potential barriers to entry. While the proposed definition may simplify the registration process over the interim period, in so doing it may also limit the ways in which market participants can operate. This could inadvertently reduce a level playing field favouring one type of technology approach over another.

Should the bi-directional resource provider category be introduced, participants should retain the flexibility to choose either to operate under one bi-directional Dispatchable Unit Identifier (**DUID**) or two DUIDS, one for generation and one for load. This will enable participants to operate their facilities according to their individual needs. For example, if a participant prefers to operate their grid-scale batteries according to AEMO's current arrangements of having separate DUIDs for generation and load, this should be allowed within the bi-directional facility definition.

AGL agrees with AEMO that there may be confusion in the registration process for hybrid facilities as the current regulatory framework assumes participants only control one type of technology behind the connection point. AGL welcomes the introduction of a new participant category that allows multiple generators behind the same connection point, provided it allows participants the flexibility to register and participate the way that they see fit, as well as remaining fit for purpose as new technology and business models enter the market.

Further, the proposed new model should also allow participants to manage their FCAS market participation either at the individual DUID level or at an aggregate level if they choose to. For example, according to figure 3.2 in the consultation paper, the battery has one DUID and the wind farm a second DUID, however AGL considers the participant should have the flexibility to choose to have two DUIDs connected to the battery – one for generation and one for load and then a further DUID for the wind farm. The participant should then have the option to participate in all FCAS markets either as an individual DUID or as an aggregated DUID participant.

We ask the AEMC to consider whether AEMO's proposal is the optimised solution, or whether an alternative option would achieve a similar outcome at a reduced cost without locking in (or out) innovative business operational models.

Current treatment of storage and Hybrids under the NER

AGL does not see the current treatment of storage and hybrid facilities under the NER as a significant barrier to entry and we have not experienced any major issues in applying the current regulatory framework. However, we do consider that a new participant category for hybrid facilities may enable greater participation for new technologies through a clearer registration process. We support this addition should the AEMC consider it to be the most effective way to enable alternative technologies and provide sufficient flexibility for prospective participants.

Alternatives to AEMO's proposed solution to integration issues for storage

AGL does not agree that the industry should wait for the implementation of a two-sided market to address how storage integrates efficiently in the NEM. If AEMC considers that there are significant concerns over

how storage facilities may operate currently due to sub-optimal efficiency in the rules, then these should be considered and addressed ahead of the two-sided market reform.

Transitional arrangements

It is not clear what advantages the new participant category for grid scale batteries might provide for our existing assets. Therefore, we support the grandfathering of existing standalone storage, i.e. existing units should be permitted to retain their current registration and classification arrangements.

SGA/VPPs

AGL agrees that greater clarity may be needed in the NER in relation to the inclusion of small storage units in SGAs' and other market participants portfolios for the purposes of market registration.

Nevertheless, we consider that registration requirements for aggregated fleets of small storage units should take into account the outcomes of other policy reform processes, including the generator registrations and connections consultation, and the ESB's post-2025 market design work on moving to a two-sided market. We also consider that relevant insights could be gleaned from ongoing trials that seek to test market participation of VPPs, including AEMO's VPP Demonstrations and the planned Project Symphony and Victorian DER marketplace trials.

Accordingly, we would recommend that this matter be deferred to appropriately account for the outcomes of the broader distributed energy policy discussion and to enable relevant insights from DER trials.

Technical and operational challenges

Bidding in scheduled storage facilities

AGL does not see any added complexity in bidding in a storage facility under current registration arrangements, except for some additional work due to having an additional DUID. However, AGL does not understand how a 10-price band model would work per the rule proposal given that for a storage facility the bids are the inverse of each other. It is not clear how this model would enable a neutral point where the facility is not generating or consuming, and more clarity on how AEMO sees this as a workable solution for the participant is needed together with a range of simple and complex worked examples.

Dispatch conflicts

AGL considers that dispatch conflicts are not an issue for bi-directional facilities. Control systems can be programmed to net out the generate/consume dispatch instruction prior to ramping. I.e. if the facility receives an instruction to generate 30MW and to consume 30MW, the net would be zero.

Aggregation and Ramp Rates

AGL agrees there are problems with the current arrangements in relation to the application of minimum ramp rates and how they should be calculated. These issues need clarification irrespective of how they might relate to grid connected storage facilities. AGL does not agree with the AEMO interpretation of the NER as outlined in the consultation paper.

Chapter 10 of the NER clearly states the minimum ramp rate requirement of 1 MW/minute for a generating unit:

> *generating unit minimum ramp rate requirement:*
>
> *(b) in relation to a generating unit that has been aggregated in accordance with clause 3.8.3, the lower of 3 MW/minute or 3% of the maximum generation provided in accordance with clause 3.13.3(b1), expressed as MW/minute rounded down to the nearest whole number except where*

this would result in the nearest whole number being zero, in which case the generating unit minimum ramp rate requirement is 1 MW/minute.

The ramp rate definition can then be considered alongside the generating unit and available capacity definitions:

generating unit:

The plant used in the production of electricity and all related equipment essential to its functioning as a single entity.

available capacity:

The total MW capacity available for dispatch by a scheduled generating unit, semi-scheduled generating unit or scheduled load (i.e. maximum plant availability) or, in relation to a specified price band, the MW capacity within that price band available for dispatch (i.e. availability at each price band).

AGL understands this single entity specified as a generating unit is at the DUID level. For a semi-scheduled generating unit, AGL's view of the NER is that a semi-scheduled generating unit is the aggregation of all of the physical DUIDs since the available capacity of the total aggregation DUID is submitted to AEMO for the dispatch process.

The AER rebidding and technical parameters guideline 2.1 states that for a "scheduled or semi-scheduled generating unit that is aggregated, the lower of 3% of maximum generation or 3MW/min, rounded down but no less than 1MW/min, applied to individual physical units, then summed." AGL understands that "no less than 1MW/min" applies to the summed total of individual units.

By way of example, at AGL's Macarthur wind farm a 3MW turbine will have a 3% =0.09MWmin achievable ramp. Conversely, if a 1MW/min ramp was used as a minimum for that turbine and the plant has 140 turbines, then the minimum ramp would be 140 MW/min, which is an unreasonable outcome. A plant would not be physically capable of providing this ramp rate and AEMO would reject bids > 90MW/min.

Performance Standards and energy availability

AGL supports AEMO's intention to provide greater clarity in the registration process for hybrid facilities

AGL supports the performance standards being negotiated at the connection point with multiple DUID's behind it. AGL in its submission to the Dedicated Connection Assets (DCA) consultation paper states that performance standards should be managed in line with arrangements for embedded networks. We stated that performance standards should be in place at the connection point level where AEMO and the Financially Responsible Market Participant (**FRMP**) are counterparties with the commercial arrangement in place between the FRMP and the facility/ DUID mirroring parent and child metering arrangements.

All NEM balancing services and operational processes such as loss factors, accuracy or metered flows, prudential matters and use of service charges etc, could be made attributable, both legally and financially, to the Dedicated Connection Asset Service Provider (**DCASP**). Where non-compliance with the NER was identified at the DCA connection point, the DCASP as the FRMP would be held accountable under the NER but could commercially enforce and address these issues directly with its connected users. The agreement between these two points provides suitable operational and financial incentives as outlined above.

Issues with Fees and Charges

TUOS and DUOS charging arrangements

AGL agrees that there is ambiguity and uncertainty around how transmission and distribution network businesses calculate and charge TUOS and DUOS for battery systems, including why TUOS and DUOS are treated separately. AGL supports the fundamental premise that batteries when generating are providing valuable technical services (frequency and voltage management) to the power system connection point at both a transmission and distribution level, which then "compensates" for services consumed when charging. AGL considers the exemption arrangements for TUOS should also apply to DUOS, as transmission and distribution are the same from a functional definition perspective. The inclusion of UOS charges could result in a double charge on electricity and this could potentially create inefficiencies in the way's that storage assets recover these charges.