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By email: smartappliances2019@sa.gov.au

To whom it may concern,

Smart Demand Response Capabilities for Selected Appliances

The Public Interest Advocacy Centre (PIAC) is an independent, non-profit legal centre based in New South Wales. Established in 1982, PIAC tackles systemic issues that have a significant impact upon people who are marginalised and facing disadvantage. We ensure basic rights are enjoyed across the community through litigation, public policy development, communication and training. The Energy + Water Consumers' Advocacy Program represents the interests of low-income and other residential consumers, developing policy and advocating in energy and water markets.

PIAC welcomes the opportunity to respond to the consultation paper," Smart*" demand response Capabilities for selected appliances.*

PIAC strongly supports the mandating of minimum Demand Response (DR) capabilities for Air Conditioners, Hot Water Heaters, Pool Pump Controllers and Electric Vehicle charge/discharge controllers. We agree with the proposed application of AS/NZS 4755 to the selected appliances, and agree with the proposed timeframes for implementation. However, PIAC contends that the proposal should revisit the inclusion of electric-boosted solar and heat pump hot water systems, as well as Air Conditioners up to 30kW output. We have attached a document (Appendix A) with responses to the questions contained in the consultation paper.

This proposal is a crucial component in a suite of changes developing a mature market for demand response that allows households to more effectively control their usage, and that helps to facilitate a more efficient, reliable and affordable energy system.

Continued engagement
PIAC would welcome the opportunity to discuss the proposal, and any of the issues in our submission, in more depth. We look forward to participating in the next phase of this process.

Yours sincerely

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Appendix A

1. Do you support the proposal to mandate compliance with AS/NZS 4755 for the nominated priority appliances? Please give reasons.

PIAC strongly supports the proposal to mandate compliance with AS/NZS 4755 for the nominated priority appliances subject to some alterations outlined in subsequent responses.

The proposed mandated minimum standards are a crucial enabling measure facilitating a step-change in the availability of Demand Response (DR) opportunities for residential consumers.

PIAC considers this proposal to be the lowest cost, and most effective mechanism by which to make a material improvement to the availability, employment and effectiveness of DR for households. By targeting and standardising the output standards of the nominated appliances, this proposal facilitates the maximum potential residential participation, is able to accommodate the widest range of innovative service responses, and is well co-ordinated with Wholesale Demand Response Mechanism (WDRM) changes. The proposal helps provide Demand Response Service Providers (DRSPs) with an expanded scope for value creation that will contribute to a material increase in the range and impact of DR services available to households.

3. Do you support:

a. permitting compliances with either AS/NZS 4755.2 or (DR) AS 4755.2?
PIAC supports the proposal to permit compliance through either nominated standard.

b. requiring compliance with all Demand Response Modes (DRMs)?
PIAC supports the proposal's scope requiring compliance with all Demand Response Modes. The value of the proposal is in the provision of a consistent foundation for the widespread, practical and reliable employment of DR by households. While it is likely that some appliance manufacturers will move well beyond the DR functionality required by the proposal, they represent both a crucial enabler of consistency and a valuable signal to the market of the value of flexible DR capability.

4. Do you agree with the scope of the proposal:

a. air conditioners up to 19kW cooling capacity?
While PIAC supports the proposal to apply mandated minimum DR standards to air conditioners, we contend that the scope to include units up to 30 kW should be reconsidered. A number of assumptions and conclusions made in the Consultation Paper (the paper) regarding the reasons for the proposal only relating to 19kW units should be reconsidered. Specifically:

- The paper contends that the higher per-unit retooling costs for air conditioners up to 30kW impact the cost/benefit equation. While this may be true, it is also the case that units up to 30kW have a higher cost per unit, such that retooling is still unlikely to result in a material cost increase per unit.

- The Paper assumes that the majority of users of air conditioning units 19-30kW are likely to be commercial, and so subject to Time of Use (TOU) pricing that already provides an incentive for peak demand reduction. PIAC strongly disagrees with this reasoning:

- It is possible that the market for units 19-30kW may include a range of 'non-commercial' users, such as strata organisations for residential building common areas. It is likely that including units up to 30kW would facilitate effective employment of DR for a range of users

- TOU pricing is a price signal not a direct control measure and should not be regarded as mutually exclusive with DR standards for appliances. DR can work independently of TOU pricing. Further, TOU pricing can result in no effective demand reduction: where demand is inelastic, there is no effective mechanism for demand reduction, or the demand reduction relies on voluntary response. PIAC regards DR as an opportunity to realise a material benefit for consumers, irrespective of the tariff structure.

- The Paper assumes that the potential availability of 'more sophisticated' energy management systems renders the application of AS/NZS 4755 obsolete. PIAC disagrees with this logic. It is not appropriate to assume that all or even the majority of commercial operations have the infrastructure, capability or finances to employ sophisticated energy management systems.

Accordingly, while the relative calculations of cost and benefit may be different for units between 19-30kW, the foundational reasoning that mandated minimum standards provide a low-cost facilitation of expanded DR participation, is the same. PIAC recommends that the proposal be applied to air conditioning units up to 30kW.

b. pool pump controllers?
PIAC agrees with the scope of the proposal as it applies to pool pump controllers.

c. electric storage water heaters?
While PIAC supports the inclusion of Electric Storage water heaters in the proposal for mandated standards, we disagree with the reasoning behind excluding electric boosted solar hot water and heat pump water heaters. In doing so we highlight the following:

- The paper suggests that because electric boosted solar hot water and heat pump hot water systems have a smaller load, the potential gains from peak demand reduction do not warrant the cost imposition. While this may be true when applied narrowly to a single appliance, it does not recognise that the demand reduction from water heaters will likely be aggregated with other appliances and household demand, and/or aggregated across a number of households by the DRSP. Accordingly, even small reductions in individual load, if able to be reliably activated, present material value to a DRSP and to the system as a whole.

- Hot water systems, even those with potentially smaller individual usage (such as electric boosted solar and heat pump systems) have relatively consistent loads that are often coincident with system peak times. Management of this load, aggregated with other household usage, and other households is of significant potential value for DRSPs.

- Processes to update national building and construction standards are likely to see a strong preference (if not requirement) for electric boosted solar and heat pump hot water systems. The widespread uptake of these more efficient water systems is in the long-term interests of consumers, system efficiency and energy sustainability and affordability. Ensuring the ongoing ability of DRSPs to utilise management of water heating load as part of aggregated DR services is an important part of this, regardless of the technology employed. Further, not including heat pump and electric boosted solar hot water systems may create a perverse incentive to favour the installation of less efficient, high load water-heating in order to capture DR value. Where such an incentive may result in a higher overall system demand for energy, this should be a consideration.

PIAC recommends that electric boosted solar and heat pump hot water systems be restored to the scope of the proposal.

d. charge/discharge controllers for electric vehicles?
PIAC strongly supports inclusion of charge/discharge controllers in the scope of the proposal as outlined.

3. If not, what products (or capacity limits) would you propose be included or exclude, and why?

PIAC has addressed this in response to the previous question regarding the application of the proposal to each nominated appliance.

5.d. Is there a risk that a mandatory AS/NZS 4755 standard may become obsolete as new technologies/innovative products achieve the same objectives without using AS/NZS 4755?
Obsolescence is not a relevant concern for this proposal. Mandating AS/NZS 4755 for the nominated appliances is a vital measure that provides important information to manufacturers, both those of the nominated appliances and of other potentially high-load appliances that are not currently intended to be included. This information goes beyond setting minimum standards to provide a leading indicator of potential value in the market. That is, it indicates that there is value in demand response and that this value is fundamental to appliances that have a high demand.

Future developments and innovations by manufacturers may go beyond these minimums, but those developments will be informed by the indications of value that are signalled by the minimums contained in this proposal. More fundamentally, any future developments or innovations will be made more possible as a direct result of the value of the potential market opened up by the implementation of the minimums contained in this proposal.

10. Is lack of DR capable products a barrier to the introduction of DR programs for small consumers? Do you think that mandating DR capability for these products will lead to their activation and to consumer enrolment in DR programs?
There is currently a limited scope for households and small consumers to participate in DR programs and participation largely relies upon active, voluntary behaviour being undertaken. This reliance has helped to curtail the development of DRSP's due to the relatively small pool of DR 'product', and the relative unreliability of this 'product'.

The most successful DR programs, such as the PeakSmart example cited in the paper, have been based on automated, aggregated responses linked to direct appliance control. By creating a 'product' through increasing the residential load able to be reliably and easily managed, Peaksmart demonstrated how DR standards for appliances can help to facilitate reliable, efficient household participation in DR programs. However, as a network focussed program, Peak Smart is not able to realise the full range of other potential benefits that are available. Peaksmart illustrates both the barrier that a lack of available products can present to widespread residential DR, and the value that mandated DR capabilities can unlock.

Where the proposal will materially expand the 'product' available to a range of potential DRSPs, it will also align the incentives for households and DRSPs. Households, now more likely to possess appliances able to easily participate in DR programs, will have a direct financial

incentive to activate and participate to realise that value. Similarly, DRSPs will now have a significant 'product' base to work with, with a direct incentive to develop services that present value to consumers.

13. What can appliance suppliers, installers and energy utilities do to facilitate customer enrolment in direct load control or demand response programs?

Consumer information will be key to enabling safe and effective participation in DR programs. Appliance suppliers, installers, utilities and DRSPs themselves will be important conduits ensuring that consumers:

- Are aware of the capabilities of the appliance, particularly in relation to the potential for DR participation
- Have clear information regarding participation in DR programs. Ideally this information should include generalised (non-commercial) information regarding how DR works, its potential to benefit the consumer, the potential costs involved, the categories of people who should not be involved, or who have additional considerations, and other generalised information on scope for potential consumer detriment.
- Are provided with information regarding a range of DRSPs. It is important that consumers are not provided with proprietary contracts at point of sale without being given generalised non-commercial information regarding DR participation, and information regarding the choice of DRSPs available.
- Understand that activation is something that they must explicitly consent to choose, and have the generalised information to do so.

17. How should the changes in demand or energy during DR events involving AS/NZS 4755-compliant products be measured? What should be the notional 'baselines?' Is the estimation of baselines more of less reliable than for other DR approaches?

PIAC does not consider baselining and changes in energy demand during DR events to be a key consideration in assessment of the proposal, which is related to the mandating of existing standards. As set out in the paper, individual-produced performance 'baselines' are part of the standard, and will be measured relative to the rated output of the appliance. Determining how individual appliances perform in situ, and a reliable basis for aggregating response and contracting to deliver demand response into the wholesale market will be up to individual DRSPs. It will be their responsibility regardless of whether it is delivered by products that are covered by the proposed standards or not.

19. Do you think that the effectiveness of the proposal depends on the implementation of more cost-reflective pricing, e.g time-of-use (TOU) tariffs?

While more cost reflective retail pricing provides a strong economic signal to consumers regarding periods of higher system demand, it is not a necessary pre-requisite for success of the proposal. DRSPs and aggregators will either be bidding into the wholesale market in response to wholesale prices or providing demand managements services to networks in response to system peaks, or other ancillary service requirements. The value of these services can exist independently of the retail prices being paid by the residential consumer.

Similarly, while 'smart' metering would expand the range of opportunities for value for the household and a potential DRSP, it is not a requirement. This proposals' focus on setting standards relating to the output of the appliances themselves provides the basis for DR usage that is not dependent on any particular technological or communications interface. It is possible

for a DRSP to develop a service offering that communicates directly with one or more appliances in order to create value for the household. The 'Peak Smart' program, which has run successfully in Queensland is perfect evidence of this.

PIAC supports the proposal as an important measure that will maximise the opportunity for households to participate in and benefit from DR, regardless of the other technology they have access to. As such, we see the proposal as progressive contributor to greater equity in residential energy.

23. In your opinion, what measures should be taken to ensure that consumers are adequately informed of the potential costs, as well as the benefits, of entering into contracts that enable demand response capabilities on their appliances to be activated?

As outlined in response to question 13, it is necessary that consumers are provided with adequate generalised, non-commercial information regarding activation and participation in DR programs. This information should be provided both at point of sale and prior to contracting any DR services, and should be clearly identifiable as separate from any product or service specific information provided by an aggregator, retailer or DRSP.
It is particularly important that consumers:

- Have the full range of information on potential benefits, and consumer detriments, to provide explicit informed consent to any DR participation contract,

- Have access to an appropriate 'cooling off period' subsequent to signing any contract, where agreement can be withdrawn without penalty,

- Are fully aware of any potential issues or impacts relating to the interaction of DR and life-support provisions or medical energy requirements. If participation by consumers with ongoing medical or life-support issues is allowed, there must be provision for their needs to be appropriately registered to ensure their ongoing access to required energy is not impeded or curtailed.

- Have access to simple information regarding the material benefits of activation and participation, ideally presented with illustrative case examples of how they will experience DR on a day-to-day basis, according to specifics of the service offered by their prospective DRSP.

- Are able to access to DR 'override' capabilities, with clearly outlined cost penalties that are commensurate with the potential impact on the DRSP, and not punitive, disproportionate or unreasonable.

- Have access to independent complaints resolution mechanisms.

The New Energy Tech Consumer Code, the implementation of the WDRM and the upcoming AEMC review of consumer protections in the NECF occurring alongside this process are opportunities to ensure consistent provision of consumer information and protections that address the potential for consumer detriment and harm.

24. Do you consider that the regulatory arrangements provide utilities and potential DR aggregators with sufficiency incentive to offer (or commission) small-consumer demand response as a means of reducing investment in supply-side infrastructure?

While PIAC considers there to be opportunities for significant material benefit for utilities and retail demand aggregators within the current regulatory framework, those opportunities do not provide sufficient incentive to overcome a number of structural and cultural barriers. Importantly,

the proposal will make a material contribution to addressing those barriers, by facilitating a reliable, affordable and consistent platform for households to participate in offering Demand Response. Further, by creating a significant residential DR 'product', this mechanism also helps to enable DRSPs to commission and offer DR to NSPs as a cheaper alternative, helping to overcome NSPs structural or cultural preference for network investment.

c. Would the potential AEMC WDRM be material to the benefits of mandating AS/NZS 4755 for the four selected appliances? Why or why not?
PIAC considers the AEMC WDRM and the mandating of AS/NZS 4755 to be measures whose benefits are mutually reinforcing.

The Peak Smart program cited in the paper demonstrates that it is possible to realise significant benefits to networks through the direct DR participation of certain appliances, regardless of whether reforms to develop a WDRM are fully implemented. As such, PIAC recommends that the proposal proceed independent of the potential progress of the AEMCs WDRM reforms.

However, a fully implemented WDRM, that includes scope for residential participation, will substantially increase the potential benefits flowing from the proposal. Where the proposal enables the material expansion of residential DR 'product', the WDRM reform seeks to increase the markets through which the value of that 'product' can be realised, for DRSPs, households, networks and the system as a whole.

d. Would the benefits of deferring investment in network capacity flowing from the WDRM changes announced by the AEMC also reduce the network investments attributable to mandating AS/NZS 4755?
While both measures are likely to provide net benefits in isolation, PIAC considers the benefits attributable to WDRM and mandating AS/NZS 4755, as overlapping and reinforcing. In some cases, the potential benefits may be indistinguishable, for example some proportion of network investment deferment benefit, assessed independently, may be the same for both reforms. We do not consider it necessary to attempt to separate the specific benefits attributable to each reform as part of this process, as it is likely that full implementation of both reforms will materially increase the network investment deferment benefits.

27. Could and option for Government to require utilities or independent DR service providers to offer incentives, or have the Government fund these incentives, achieve the same benefits as the mandatory standard but at a lower overall cost to the community

PIAC does not consider incentives to be an effective measure in isolation and, in the context of this proposal, not likely to deliver any material increase on the benefits of BAU or voluntary implementation. Further, incentives introduce a range of inequities, complications and risks that further reduce the likelihood that any intended benefits will be fully realised. Where this proposal creates the basis for value creation at a household and systemic level, it provides a more consistent and more significant incentive than would be possible to deliver via government policy. PIAC would be particularly concerned to see government funding committed to provide added incentive where the opportunity to realise significant market value already exists.