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ERC0256 Generator registrations and connections consultation paper

AGL Energy (**AGL**) welcomes the opportunity to comment on the Australian Energy Market Commission's (**AEMC**) consultation paper on generator registrations rule change requests submitted by the Australian Energy Council (**AEC**) on 15 of December 2018 and by Mr Damien Vermeer on 2 September 2020, respectively.

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.

The rule change request from the AEC seeks to address issues it has identified with how generating systems, which have the capacity to follow dispatch processes, are classified as non-scheduled, and how these generators are impacting efficient market outcomes.

In April 2016, the AEMC published a final rule determination on the consolidated rule change requests received from Snowy Hydro and ENGIE, which sought to reduce the threshold at which non-intermittent generators are required to be scheduled from nameplate ratings greater than 30MW to nameplate ratings greater than 5MW. the AEMC decided not to make a final rule, finding that the materiality of the issue raised by the rule change requests was insufficient to warrant making any proposed changes. We encourage the AEMC to reassess the analysis done back in 2017, for various reasons outlined below.

1. The AEMC found that the proposed changes would only apply to a limited number of generators and therefore have a limited impact on pre-dispatch forecasting accuracy. We believe this participant group has grown, and will continue to grow, and therefore have an impact on pre-



dispatch forecasting accuracy. With greater levels of this participant category price and demand forecasting will become less accurate and may pose threats to system security.

2. The AEMC found that costs of scheduling may be material to smaller generators and may flow through to consumer prices. This needs to be further unpacked. If greater participation and transparency in central dispatch provides a more efficient market outcome, then the costs are justified. We think there is room for the AEMC to be guided by AEMO on the appropriate threshold where cost of implementation is justified by its impact on price discovery, market outcomes and positive impact on the National Electricity Objective (NEO).

A greater number of scheduled generators would promote more efficient operation of the market and power system. This will help to improve AEMO's market scheduling and forecasting process, while also improving security and reliability in the NEM, achieving the NEO.

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



Attachment

The AEC is concerned about AEMO's ability to manage the power system in the context of it becoming increasingly "characterised by progressively smaller unit sizes, and also more greatly affected by variations in supply and demand" ¹.

AGL agrees with the AEC that this group of generators is likely to grow in the future, and better management of how these assets operate in the market is crucial to efficient market outcomes and managing power system security.

In our view, the issues addressed in the consultation paper can be framed as either relating to system security concerns or to an inefficiency in the market price discovery process.

AGL encourages the AEMC to look at how to manage these two issues separately, as reducing the thresholds of scheduled generators from 30MW to 5MW might help address aspects of one of these areas while creating further problems in the other.

System security

The issue:

From a system security point of view, greater levels of non-scheduled smaller generators are making it more difficult for AEMO to manage the power system effectively and securely.

Small generators with fast ramping capability that both generate and consume have large swings that when not scheduled can have a big impact on the security of the power system. The swing from a 4.5MW battery has a 9MW impact on the system, but this swing capability is not captured by the rule change. There is no difference between a 5MW battery and a 4.5MW battery when it comes to managing the power system securely. If this rule change sends a signal to the market that 4.5MW batteries do not need to be scheduled than this will incentivise participation at this MW level, particularly given the readily scalable nature of this technology. AGL has concerns over the impacts to system security were this situation to happen. The lack of oversight by the AEMO control room on the dispatch of small generators and battery energy storage systems (BESS) during a peak demand day would create uncertainty with managing the power system.

Therefore, reducing the threshold to the arbitrary level of 5MW will not address these issues around non-scheduled generators with fast ramping capabilities because the issue will still exist for batteries less than 5MW.

Our proposed solution:

We would recommend a more preferred rule change to address this concern.

¹ AEC, Generator registration thresholds -rule change request, p2



Generators that are connected to 11kV or above should be scheduled, or the permitted ramp rate should not exceed 20% of the unit's maximum capacity (MW/min).

Our proposal would cover all batteries, minimising risks to the power system by limiting fast swings which the current rule change does not capture. As the number of smaller generators increase over time, which is also compounded by 5ms market changes, the aggregating of these instantaneous swings will create more uncertainty for the AEMO control room compromising its ability to maintain power system security like in an islanding situation which has already been experienced in South Australia with large – scheduled BESS.

Efficient price discovery

The issue:

AGL supports greater visibility and transparency for generators, leading to better price forecasting for all participants and leading to positive impacts on the NEO. Greater proportions of non-scheduled generation, which are likely to increase over time, are making demand forecasting accuracy more difficult which is the leading contributor to energy price uncertainty.

AGL agrees that for AEMO, the lack of visibility from smaller generators is making it harder to forecast their behaviour exogenously. AEMO's ability to forecast will be improved with more generators required to be scheduled. It will reduce AEMO's need to guess what generators might do, and potentially reduce the need for the Forecast Uncertainty Measure (FUM), delivering improved certainty to AEMO's market scheduling and forecasting process.

Our proposed solution:

A generator's size is important as it is a key input into forecasting, however we do not think it beneficial to make a new rule based on an arbitrary threshold with no cost benefit analysis. The costs incurred for participants to be scheduled should align with their relative impact on market outcomes, price discovery and the NEO. Therefore, the more generators that are scheduled the better the market outcomes for all participants through improved demand forecasts and price outcomes.

AGL would encourage the AEMC to be guided by AEMO on a threshold that is appropriate through a cost benefit analysis. In saying this we support a lower threshold than 30MW but consider that without this analysis, 5MW remains an arbitrary threshold value.



Small Generator Aggregator's

Small Generator Aggregators (**SGAs**) are not included in this rule change as they do not participate in central dispatch. As is the case now, a generator with >5MW nameplate capacity behind a single connection point could not register as an SGA, unless they were exempted from becoming a registered participant by AEMO, as it breaches the threshold for the standing registration exemptions.

However, you can register as an SGA up to 30MW where the following needs are met:

- the operation of the generating system does not adversely impact power system security; and
- the generating system is expected to export less than 20 GWh over 12 months

We would encourage the AEMC to make inquiries with AEMO to understand how many participants might register in this category, as this category has the same potential to impact both system security and price discovery if it is not considered alongside this rule change proposal.

Further Analysis required:

AGL would urge AEMC / AEMO to undertake a detailed analysis of the MW threshold that would be significant enough to impact the price when prices are high, and the network is under stress. This MW level could also be the threshold for scheduled generator registration.

Analysis could include looking at every interval over the last year and only taking the high price intervals, narrowing what generation threshold was setting that price (e.g. the smallest generator in the stack) and averaging that over the time period. That could become the MW needed to move the market price. This could also be analysed and understood through removing the smallest generator in the stack and seeing what impact that would have on price.

Specific responses to AEMC questions

1. [Do you agree with the proposed assessment framework or are there any additional assessment criteria the Commission should use when assessing identified issues and possible solutions?](#)

Yes, AGL agrees with the proposed framework and has also used this framework to consider our own internal position.



2. Do you agree with the AEC that transition in the NEM's generation mix is trending towards having a greater proportion of non-scheduled generation?

Yes, AGL agrees that there will be an increase in the proportion of non-scheduled generation, and that any rule change made today should consider the trend towards greater levels of smaller and faster non-scheduled generation.

3. Do you expect the capacity of non-scheduled generation as a proportion of total generation capacity to maintain the same growth trend into the future? If not, how do you expect this trend to change over time?

We expect the capacity of non-scheduled generation as a proportion of total generation will increase but not at the same rate. We think this capacity's growth trend will increase into the future.

4. Do you consider that the current penetration of non-scheduled generation in the NEM is causing difficulties or inefficiencies in the forecasting and market scheduling process?

Yes, AGL agrees that for AEMO the lack of visibility from smaller generators makes it harder to forecast their behaviour exogenously. AEMO's ability to forecast will be improved with greater visibility resulting from a greater proportion of generators being scheduled. This should enhance security and reliability as AEMO will not need to guess what generators might do, delivering improvements to AEMO's market scheduling and forecasting process. The NEM is moving to a system where we ask for more variability from previously slow and flat running baseload generation to fill in the gaps left by small volatile generation.

Furthermore, the ability to forecast non-scheduled smaller generators would also remove power system uncertainty on a peak demand day and may reduce the need to schedule RERT when an LOR 2 is forecast. Thus, providing certainty for AEMO's control room but also reducing costs to the consumer.

5. Do you consider that lowering the threshold for classifying new generators as non-scheduled would help to address the issues the AEC has identified for the efficient management of the power system? Why or why not?

Yes, lowering the threshold for classifying new generators as non-scheduled will help address the issues identified by the AEC, such as AEMO's ability to effectively manage the power system,



leading to greater market efficiency and improved price discovery. AGL believes this will reduce the magnitude of the problem but not necessarily eliminate it.

6. How much of an improvement to the accuracy of AEMO's forecasts would scheduling new generators above 5 MW nameplate capacity have, compared with requiring this of all new and existing generators above this size?

This would depend on the proportion of generation within the 5-30MW band compared to <5MW and >30MW, which would obviously change over time. As noted previously, a threshold arbitrarily set at 5MW may substantially alter the number of batteries installed below that threshold.

7. Do you think the costs associated with the AEC's proposal to reduce the thresholds have been adequately captured? How would these costs vary depending on whether the generator was scheduled or semi-scheduled?

It is possible to lump the costs into bins or groups as it is dependent on MW capacity, the larger the site the more devices needed that would make up a SCADA system. For up front establishment we would consider the following as appropriately representative costs.

<5MW – \$10,000 – \$50,000

5-50MW – \$250,000

50-100MW – \$500,000

100MW+ - \$700,000 +

But once the site is built, the ongoing costs are independent on size - in the order of 10's of thousands, possibly up to 100k.

There is no difference between scheduled or semi-scheduled generation with respect to the cost of SCADA implementation.

8. Do you agree with the AEC that the costs of participating in central dispatch have fallen to the extent where the market benefits of increasing the proportion of scheduled generation outweighs the costs to participants? Why or why not?

AGL supports greater visibility from participants, as this will lead to better price forecasting for all participants including AEMO. The cost question would need to be analysed through a cost benefit analysis, where the threshold is decided on where the benefit provided outweighs the costs associated with participating in central dispatch.



We do not think that the costs of participating in central dispatch have fallen materially since 2017. If anything, costs have increased due to the increased complexity of the market and increased regulatory oversight. However, the cost impact on the market is likely to increase significantly, which would need to be incorporated into any cost benefit assessment.

9. If made, should the AEC's rule change only apply to new generating units at the time of their registration and AEMO's existing practise of grandfathering the changes apply to existing generators registered inconsistently with the new provision?

We support the rule change only applying to new generation at the time of their registration and AEMO's existing practice of grandfathering the changes apply to existing generators.

10. Do you consider that the penetration of unscheduled generation has reached a level where a decision needs to be taken to lower the thresholds to require this generation to participate in central dispatch? Why or why not?

No, at this stage the proportion of these units is still low, and even with the exit of larger scheduled units, it will remain so. However, preparations should be made now to act as an enabler for technology growth and an orderly transition to a carbon constrained future. This should occur before the proportion of these units increases by any significant amount.

11. Do you believe AEMO's 5 MW generator registration exemption threshold would serve as a reasonable threshold for participation in central dispatch? If not, what do you think this threshold should be?

We do not agree that a proposed arbitrary threshold of 5MW nameplate capacity is appropriate. This should be guided by a cost benefit analysis, and for the system security concerns, generators that are connected to 11kV or above should be scheduled, or the permitted ramp rate should not exceed 20% of the unit's maximum capacity (MW/min).

12. Do you think that factors other than the size of a generator should factor into whether a generator is required to participate in central dispatch? If so, what should these other factors be?



Yes, we consider that some of these other factors are potentially more important than a specific size. Factors such as ramp rates and where the unit is connected should be considered as these are also critical to system security.

13. Do you consider the benefits of implementing these alternative arrangements would outweigh the prospective additional system costs they might impose on the market by increasing the complexity of AEMO's operations?

Potentially, yes. A proper cost benefit analysis would need to be undertaken.

14. Are you in favour of the NER requiring AEMO to publish its reasons for making these exemption and classification decisions? Why or why not?

AGL supports greater transparency from AEMO on any exemptions being given for generators or large loads to remain registered as non-scheduled. This information should be made available to all participants. There is precedent for such transparency, for example, how AEMO publishes details of approved variations for generators providing primary frequency response. We agree that this will improve the transparency of AEMO's decision-making processes and ensure industry is well-informed of exceptions to the generator registration requirements. We agree that this will potentially lead to a better understanding of the market by participants potentially leading to more efficient participation.

15. Do you consider that Mr Vermeer's proposed solution appropriately addresses the connection issues for embedded generators between 5 and 30 MW? Why or why not?

Mr Vermeer's concerns need to be addressed together with the other issues raised in the AEC's rule change proposal. Specifically, the AEMC should assess what the appropriate registration threshold should be, through a cost benefit analysis. This threshold could then guide the potential appropriate solution to address the connection issues for embedded generators. Mr Vermeer's solution may be appropriate if AEMO is satisfied that the conditions are met, as outlined in the consultation paper on p29. It is important that the AEMC consults with AEMO on the appropriate thresholds, as well as the other concerns raised in the AEC rule change before proceeding with Mr Vermeer's rule change to avoid inconsistencies in the outcome.