

15 November 2023



Terry Niemeier
Director - Program and Market Development - Safeguard
NSW Office of Energy and Climate Change

Dear Mr Niemeier,

**Ausgrid response to NSW Office of Energy & Climate Change Peak
Demand Reduction Scheme Rule Change 2 Consultation**

Ausgrid welcomes the opportunity to provide a submission to the NSW Government on the Energy Security Safeguard (**Safeguard**). This letter sets out our key high-level points in response to the Peak Demand Reduction Scheme (**PDRS**) rule change consultation paper. We have attached responses to the consultation questions in **Attachment A**.

Ausgrid operates a shared electricity network that powers the homes and businesses of more than 4 million Australians living and working in an area that covers over 22,000 square kilometres from the Sydney CBD to the Upper Hunter. Ausgrid has a vision to empower communities in a resilient, affordable and net-zero future.

Ausgrid supports the amended activities and proposed additional PDRS activities in this Rule Change, which will facilitate participation for demand response and presents opportunities to complement emerging network and market services needed to support a reliable, secure, and affordable supply of electricity in NSW. Our response to this consultation paper includes:

- A detailed response to the consultation questions in **Attachment A**, including findings when relevant from Ausgrid Demand Management Innovation trials to provide additional information for NSW Government consideration.
- Ausgrid's high-level feedback on the Safeguard and PDRS with consideration to a future rule change and the anticipated statutory review of the scheme in 2024.

Greater levels of fuel switching to viable electric alternatives is taking place to meet NSW's Net Zero targets and the shared distribution grid plays a key role in maintaining energy security and facilitating the transition to an economy powered by a growing mix of renewable and Consumer Energy Resources (CER). As an electricity distribution network, we can help create a more efficient, higher value electricity system for customers by facilitating the integration and balancing of renewables, flexible demand, distributed storage, and bi-directional flows.

The recent "*NSW Electricity Supply and Reliability Check Up*" Report (**Check Up Report**)¹ noted in particular the speed at which the energy transition in NSW needs to occur in order for emissions reduction targets to be met. The Check Up Report pointed to the pressing need for greater CER integration in NSW to facilitate a speedy transition.²

We note the NSW Government accepted recommendations 31-33 and 34³ in the Check Up Report regarding CER.

The continued evolution of the Safeguard and PDRS is well aligned with the recommendations to support long-term consumer outcomes. Renewable energy, electrification and digitisation of

¹ Marsden Jacob, "*NSW Electricity Supply and Reliability Check up: Prepared for NSW Treasury – Office of Energy & Climate Change (OECC)*" (4 August 2023).

² Check Up Report, section 8.6.

³ see Office of Energy and Climate Change, "*Electricity Supply and Reliability Check Up: NSW Government Response*" (September 2023), p 14.

flexible customer loads present innovative opportunities to manage constraints across the energy system. We encourage the NSW government to consider how the design of the Safeguard and PDRS can play an important long-term role in the NSW transition through:

- Extending the scheme beyond existing target of supply and demand balance at traditional peak times, to provide benefit of flexible demand at times of high instantaneous renewable generation which is increasingly important for system security and reliability.
- Explore how new PDRS activities could support an accelerated smart meter roll-out by 2030⁴, which enables wider adoption of cost reflective network pricing to end-customers via retailers, including the development and adoption of dynamic pricing.
- Network investment is largely driven by local variations in spatial demand and supply variations. The PDRS certificates could consider locational factors in future coordinated with networks to support availability of non-network alternatives to manage network constraints.
- Consider energy savings and demand flexibility from fuel-switching activities through a whole of energy system approach to incorporate other energy sector activities into the PDRS activities. Similar to hot water systems, electric vehicles (EVs) provide greater end-use efficiency, lower carbon emissions and extensive flexible load potential.
- We support the introduction of efforts to improve customer energy resources (CER) information capture and installation compliance, such as requirements to evidence DER Registration needed to monitor CER installation and compliance. Making data and information available to NSW DNSPs from PDRS activities provides benefits to support accurate forecasts of future customer demand and track uptake trends in emerging demand-side technologies, including batteries and EV smart charging. We note around 84% of installed rooftop solar inverters are non-compliant on our network. We recommend improved compliance mechanisms for the NSW Government and distribution networks to prevent other types of non-compliant CER installations at such material levels.
- We would encourage greater efforts to engage with end-user customers and industry to better understand their experience with the scheme, which could be achieved through a customer research program.

Regards,

Murray Chandler

Head of Network Strategy & Future Grid

⁴ Review of the Regulatory Framework For Metering Services (2023) https://www.aemc.gov.au/sites/default/files/2023-08/emo0040 - metering_review - final_report.pdf

Attachment A – PDRS Rule Change 2 Consultation Questions

We have provided specific responses to the consultation questions raised in the PDRS rule change consultation paper in the table below and provided evidence where available.

Consultation Question	Ausgrid Response
1. Do you agree with the update to the equation, adjustment factors and lifetime for SYS2?	Yes, Ausgrid agrees with the proposed equation, adjustment factors and lifetime amendments made for SYS2.
2. Is the pool pump industry able to meet a requirement that pool pumps have demand response capability and what would the cost impact of this be?	No comment.
3. Do you agree with adding a capacity factor to WH1?	Yes, Ausgrid agrees with the alignment of the capacity factor to the ESS rule to limit the energy savings to new equipment with energy ratings less than the old equipment.
4. What evidence should be required under WH1 to ensure that customers aren't being taken off controlled load?	Ausgrid has about 2,900 non-residential customers with a controlled load circuit in our network area and a customer or their Retailer would need to initiate removal of the controlled load circuit.
5. Is the new air conditioner requirement (equipment requirement 3), as written in the rule, going to be effective to enable consumers to participate in demand response programs using their new air conditioner?	<p>We note that installation and ongoing connectivity of such devices can be problematic in supporting firm demand response. Ausgrid's Behavioural Demand Response (BDR) trial sought to demonstrate such automated demand response with Smart AC controllers via a Retail partner. The short trial found that the smart controlled AC customers were only enabled for 17% of customers on average across 5 summer events.</p> <p>Different factors may have driven this result including greater engagement needed to support installation and connectivity of the device for customers and maintaining customer engagement. More information can be found in Ausgrid's Interim BDR Report⁵</p>
6. Do you need a transitional period to prepare for the new demand response requirements?	Not applicable.
7. Do you agree with the requirement to verify demand response capacity through dispatch data?	<p>Ausgrid agrees with this requirement. Ausgrid is focused on finding least cost options to manage the transition to a low carbon future. As we increasingly expand flexible services to operate the distribution network and support system security it will become paramount that we have visibility of the demand response activities on our network. Currently we do not have visibility of flexible Commercial and Industrial loads.</p> <p>The PDRS rule change could provide an opportune time to include basic information sharing provisions, including sharing</p>

⁵ Ausgrid Interim BDR Report: <https://www.ausgrid.com.au/Industry/Our-Research/DMIA-Research-and-trials>.

Consultation Question	Ausgrid Response
	with distribution networks.
8. Do you agree with the proposal to leverage data from the Wholesale Demand Response Mechanism to validate PDRS capacity?	<p>Ausgrid agrees with this requirement.</p> <p>As discussed in the preceding response, we note that the PDRS Rule Change could support sharing of information with DNSPs. NMI level data for registered participants would support distribution network visibility of Wholesale Demand Response participation.</p> <p>The AEMO DER Register does not capture flexible commercial and industrial load, despite this being a growing area for demand response. The PDRS rule change could provide an opportune time to include these basic information sharing provisions, including sharing with distribution networks.</p>
9. Do you agree with the exclusion of RERT and LTESA loads from the PDRS?	No comment.
10. Are the implementation requirements sufficient to drive best practice installation of batteries?	<p>The battery installation must be compliant to the relevant Australian Standards and network standards, including as-installed details registered to the DER register. Ausgrid supports the use of accredited installers and approved product list, noting these are available for the scheme to leverage as soon as practicable.</p> <p>However, Ausgrid encourages the NSW Government to consider the broader issues impacting installer data collection for the DER Register and the AEMC CER Technical Standards Review, which highlight that NSW is continuing to fall behind other jurisdictions.</p> <p>NSW DNSPs still lack the regulatory tools to provide this data to the DER Register and similar certificate schemes (e.g. the Clean Energy Regulator Small-Scale Renewable Energy Scheme) has not prevented poor compliance of solar and inverter installations to meeting the required technical standards. Ausgrid has observed that 80% of their customer complaints can be resolved by moving inverters installed after December 2021 to the 2020 Standard settings; this proportion is likely similar across other NSW DNSPs.</p> <p>Ausgrid would reinforce the need for the NSW Government to ensure the regulatory mechanisms that are needed to ensure installer accreditation, training, compliance and enforcement are fit for purpose to support best practice installation of batteries (and related CER devices).</p> <p>Noting the above, residential storage is currently underreported across our network. Ausgrid strongly supports the opportunity to improve the capture of installation data and technical compliance for batteries as part of the PDRS scheme to support adherence to the national DER Register process and improved visibility of residential storage on our network.</p>
11. What additional steps can	Ausgrid would reinforce the need for the NSW Government to

Consultation Question	Ausgrid Response
we take to mitigate fire and other safety risks from batteries supported through the scheme?	<p>implement the regulatory mechanisms that are needed to ensure installer accreditation, training, compliance and enforcement are fit for purpose to support best practice installation of batteries (and related CER devices).</p> <p>This is needed to ensure the scheme does not result in incentivising uptake in CER that is incorrectly installed, resulting in network costs to address technical non-compliance.</p>
12. Will there be any challenges meeting the requirement for batteries to be registered on AEMO's DER register?	<p>Ausgrid supports NSW Government efforts to improve information reporting and DER technical compliance monitoring.</p> <p>As discussed in previous questions, batteries are under reported through the national DER register and often do not require a connection application as a new load.</p> <p>Ausgrid has limited visibility of battery installations and would support this approach to improve information capture from installers in absence of other regulatory mechanisms that are required in NSW to enforce this reporting requirement.</p> <p>The challenges surrounding installation reporting and technical standards compliance are well noted in the AEMC Technical Standards Review Final Report⁶. We note that the NSW Government may explore additional mechanisms to strengthen DER installation reporting and technical standards compliance as part of the proposed NSW CER Strategy (Recommendation 31 of the NSW Electricity Supply and Reliability Check Up).</p> <p>Ausgrid would also add that the findings from the ESB Electric Vehicle Supply Equipment (EVSE) Consultation Outcomes Report⁷, indicates the potential extension of the national DER Register reporting obligations to include EVSE standing data. This should also be considered for future changes to the PDRS rule when EV charging is considered for inclusion.</p>
13. Are there additional requirements you recommend we add to ensure consumers get the best outcomes?	<p>No further comments to those provided in the previous questions.</p>
14. Do you support the dataset used, data assumptions and proposed calculation method for certificates for activity BESS 1?	<p>Ausgrid acknowledges the data set that was used to inform the BESS 1 calculation parameters, but without further information on the characteristics of this dataset, we cannot comment as to whether it offers a valid basis for deriving the certification values.</p> <p>In February 2023, Ausgrid published the final Virtual Power Plant (VPP) Trial report⁸</p>

⁶ AEMC Review into consumer energy resources technical standards (<https://www.aemc.gov.au/market-reviews-advice/review-consumer-energy-resources-technical-standards>)

⁷ ESB EVSE Standing Data Consultation Outcomes Report (<https://www.datocms-assets.com/32572/1688103470-attachment-b-evse-standing-data-consultation-paper-final-june-2023.pdf>)

⁸ Ausgrid VPP Trial Report: <https://cdn.ausgrid.com.au/-/media/Documents/Demand-Mgmt/DMIA-research/Ausgrid-Battery-VPP-Final-Report-February-2023.pdf?rev=4784556b7ee84bed955140bae158874d>.

Consultation Question	Ausgrid Response
	<p>Ausgrid's review of the trial findings across 193 residential customers in Sydney, Central Coast and Upper Hunter on days over 30 degrees, found the following average performance on non-VPP dispatch days:</p> <ul style="list-style-type: none"> • 8.9kWh usable capacity • 7.81kWh state of charge at 2:30pm • 4.33kWh state of charge at 8:30pm <p>This shows that total export on a non-VPP dispatch event day was <u>39%</u> of the 8.9kWh of usable battery capacity. On these non-VPP dispatch days, the batteries are expected to operate under a self-consumption model, but actual operation can vary considerably based on factors such as customer load as a ratio of battery size.</p> <p>We would encourage NSW Government to review the calculation parameters.</p>
15. Do you agree with the way we've considered round trip losses in the factor of 10%?	<p>Ausgrid agrees that the round-trip losses factor of 10% offers a reasonable average for calculation purposes, but we question its use in determining the certificate value in BESS2. See response to question 16 below.</p>
16. Do you support the data assumptions and proposed calculation method for certificates for activity BESS2?	<p>In addition to Ausgrid's response to question 14 and 15 and review of our own VPP trial findings, we highlight that for the same sample on 'VPP dispatch days', the batteries delivered the following performance:</p> <ul style="list-style-type: none"> • 8.9kWh usable capacity • 8.65kWh state of charge at 2:30pm • 8.9kWh maximum state of charge at 4:00pm • 1.96kWh state of charge at 8:30pm <p>This shows that total export on a VPP dispatch event day was <u>78%</u> of the 8.9kWh of usable battery capacity when assuming the max state of charge.</p> <p>Note that the maximum state of charge was higher on dispatch event days because battery capacity is optimised for VPP dispatch events. On a dispatch day the increased incentive from VPP payments can trigger pre-charge behaviour which would increase the state of charge availability for response to VPP dispatch. Some battery products and VPP providers also enable customers to tailor their settings, which would need to be considered in determining the reduction capacity.</p> <p>It is for this reason that we question the use of non-VPP dispatch data to derive VPP dispatch performance.</p> <p>For further information, we would point the NSW Government to the following report Ausgrid VPP Progress Report from December 2021 and section 'Pre-charging to maximise dispatch energy' (p 9-11)⁹. This highlights how VPP output can vary significantly between fleets with and without automatic pre-</p>

⁹ Ausgrid VPP Progress Report December 2021: <https://cdn.ausgrid.com.au/-/media/Documents/Demand-Mgmt/DMIA-research/Battery-VPP-Progress-Report-December-2021.pdf?rev=816a26e5949d4e21a1180e7d0be350fc>

Consultation Question	Ausgrid Response
	<p>charging. This section also illustrates how a VPP can pre-charge (i.e. import energy from the grid) to maximise dispatch during the peak period.</p> <p>We would encourage NSW Government to review the calculation parameters.</p>
17.Are there additional requirements you recommend we add to BESS2 to ensure consumers get the best outcomes?	No further comments.
18.Can you provide evidence of what proportion of a battery's capacity is available for demand response under orchestration contracts?	No further comments to Ausgrid's response in Question 14, Question 15 and Question 16.
19.Can you see any potential issues with the 12-month cadence of certificate creation for each NMI?	<p>Peak demand certificates are time critical and time dependent and availability of peak demand reductions may vary from year to year.</p> <p>Given the shortfall in firm capacity will vary from year to year, the value and availability of peak demand certificates may also vary year to year. For this reason, we suggest that certificates that expire annually would be a reasonable approach.</p> <p>The 12-month cadence may also provide an appropriate mechanism to maintain longer-term customer engagement, while factoring in issues like change of tenancy or withdrawal from a Demand Response contract within the period.</p> <p>Ausgrid encourage annual reviews to examine whether incentives are pitched at an appropriate level and support continual improvement of the scheme in this evolving market, as new opportunities or barriers emerge.</p>
20.Do you support the data assumptions and proposed calculation method for certificates for activity HVAC3?	<p>Ausgrid considers that the proposed rule understates the demand response capability of air conditioner flex. For example, this Rule would limit the effective reduction in demand in Climate Zone 5 to only 13% of rated capacity.</p> <p>In Ausgrid's CoolSaver trial, we used AS4755 compliant demand response enabling devices to reduce the air conditioner capacity by 25% or 50% with virtually no issues with customers. Please refer to our published reports.¹⁰</p> <p>We also question the need for a cap of 2 hours. Typical CoolSaver events were 3 to 5 hours, aligned with the typical duration of network peak demand in residential areas. Restrictions on eligibility will only constrain the development of a demand response market, and any risks are best managed by customers in partnership with their demand response</p>

¹⁰ Ausgrid published reports: <https://www.ausgrid.com.au/Industry/Our-Research/DMIA-Research-and-trials>.

Consultation Question	Ausgrid Response
	aggregators.
21. Are there additional requirements you recommend we add to HVAC3 ensure consumers get the best outcomes?	<p>As noted in our response to question 20 above, we consider that the restrictions and calculation methods for this method understates the demand reduction offered and therefore the customer benefit.</p> <p>Ausgrid's CoolSaver program observed that customers who participated in the flex services program showed high levels of satisfaction, high retention rates and low levels of using program override options.</p> <p>More information can be found on Ausgrid's website.¹¹</p>
22. Can you provide evidence on the approximate duration of events where an air conditioner is controlled by a third party? In addition, can you provide evidence that customer comfort is not noticeably impacted?	<p>As noted in our response to Question 20 above, Ausgrid's CoolSaver trial typically operated demand response events of between 3 and 5 hours.</p> <p>Ausgrid received consistently positive survey feedback from participating households with 84% participating households extending their participation in the trial to a third summer period and 88% of remaining households extended participation through to the end of summer 2016/17.</p> <p>More information can be found on Ausgrid's website.¹²</p>
23. Can you provide evidence of opt out rates for third party control of air conditioners?	<p>As part of the Ausgrid CoolSaver trial, participants were provided the option of overriding a dispatch event and only a few participants chose to do so. Over the course of 2014/15 and 2015/16 summer seasons, customers selected to override on only 4.3% of customer dispatch events.</p> <p>Ausgrid also note that through the Behavioural Demand Response (BDR) trial, customer opt-out rates were not the only challenge faced in the retailer led trial of third-party smart air conditioning control. This included challenges with the installation and connectivity of the equipment as described in our response to Question 5.</p>
24. Can you see any potential issues with the 12-month cadence of certificate creation for each NMI?	<p>Peak demand certificates are time critical and time dependent and availability of peak demand reductions may vary from year to year. Given the shortfall in firm capacity will vary from year to year, the value and availability of peak demand certificates may also vary year to year. For this reason, we suggest that certificates that expire annually would be a reasonable approach.</p> <p>The 12-month cadence may also provide an appropriate mechanism to maintain longer-term customer engagement, while factoring in issues like change of tenancy or withdrawal from a Demand Response contract within the period.</p>

¹¹ Demand Response Airconditioning Programs Report: <https://cdn.ausgrid.com.au/-/media/Documents/Demand-Mgmt/DMIA-research/Demand-Response-Airconditioning-Programs-Report-2022.pdf?rev=3fe6c8bd14aa42798806b8f52014a1ae>.

¹² Demand Response Airconditioning Programs Report: <https://cdn.ausgrid.com.au/-/media/Documents/Demand-Mgmt/DMIA-research/Demand-Response-Airconditioning-Programs-Report-2022.pdf?rev=3fe6c8bd14aa42798806b8f52014a1ae>.

Consultation Question	Ausgrid Response
	<p>Ausgrid encourage annual reviews to examine whether incentives are pitched at an appropriate level and support continual improvement of the scheme in this evolving market, as new opportunities or barriers emerge.</p>
<p>25. Can you provide information on baseline demand/discharge, demand response or shifting, and other key operational characteristics that the NSW Government could use to develop rules for any of the activities we are continuing to look at?</p>	<p>Ausgrid outlines the following and would encourage further changes to the PDRS rule to support EV smart charging (including bi-directional EV charging).</p> <p>We also outline findings from Ausgrid's Behavioural Demand Response (BDR) trial for NSW Government consideration as a mechanism to build consumer trust, awareness and confidence in such schemes. This may also improve retail competition through addressing differing retailer barriers to mobilising such schemes.</p> <p>Pool pump demand response:</p> <p>No further comments.</p> <p>EV charging:</p> <p>Ausgrid's view is that there is substantial evidence for a case to be made to introduce EV charging to the PDRS activities based on Australian and international trials. Smart charging will provide substantial load flexibility benefits through price responsive and managed charging behaviours. This activity should be included as early as practicable. The development of EV charging standards will become increasingly important to unlock demand flexibility potential of EVs, offering customers new products and services which also provide significant system benefits to avoid charging at peak demand times on the network and optimising charging when rooftop solar generation is plentiful through the day. This includes the need to consider emerging innovative technologies and business models that will support future offerings such as bi-directional charging, which could unlock further customer and system benefits to support the electricity network and increase the value and uptake of EVs.</p> <p>Ausgrid would be happy to partner with the NSW Government and industry on progressing this as a key focus to support uptake of smart EV charging and load flexibility.</p> <p>Ausgrid supported a recent smart charging trial in collaboration with a retailer, which sought to understand the benefits of and barriers to controlled smart charging, including improving understanding of EV driver behaviour, willingness to accept third party control and what incentives are needed to encourage future participation in charge management programs. The final report and findings of this trial can be found on ARENA's website¹³.</p> <p>Commercial & industrial batteries:</p> <p>No further comment.</p>

¹³ Origin Smart Charging Final Report (ARENA): <https://arena.gov.au/knowledge-bank/origin-energy-smart-charging-trial-final-report/>.

Consultation Question	Ausgrid Response
	<p>Behavioural Demand Response:</p> <p>Ausgrid considers that the evidence base for the capability and performance of behavioural demand response is already well established and recommends it be reconsidered for inclusion in the scheme as soon as possible.</p> <p>Ausgrid has seen significant success in the delivery of our Behavioural Demand Response (BDR) trial in collaboration with retailers, observing an average demand reduction per customer of 0.8-1kW and active participation rates of 40-50% across both opt-in and opt-out approaches.</p> <p>Behavioural demand response offers a low barrier to participation with only a smart meter required to participate in a number of Retailer led programs. Inclusion of BDR in the PDRS provides consumers with choice in how they engage with flex services opportunities and their Retailer.</p> <p>This also offers a low-tech solution for those without the means or willingness to participate in direct control schemes. Such programs offer customers a steppingstone to more active control of their appliances as they gain trust in the systems and their demand response providers. Further information on the Ausgrid BDR trial can be found in our report¹⁴.</p> <p>For additional information, we also make the NSW Government aware of the United Energy Summer Saver program¹⁵.</p>

ENDS

¹⁴ Ausgrid BDR Report: <https://cdn.ausgrid.com.au/-/media/Documents/Demand-Mgmt/DMA-research/Demand-Response-Trial-Interim-Report-2023.pdf?rev=82f6967b5796431c94d590e7135b61b5>

¹⁵ United Energy Summer Saver Program: <https://www.unitedenergy.com.au/innovation/summer-saver/>.