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Mr. Craig Walker

Smart Appliances Regulation Impact Statement Project Team

Energy and Technical Regulation

Department of Energy and Mining

Government of South Australia

Submitted by email to: **smartappliances2019@sa.gov.au**

23 September 2019

Dear Mr Walker

E3 Consultation Paper: 'Smart' Demand Response Capabilities for Selected Appliances, August 2019

AGL Energy (**AGL**) welcomes the opportunity to respond to the Equipment Energy Efficiency Program (**E3**) Consultation Paper, 'Smart' Demand Response Capabilities for Selected Appliances, August 2019 (**Consultation Paper**).

AGL's position on the proposal

AGL supports the continued development of modern and fit-for-purpose technical standards to facilitate the growth of demand response (**DR**).

However, we consider that the proposal to mandate compliance with AS/NZS 4755.3 or AS 4755.2 in their current form not appropriate as these standards are outdated and no longer fit-for-purpose to support the DR market. AGL believes substantial work remains for Standards Australia to develop Australia's technical standards framework in alignment with international standards that are considered best practice.

In the context of EV chargers, we also would recommend establishing a Technical Working Group to develop a technical standards framework. This work could be led through the recently established EV Grid Integration Working Group.

The importance of demand-side participation in Australia's energy markets

AGL recognises the importance and is an industry participant of demand-side participation in Australia's evolving energy markets. Customers are already engaging by utilising their distributed energy assets to participate in a range of innovative energy services that provide improved solar self-consumption and benefits to the broader energy market, such as DR and grid support services during periods of high electricity demand.

AGL's focus on technology to enable increased customer engagement is reflected in our refreshed strategy, under which a range of emerging growth opportunities in distributed energy have been identified, including bringing to market residential battery offerings, expanding our view to consider e-mobility more broadly, and utilising smart home and energy efficiency technologies that aim to leverage the convergence of data and energy. We are also working with other market participants to trial innovative programs that draw upon customers' distributed energy assets, most notably our Virtual Power Plant (**VPP**) Program in South

Australia[1] and our Demand Response Program in New South Wales[2] that are both funded in partnership with ARENA's Advancing Renewables Program.

During the second year of our NSW Demand Response Program, we substantially increased the customer base for residential behavioural demand response and gained a range of insights on the acceptance and effectiveness of behavioural demand response at the residential level. We also continued residential controlled load demand response, encompassing remote control of air-conditioners and remote control of home EV chargers for a small number of customers with electric vehicles.

Through our Managed For You air-conditioner program, we installed demand response equipment conforming to AS4755 in 45 customer homes to provide DR capability to existing (already installed) air-conditioners. Although the program demonstrated that a reduction in power consumption can be achieved from a portfolio of air conditioners during demand response events, it also highlighted many practical issues related to the Demand Response Enabling Device (**DRED**) control methodology specified in AS4755.

The role of technical standards in supporting demand response capability

AGL supports the premise that a common, open technical standards framework for DR capability would enable the continued development of DR in Australia's energy markets, particularly with respect to residential and small business consumers. We consider that promoting interoperability through technical standards will be a key enabler for the optimisation of distributed energy resources across Australia's energy markets.

Accordingly, AGL has been actively involved in the development of a range of technical standards applicable to distributed energy and DR. AGL represents the Australian Energy Council (**AEC**) membership on the EL-54 Standards Australia Committee. The AEC brought forward the proposal for the creation of AS 4755.2 *Demand response framework and requirements for communication between remote agents and electrical products* that is currently in development by the Committee.

In order to realise the full value of DR to consumers and Australia's broader energy system, we consider that technical standards should adhere to the following guiding principles:

- align with **internationally accepted standards** to ensure access to an open and competitive market for distributed energy products and services;
- be **technology agnostic** and remain **future-proofed** for future technological developments; and
- **empower consumers with choice** to utilise DER assets for their own comfort and to participate in competitive market services which address broader energy system needs through innovative aggregator models such as virtual power plants.

We have used these guiding principles to assess the proposal and supporting analysis contained in the Consultation Paper. We elaborate our feedback in the **Attachment**.

As the Project Team develops its advice on the broader proposal to support COAG Energy Council Ministers, we would welcome the opportunity to meet to discuss some of our observations based on our operational experience with DR and ongoing involvement in standards development.

[1] For further information regarding AGL's ARENA SA VPP program, including the two milestone reports published to date, please refer to https://arena.gov.au/projects/agl-virtual-power-plant/.
[2] For further information regarding AGL NSW Demand Response program, including our first milestone report, please refer to https://arena.gov.au/projects/agl-demand-response/.

Should you have any questions in relation to this submission, please contact Kurt Winter, Regulatory Strategy Manager, on 03 8633 7204 or KWinter@agl.com.au.

Yours sincerely

Con Hristodoulidis

Senior Regulatory Strategy Manager

ATTACHMENT

The proposal to mandate demand response capability

The Consultation Paper proposes mandating that all air conditioners, electric storage hot water heaters, pool pump controllers and electric vehicle chargers that are supplied or offered for supply be required to comply with the full range of DR modes in either the relevant part of AS/NZS 4755.3 or AS 4755.2 as detailed in Table 2 (replicated below):

Table 2. Proposed mandatory Demand Response Modes in AS/NZS 4755

Product	Demand Response Modes (DRMs)						
	AS/NZS 4755 part (alternatives)	Safety Disc-connect	Minimum load/off	Reduce load	Switch on / store energy	Discharge energy if capable	Do not discharge energy
Air conditioners	3.1 (a); 2(b)	NA	DRM 1	DRM 2,3	NA	NA	NA
Pool pump controllers	3.2 (a); 2(b)	NA	DRM 1	DRM 2	DRM 4	NA	NA
Electric water heaters	3.3 (a); 2(b)	NA	DRM 1	DRM 2,3	DRM 4	NA	NA
Electric vehicle chargers	3.4 (c)	DRM0 (e)	DRM 1	DRM 2,3	DRM 4	DRM 8 (d)	DRM 5 (e)

(a) Published part. (b) Draft of AS4755.2 is at public comment stage, so DRM numbers indicative only. (c) Unpublished draft – would need to be brought to publication or the contents incorporated in a GEMS determination or similar. (d) AS/NZS 4755 framework includes DRMs 6 and 7 to constrain the rate of discharge, but these would not be mandatory. (e) Mandatory safety modes for products capable of discharge to grid.

AGL supports the continued development of fit-for-purpose technical standards to facilitate the growth of DR.

However, we consider that the proposal to mandate compliance with AS/NZS 4755.3 or AS 4755.2 in their current form not appropriate as these standards are outdated and no longer fit-for-purpose to support the DR market. AGL believes substantial work remains to develop Australia's technical standards framework to align with international standards that are considered best practice.

While AS/NZS 4755 remains the only DR framework for electrical products in Australia, it currently includes the requirement to provide a physical interface on AS/NZS 4755.3-compliant electrical products, so that products can receive operational instructions from an external 4755.1-compliant Demand Response Enabling Device (**DRED**). Given the technological advancements seen across the international market, including wireless and cloud-based demand response mechanisms, the DRED interface requirement restricts product innovation and market interfacing solutions in Australia and imposes an unnecessary additional cost on consumers wanting to engage in DR.

In our view, there is a substantial risk that in mandating 4755, the Australian market for demand responsive electrical products and services would fragment with various retailers, network businesses, aggregators and product manufacturers adopting divergent systems (including restrictive proprietary systems). Moreover, some product manufacturers may choose to stay out of the Australian market altogether due to the increased commercial risk associated with the Australian market.

In 2017, the AEC brought forward the proposal to create AS4755.2 with the intent to create an enhanced DR standards framework that would increase flexibility, reduce cost and improve customers' experience in the delivery of demand response services. Importantly, AS4755.2 was not intended to be a specified communications protocol. Rather, the framework would permit the use of any protocol (international or national, public domain or proprietary) which can be demonstrated to meet, but not limited to, the minimum specified functional requirements of the demand response system. This approach would reduce costs to manufacturers and customers and increase customer choice in relation to products and/or services.

However, in reviewing the draft standard AS4755.2 that was subject to industry consultation in August 2019, it is apparent that substantial work remains to create a fit-for-purpose technical standards framework. Having regard to our guiding principles elaborated above, we observe the following:

- The standard does not currently align with the international accepted standard for demand response, IEC 62746-10-1:2018 *Systems interface between customer energy management system and the power management system - Part 10-1: Open automated demand response.* The absence of minimum requirements for two-way communications and restrictive provisions governing feedback pathways risk creating technical requirements for the Australian market that are not compatible with international products and services. In the context of the current DRED control methodology specified in AS4755, AGL has experienced substantial practical issues in relation to the lack of a feedback mechanism or local override capability if the customer wants to opt out of an event after it has started. In additional to these practical issues, non-alignment with international standards could result in additional costs for manufacturers. Given that a large portion of distributed energy products are supplied into the Australian market by international manufacturers and suppliers, this could lead to a less competitive product market for Australian consumers.
- The standard is not technology agnostic or future-proofed for future technological developments. While the standard would enable some DR to be used without a DRED device, it misses some technologies already in market and does not create a framework for future technologies to comply unless the standard is updated at a later point in time. The application of the standard is limited to electrical products of a class covered by the appendix. Accordingly, there is a risk that if 4755.2 were mandated in its current form, it would not provide a clear compliance pathway for technologies such as home energy management systems, new DR devices such as washing machines and dishwashers and air-conditioning temperature variance.
- The standard does not appropriately account for customer choice in the provisions governing customer override. Customer should have the ability to override a DRM (regardless of the technology application) however the customer's action to override should also be communicated back to the remote agent to provide visibility.

The Consultation Paper states that at present, there is no part of AS/NZS 4755 covering EV chargers and that it will be necessary to re-commence drafting of the standard and/or add a new appendix, if the same compliance options are available for EV chargers.

EV chargers could play an important role in DR alongside other distributed energy resources in optimising Australia's energy markets to the benefit of consumers. We would therefore support a coordinated industry approach to developing technical standards for smart EV charging to facilitate interoperability for consumers between physical and commercial systems.

However, given that the EV charging sector is in the early stages of development both in Australia and internationally, we would caution against mandating a standardised approach that risks stifling innovation and consumer choice. Developing an appropriate standard will require careful consideration of a range complex matters, including but not limited to:

- Ascertaining the minimum 'smart' technical requirements for EV charge points necessary to facilitate the management of electricity network capacity and energy availability. This may encompass the charge point being able to:

- Receive and process information provided;
- React to information received (adjusting the rate or charge/ discharge); and
- Monitor and record energy consumption and being able to transmit this.

- Aligning data communications arrangements with international standards and protocols, including the Open Charge Point Protocol;
- Developing appropriate cyber security controls to ensure that communications are exchanged in a secure manner with an appropriate level of encryption to protect against cyber-attack; and
- Facilitating transactional traceability for consumers to enable them to see their transactions with EV chargers (including time of charge, duration and cost).

We would therefore recommend that the COAG Energy Council consider establishing a Technical Working Group comprised of industry representatives to determine an appropriate timeframe to develop a technical standards framework and execute that program through appropriate industry consultation. This work could be led through the recently established EV Grid Integration Working Group that is being facilitated by the Australian Energy Market Operator and ARENA with participation from relevant industry associations.