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Department of Environment, Land, Water and Planning

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Voltage Management in Distribution Networks: Consultation Paper

AGL Energy (AGL) thanks the Department of Environment, Land, Water and Planning (DELWP) for the opportunity to provide feedback on *Voltage Management in Distribution Networks* Consultation Paper dated May 2022.

AGL is one of Australia's leading integrated energy companies and one of the largest ASX listed owner, operator, and developer of renewable generation. AGL is also a significant retailer of energy and telecommunications with 4.5 million customer accounts across Australia.

We are a market leader in the development of innovative products and services that enable consumers to utilise their DER assets to optimise their energy load profile and better manage their energy costs. Our current DER product and services include our leading-edge Virtual Power Plant (VPP)¹, Peak Energy Rewards demand response program², retail offer for electric vehicle (EV) owners³ and EV subscription service⁴. Through our EV Orchestration Trial,⁵ we are seeking to understand how EVs could help the wider energy system by orchestrating vehicle charging through smart chargers, Vehicle to Grid chargers and API technology. Our new Solar Grid Saver offer⁶ rewards customer for participating in solar orchestration, pausing their solar exports in periods of minimum operational demand whilst enabling them to continue to generate solar power to meet their household demand.

AGL commends DELWP's work to inform long-term Victorian government strategy, policy and regulatory decisions to support effective voltage management in the distribution system as Victoria continues to integrate high levels of DER into the electricity grid. Our feedback on the Consultation Paper is informed by our experience with DER products and services and our longstanding involvement in DER policy and regulatory design.

Importantly, AGL considers voltage management one of many services third party aggregators can offer network service providers through orchestration-based grid services. We recommend that DELWP consider not only reforms to improve reporting of voltage management performance as a compliance outcome, but also policy and regulatory arrangements that are important to facilitate Victorian distribution networks seeking non-

¹ 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-energy/bring-your-own-battery?cide=semr&gclid=EAlalQobChMlicjKmKuP5wlVylUrCh2eXwvVEAAYASAAEgLRPD_BwE&qclsrc=aw.ds.

² See further AGL Peak Energy Rewards, available at <https://www.agl.com.au/newcampaigns/peakenergyrewards>.

³ See further, AGL EV Plan, available at <https://www.agl.com.au/electric-vehicles>.

⁴ See further, AGL Electric Vehicle Subscription, available at <https://www.agl.com.au/get-connected/electric-vehicles/ev-subscription>.

⁵ See further, AGL Electric Vehicle Orchestration Trial, available at <https://arena.gov.au/projects/agl-electric-vehicle-orchestrationtrial/>.

⁶ See further, AGL Solar Grid Saver offer, available at <https://discover.agl.com.au/energy/helping-to-maximise-your-solar-savings/>; Maximising solar to support Australia's evolving grid (Part 1), available at <https://www.agl.com.au/thehub/articles/2021/11/maximising-solar-to-support-australias-evolving-grid>; Maximising solar to support Australia's evolving grid (Part 2), available at <https://www.agl.com.au/thehub/articles/2021/11/maximising-solar-to-support-australias-evolving-grid-part-2>.



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network voltage management services. These services should be procured in a competitively neutral manner that maximises the value consumers who invest in DER directly as well as providing whole of energy system benefits. AGL considers the following reforms foundational in achieving the goal of providing incentives for consumers who can contribute to voltage management via their DER investments:

- Leverage national reforms that will improve visibility of voltage management data and value, including the Australian Energy Regulator's (AER's) customer export curtailment value methodology and the Energy Security Board's (ESB's) DER integration market arrangements and Data Strategy work streams.
- Remove financial bias for networks to seek capital over non-network solutions, such as reducing the RIT-D \$6 million cost threshold, as voltage management services programs through aggregators are currently unlikely to trigger the existing threshold.
- Improve transparency of reporting by networks of localised voltage management services, especially through their Annual Planning Reports. Currently Victorian networks articulate activities they are undertaking around compliance with voltage management obligations but do not report on the procurement of voltage management services.
- As per UK, develop a public and annual reporting register of network service, including voltage management, tendered and contracted by Victorian electricity distribution networks in the last 12 months⁷
- Limit the ability of Victorian networks to mandate unrewarded network services through technical standards and connection agreements. The 'Power Quality Response Mode' settings in AS4777.20 requires rooftop solar inverters to provide voltage management services to networks without compensation.
- Stronger regulatory oversight over the application of Dynamic Operating Envelopes to consumer connection points to ensure networks do not extract a service from consumer DER, that has financial impacts for the owner, without compensation.

In support of these recommendations, the remainder of submission contains research analysis conducted on AGL's South Australian Virtual Power Plant around consumer value generated from the provision of voltage management services through their DER assets. We believe this research prima facie shows how DER can be part of an energy system that provides benefits for both the owner of the DER assets and for distribution businesses in managing their voltage in a cost-effective manner.

If you would like to discuss any aspect of AGL's submission, please contact me at christodoulidis@agl.com.au.

Yours sincerely,

(signed for electronic submission)

Con Hristodoulidis

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AGL Energy

⁷ [Flexibility services – Energy Networks Association \(ENA\)](#), refer to file titled 'ON22-WS1A-P0 Flexibility Figures 2022/23'



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APPENDIX

How have current distributor voltage reporting requirements been useful since their introduction? How could these requirements be updated to provide more meaningful data for consumers and useful information to support public transparency?

Can third parties who wish to provide non-network solutions (such as neighbourhood batteries and electric vehicle chargers) currently access voltage data to support their needs? Is there other data and information from distributors that could cover this need?

Through AGL's SA VPP⁸, we have been able to draw upon operational data to develop a range of important insights into the interaction of DER with the low voltage distribution network, including on voltage management. Specifically, we evaluated the effect of Volt-VAr on our SA VPP fleet with a view to understanding whether regulating PV inverter power quality response modes is the right approach to addressing overvoltage issues, the evaluation revealed that:

- The voltage reduction impact of the Volt-VAr power quality response mode at individual sites was minimal across a range of network types
- These findings align with the reactive power theory and academic literature
- The ability of that asset to provide real power is curtailed. This reduces the value of a customer's investment for self-consumption and limits their ability to transact in the value of that asset, including in the context of an orchestration program such as a virtual power plant.

AGL shared the VPP operational data with a group of academics from UNSW so that they could analyse how power quality response modes not only support voltage management practices and system security but also do not unintentionally impact customer value and therefore potentially disincentivise consumer uptake and participation in DERs⁹.

The social science research component, amongst other things, indicated that people expect transparency and information about the extent to which they are being or might be affected by management of their PV system, to make informed decisions about DER investment. Further, people who participated in the research found the "concept of curtailment 'off-putting' and questioned whether distributed energy owners should be made to bear any losses given the perceived benefits of distributed energy resources helping the environment and energy sector".

Further, the technical component of the study found that distributed energy resource owners experience revenue losses from two types of curtailment, being tripping (anti-islanding and limits for sustained operation) and V-VAr. These results do not include V-Watt curtailment which the authors anticipate will result in higher curtailment than the two modes evaluated in the study.

⁸ [AGL Virtual Power Plant - Australian Renewable Energy Agency \(ARENA\)](#)

⁹ [Curtailment and network voltage analysis study \(CANVAS\) - RACE for 2030](#)