Energy Security Safeguard

Department of Climate Change, Energy, the Environment and Water

Peak Demand Reduction Scheme

Rule change 2

NSW GOVERNMENT

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Introduction

The Peak Demand Reduction Scheme (PDRS) is a certificate scheme that aims to reduce peak electricity demand in NSW. The PDRS commenced in September 2022 and is scheduled to end in 2050.

Under the PDRS, scheme participants are required to purchase and surrender Peak Reduction Certificates (PRCs) to the NSW government. PRCs are created when Accredited Certificate Providers (ACPs) complete eligible activities that help households and businesses reduce their peak energy consumption.

The NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) has made changes to the Peak Demand Reduction Scheme Rule of 2022 (the Rule).

This Rule change introduces new activities and removes some existing activities that do not sufficiently meet the PDRS objectives or are preventing uptake of more impactful peak demand reduction technologies.

The Rule change will be effective from 1 August 2024 with battery activities commencing on 1 November 2024.

Purpose of this paper

The paper will help readers to understand the Rule change and how it might impact them. It outlines:

- changes to existing activities in the Rule
- new activities in the Rule
- stakeholder feedback during consultation
- how we have responded to feedback.

Consultation process

This paper follows the PDRS consultation paper and is informed by feedback we received from public consultation held between 19 October and 15 November 2023 and though subsequent follow up.[1]

We held an online public consultation forum on 1 November 2023 attended by over 160 stakeholders who asked over 50 questions during the Q&A session.

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https://www.energy.nsw.gov.au/sites/default/files/2023-10/Peak_Demand_Reduction_Scheme_Consultation_Paper_Rule_Change_2.pdf

We received submissions from a range of stakeholders including ACPs, Demand Response Service Providers, distribution network service providers, electricity retailers, industry associations and manufacturers.

We published a Notice to Market on 5 April 2024 which explained some further changes and provided industry with time to prepare for those additional changes.

Changes to existing activities

Summary of changes

Rule changes to existing activities are outlined in Table 1.

Table 1 Summary of changes to existing activities

Activity	Change
HVAC1 – install a new high efficiency air conditioner or replace an existing air conditioner with a high efficiency air conditioner (residential).	Not proceeding with demand response capability requirement.
HVAC2 – install a new high efficiency air conditioner or replace an existing air conditioner with a high efficiency air conditioner (business).	Not proceeding with demand response capability requirement.
WH1 – replace one or more existing hot water boilers or water heaters with one or more air source heat pump water heater systems.	Exclusion of heat pump water heaters of less than 425 litres.
RF1 – remove a spare refrigerator or freezer.	Removal of activity.
RF2 – replace an existing refrigerated cabinet with a new high efficiency refrigerated cabinet.	Reduction in lifetimes for larger class 7, 8 and 11 refrigerated cabinets. Clarification of like-for-like changes.
SYS1 – install a new high efficiency ventilation or refrigeration motor or replace an existing ventilation or refrigeration motor with a high efficiency ventilation or refrigeration motor.	Removal of activity.
SYS2 – replace an existing pool pump with a high efficiency pool pump.	Revised calculation method.

Changes to HVAC1, HVAC2

We proposed during consultation that all air conditioners installed under the PDRS have internet connectivity and the ability to be controlled by a demand response aggregator.

Summary of position

- The current Australian Standard 4755 (AS4755) is not internet-based and cannot provide two-way, third-party control to another entity, so we deemed it unviable for the PDRS.
- The inclusion of requirements for demand response will be delayed until DCCEEW identifies an appropriate demand response standard.

Issue analysis

The proposed Rule change aims to increase adoption of demand response capability through the PDRS, with a long-term outcome that all air conditioning users have the option to take part in demand response programs.

During consultation, we proposed a requirement that eligible air conditioners installed under the PDRS must have specific demand response functionality. Stakeholders responded that while manufacturers could meet the proposed requirements, they would not sufficiently benefit customers. Manufacturers could fit air conditioners with Wi-Fi chips, yet without an appropriate communication standard, they would not have the capability to conduct demand response.

Although South Australia and Queensland adhere to AS4755, we have determined that the standard's limitations make it unviable for the PDRS. These limitations include:

- the one-way nature of communication
- the low certainty of energy reduction. The standard outlines communication by reducing compressor power input to a percentage of the *rated input power*. A CSIRO case study has shown that because most air conditioners run at a partial load, even on very hot days, and that the true energy reduction for AS4755 is far lower than expected.[2]
- the inability to return the unit to its original state after the demand response event.

Other stakeholders called for the inclusion of air conditioners fitted with smart thermometers. However, these devices are cost prohibitive, and stakeholders have advised DCCEEW of functionality issues. These include inaccurate temperature readings and misalignment between phone applications and physical remotes. Our position is that incentivising

[2] https://www.energymining.sa.gov.au/__data/assets/pdf_file/0005/674213/Dr_Martin_Gill.pdf

manufacturers to create products with embedded demand response capabilities remains the best option to unlocking demand response capacity.

We will engage with the team working to update AS4755 and determine whether the planned changes align with our goals under the PDRS. We will continue to consult throughout the year to help us determine the best way to incorporate requirements for a communication protocol that prioritises internet connectivity and third-party control.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	Support for the requirement was mixed, with significant concern for challenges related to practical connectivity, control, and demand response program integration. There was general support for retrofitting with external smart thermometers to produce greater outcome in the near term and provide demand response capability for homes with recently upgraded equipment. There was a broad lack of clarity on evidencing and product requirements, including IPARTs handling of product applications and approvals. National Carbon Bank of Australia proposed methods for compliance with AS4755, including harmonisation with the South Australian Government Air Conditioner Regulation Change that requires air conditioners to comply with AS4755 and 3 demand response modes (DRMs) – DRM1, DRM2, and DRM3. Smart Life Australia noted that internet connectivity should be prioritised over AS4755.
Demand response service providers (DRSPs)	No submissions received.
Distribution network service providers (DNSPs)	Ausgrid noted that achieving firm demand response capacity is challenging considering the installation and ongoing connectivity requirements and pointed to the results of their Behavioural Demand Response (BDR) trial, which saw enablement for 17% of customers on average across 5 summer events.
Electricity retailers	No submissions received.
Government agencies	No submissions received.
Industry associations	The Energy Savings Industry Alliance (ESIA) was supportive but called for clarification on 'internet connectivity' and evidencing requirements, as internet connectivity does not guarantee compatibility with a demand response aggregator. They highlighted the risk that manufacturers can use third-party Wi-Fi chips to meet requirements without having the capability or intention to integrate with demand response programs. Also

Stakeholder group	Feedback summary
	that an open API or manufacturer-developed demand response system is needed as an alternative to external smart thermostats, which are a less attractive approach in the longer term.
Manufacturers	Sonnen noted that co-ordination of air conditioners should be managed by a residential battery or 'gateway' device with grid power flow monitoring to overcome the limitations of AS4755. Sonnen and Daikin called for harmonisation of technical standards across Australia to minimise costs. Daikin noted that AS4755 allows for a standardised approach to demand response for air conditioners, and that requirements for demand response capabilities should aligned nationally with respect to cooling capacity limits. SwitchDin was broadly supportive of the requirement.

Changes to WH1

The activity is to replace hot water boilers or water heaters with air source heat pump water heater systems. The consultation asked stakeholders about including a capacity factor and excluding systems on controlled load tariffs. Additional changes after consultation limit eligibility.

Summary of position

The updated activity will:

- add a capacity factor, to align the activity with the ESS Rule
- exclude businesses on controlled load
- exclude systems that are 425 litres or less, as these models are eligible for Small-technology Certificates (STCs) under the Renewable Energy Target (RET).

Issue analysis

Capacity factor

We proposed alignment of WH1 with the equivalent activity (F16) in the Energy Savings Scheme (ESS) by including a capacity factor that limits the peak demand savings to ensure there is no oversizing. Industry was broadly supportive of the update.

Controlled load

We consulted on the potential for heat pump water heaters to increase peak electricity demand when customers install a heat pump and move off a controlled load tariff. Although

this would affect a small portion of customers, the change would significantly increase water heating costs and not deliver on the PDRS main objective to reduce peak demand.

To address this, the updated activity will exclude customers on controlled load. If participating in this activity, customers will be required to demonstrate that they are not on a controlled load.

Stakeholder feedback indicates this change has low evidentiary requirements (such as an electricity bill) and there is broad industry support.

Product eligibility

On 5 April 2024, we issued a Notice to Market that WH1 eligibility would be adjusted to exclude systems below 425 litres. This change will prevent incentive stacking across 3 schemes the ESS, PDRS and Commonwealth Small-scale Renewable Energy Scheme (SRES).

Commercial heat pumps under 425 litres remain eligible for incentives for the ESS and SRES. Heat pumps over 425 litres remain eligible for the ESS and PDRS.

To date, 86% of PDRS certificates have been created from WH1 activities. This has led to a significant certificate surplus from smaller heat pumps. Additionally, commercial heat pumps are often installed without any contribution from the customer, with reports that the combined incentives exceed the installed product costs. This indicates that PDRS incentives are not required to encourage small commercial heat pump upgrades.

This change will:

- improve competition amongst other technologies that cannot stack incentives from 3 schemes
- increase confidence that the PDRS encourages activity that would not have happened with existing ESS or SRES incentives
- align with wider changes for incentives for heat pumps.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	In general, ACPs supported the introduction of a capacity factor that aligns with the capacity factor in the ESS F16 activity. Two ACPs suggested using the thermal capacity rather than the ComPkLoad. Most ACPs were supportive of restricting controlled load customers from receiving upgrades that place the customer's water heating on a continuous tariff. National Carbon Bank of Australia suggested the small number of customers on controlled loads negates the need to introduce a requirement. All ACPs suggested the evidence requirements should be simple, for example an electricity bill.
DNSPs	Ausgrid stated the controlled load changes would affect 2,900 non-residential customers across its managed portion of the NSW grid. Customers would be required to remove the controlled load circuit themselves or get their retailer to do so. Ausgrid also supported the addition of the capacity factor.
Government agencies	IPART was supportive of a capacity factor in WH1 that aligns with the relevant ESS activities. On the controlled load issue, IPART also supported measures through the Rule that ensure the scheme remains focused on the outcome of reducing peak demand. They also highlighted that the decision to remain or move off a controlled load is complex and customers need to be supported to make an informed decision. IPART requested any compliance requirements would be easy to evidence.
Industry associations	The ESIA suggested that the customers on controlled load represents a significant pool of opportunities for heat pump water heater upgrades. They highlighted the common scenario where businesses have twin element electric water heaters which have an off-peak load at the bottom and an element on a continuous tariff at the top. The suggested savings in these applications was up to 140% where a site has solar PV. The ESIA also supported the addition of a capacity factor, adding that it should be aligned across the ESS and PDRS.

Stakeholder group	Feedback summary
Manufacturers	Rheem supported the addition of a capacity factor for WH1 but suggested the equivalent activities in the ESS also need to be reworked. On the issue of controlled load tariffs, Rheem suggested that smart water heaters are an alternative solution that can provide benefits during minimum demand events and avoid peak heating demand. From Sonnen, we heard that there is a lot of complexity in the issue of non-controlled heat pump water heaters and further consultation was suggested.

Removal of RF1

We did not consult on removing RF1 from the PDRS.

Summary of position

The removal of spare fridges activity will be removed from the PDRS. This activity has not been used since the scheme commenced and has no potential as a demand response or shifting activity. It is eligible for incentives under the ESS.

Issue analysis

RF1 has lower potential to reduce peak demand compared with batteries and other activities with demand response or shifting potential. It has been removed from the PDRS to prevent slowing uptake of other technologies.

Changes to RF2

We did not consult on changes to lifetime and a fit-for-purpose requirement for RF2.

Summary of position

The lifetime for products in classes 7, 8 and 11 with a Total Display Area greater than 3.3 m^2 has been reduced from 12 years to 8 years.

A like-for-like requirement has been added to ensure that fridges and freezers are being installed that are fit for purpose and represent actual peak demand reduction.

Issue analysis

The lifetime of calculated peak demand reductions in the Rule was split based on the Total Display Area for products in classes 7, 8 and 11. Products with Total Display Area greater than 3.3 m^2 were given a lifetime of 12 years while smaller refrigerated cabinets were given a lifetime of 8 years. Due to concerns around product durability and the peak demand savings of

refrigerated cabinets with a large glass display area, all refrigerated cabinets in classes 7, 8 and 11 now receive a lifetime of 8 years.

Where refrigerated cabinets operating as refrigerators are being replaced with freezers, the calculated of peak demand reduction will not be achieved in real life. In response, and to mirror the ESS, we have added a like-for-like requirement to ensure that installed equipment is fit for purpose and will achieve actual peak demand reductions.

Removal of SYS1

We provided a Notice to Market on 5 April of a proposed Rule change to remove the activity for the installation of high efficiency motors in refrigeration and ventilation from PDRS. This change was not proposed in the consultation.

Summary of position

The motors activity will be removed from the PDRS. The activity has not had uptake under the scheme so we expect its removal will have a minor impact on industry. It is eligible for incentives under the ESS.

Issue analysis

SYS1 has lower potential to reduce peak demand compared with batteries and other activities with demand response or shifting potential. It has been removed from the Rule to prevent it slowing the uptake of other technologies. Industry can still access incentives for motors upgrades under the F7 activity in the ESS.

Changes to SYS2

This Rule change revises the pool pump activity to create a higher peak demand reduction capacity and incentives for upgrading to multi and variable speed pumps.

Summary of position

There are several pool pump changes that are informed by stakeholder feedback. These include:

- Changing the lifetime from 12 years to 10 years, instead of the 7 years proposed in the consultation paper.
- Reducing the minimum threshold for incentives from a 4.5 to 4 energy star rating, consistent with an update to Minimum Energy Performance Standards (MEPS).
- Separating the baselines into two, related to the nameplate input power of the pool pump to replace a single baseline.

Issue analysis

The pool pump activity update aligns with pool pump star ratings following updates to MEPS.

Overall, stakeholders supported changes to this activity. Most of the feedback related to the lifetime of the product, which we proposed to be reduced from 12 years to 7 years. Almost all stakeholders that commented on this issue proposed shifting to a 10-year lifetime instead. We have implemented this feedback and set the deemed lifetime at 10 years.

We have reduced the minimum star rating threshold from 4.5 stars to 4 stars. This allows consumers to choose from the 122 multi and variable speed pool pump models listed on the Greenhouse and Minimum Energy Standards Registry, and excludes single- and two-speed pool pumps.

We have split the proposed single baseline value of 1.052 kW into 4 values based on the nameplate input power of the pool pump. This change supports appropriate sizing and provides less incentive to oversize pool pumps.

Stakeholder feedback differed about the cost of adding demand response capability to pool pumps, which ranged between $100 to $1000. There was no response from manufacturers of pool pumps to provide clarity on costs. The energy savings and demand reduction from upgrading to a new high efficiency pool pump vastly outweighs the benefits of doing demand response with an old pool pump and is much less complex. Introducing a demand response activity could also incentivise the retention of older models and delay upgrades.

We will continue to monitor the market for changes that makes demand response simple and low cost.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	ACPs were generally supportive of the changes to the equation. Five ACPs believed that the lifetime should be set at 10 years based on the Australian Tax Office depreciation lifetime. One ACP believed that 12 years was appropriate. The feedback on demand response capability suggested that inbuilt demand response capability would be costly to implement, a cost of $1000 was mentioned by one ACP. ACPs also highlighted the timing challenges around demand response capability, noting it could take months to years for all pool pumps to comply.

Stakeholder group	Feedback summary
Demand response service providers	A demand response aggregator mentioned that the simplified approach is important for this activity and indeed all activities across the scheme. On demand response capability, they stated that the home energy management space is rapidly evolving, and Wi-Fi connectivity can be achieved at relatively low cost.
DNSPs	Ausgrid agreed with the proposed changes to the equation, adjustment factors and lifetime.
Electricity retailers	No submissions received.
Government agencies	IPART suggested that care should be taken to ensure changes to activities do not result in over-incentivisation that results in poor consumer outcomes. Minimum customer contributions are suggested as another tool to avoid poor consumer outcomes.
Industry associations	The ESIA suggested that the lifetime should also be 10 years based on the current ATO depreciation rates table. They also noted the typical lifespan of a pool pump is 60 months, and pumps are only used 6 months of the year.
Manufacturers	While no responses were received from pool pump manufacturers, a water heater manufacturer provided input on pool water heating. The submission suggested that while the response time would not be fast, pool water heaters could provide demand response at a low cost for commercial water heaters. The manufacturer said demand response would potentially be a burden at the household scale. VPP solutions provider SwitchDin provided support for the simplification of the proposed pool pump activity.

Introduction of new activities

Summary of changes

Rule changes to new activities are outlined in Table 2.

Table 2 Summary of changes to new activities

Activity	Change
BESS1 – Install a new behind the meter battery energy storage system	Extending lifetime to 15 years and commence on 1 November 2024
BESS2 – Sign a behind the meter battery energy storage system up to a demand response contract	Extending lifetime to 3 years and commence on 1 November 2024

Rationale for change

The proposed Rule change expands the eligibility for the PDRS to provide incentives for batteries. This aligns with Recommendation 32 from the independent Electricity Supply and Reliability Check Up[3].

As these new battery activities are introduced, they will be closely monitored and all aspects including requirements, calculation methods and lifetimes will be reviewed and changed as required. This will be done to ensure peak demand reduction capacity is real, customers are receiving good outcomes and there is a positive grid impact for NSW.

[3] https://www.energy.nsw.gov.au/sites/default/files/2023-09/NSW_Electricity_Supply_and_Reliability_CheckUp_Marsden_Jacob_Report_2023.pdf

Installation of a battery: BESS1

During consultation we outlined an activity that incentivises the installation of batteries at a residential and small business level.

The key topics covered in consultation include:

- using the NextGen dataset to show how a residential battery is operated during peak periods
- size of eligible capacities, length of the warranty and lifetime of activity
- using Clean Energy Council's (CEC) accreditation and product registry for safety and product quality
- minimum payment of $200
- registration on the Distributed Energy Resource (DER) Register.

Summary of position

- The BESS1 activity will commence on 1 November 2024.
- Activity lifetime will be updated to 15 years to align with average degradation rates of lithium iron phosphate batteries.
- Eligible batteries will require proof of warranty of at least 10 years, guaranteeing retention of at least 70% of its usable capacity.
- Installers will be required to comply with DER Register at the time of installation for visibility of flexible assets.
- Additional safety requirements include installing a smoke alarm near the battery, collecting license details of individual installers and IPART being able to suspend products if required.

Issue analysis

DCCEEW has scheduled this activity to commence on 1 November 2024 to ensure that appropriate accreditation, compliance and consumer information is in place. This is in addition to the inclusion of safety requirements that weren't consulted on such as:

- the ability for the Scheme Administrator to remove products from the scheme
- collecting license numbers of individual installers for use inclusion in audits
- the requirement for a smoke alarm to be installed in the immediate vicinity of the battery.

In their feedback, ACPs were critical of the proposed 8-year lifetime and suggested raising this figure to between 10 and 15 years for various reasons. Assuming a degradation rate of

2.5% per annum[4], after 15 years a lithium iron phosphate battery will have 62.5% of its usable capacity available. After removing 10% for roundtrip efficiency losses and forecasting errors, as detailed in the consultation, 52.5% capacity would remain. This is just above the 51.2% assumed to be consumed by a household during the peak period. Therefore, we have decided to raise the lifetime to 15 years.

We identify the risk that nickel manganese cobalt batteries have a higher rate of degradation. However, as lithium iron phosphate batteries have become the industry standard for residential applications, we assume that most new installations will use this chemistry and conform to these degradation rates.

Additionally, we have decided that as many manufacturers offer a 10-year warranty with guaranteed 70% residual capacity, we can increase the minimum warranty requirement to match this standard without placing undue burden on manufacturers.

One submission called for the inclusion of eligibility for homes without solar, noting the demand reduction potential of standalone batteries. Due to the relatively short payback period and high uptake of solar PV in NSW, and lack of robust data for homes with standalone batteries, we will continue with our initial decision to limit eligibility to homes with solar PV installed.

Stakeholder feedback generally supported using NextGen dataset and calculation assumptions. One submission noted that it does not account for variance in solar irradiance across the state. Our position is that updating the calculation method to account for solar irradiance would add significant complexity for both ACPs and IPART for a relatively small increase in accuracy.

Another submission noted the dataset is too small to derive calculation values. During consultation, Ausgrid supplied data with a smaller sample size demonstrating that 39% of battery capacity was used over the peak period for self-consumption, which is a similar figure of NextGen dataset. As no alternative was submitted, we have used the assumptions derived from the NextGen dataset for this Rule.

Ausgrid and electricity retailers called for measures to ensure a higher degree of visibility into flexible assets on their networks, including expansion of visibility to retailers at least to the NMI level. Our proposed use of the DER Register was generally supported, though Sonnen and the CEC warned of the potential time lag between the submission and processing of updates to the DER Register. We will work with IPART and AEMO to look for opportunities to streamline the registration and evidence requirements.

[4] Analysis of degradation in residential battery energy storage systems for rate-based use-cases

Some submissions discussed the need to prioritise interoperability of consumer energy resources to avoid consumer lock-in. This issue was deemed more relevant to BESS2 than BESS1 and have been addressed in the section below.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	ACPs generally supported the implementation requirements, alignment with the CEC approved battery list, and use of leveraging the AEMO DER Register. NCBA disagreed with the data assumptions and asserted that the battery contribution to household consumption occurs over a 3.5, instead of 6, hour period and that the equation should be updated accordingly. NCBA also recommended an inclusion for batteries installed at premises that don't have solar. There were issues raised with the deemed lifetime being too short, resulting in a mix of responses as ACPs called for 10, 12, and 15 years. Other concerns included the financial incentive being too low, putting it at risk of being absorbed by installers to account for variance in installation times. ACPs welcomed the introduction of fact sheets early in the activity timeline to help inform customers on pursuing an upgrade. There was one complaint of the NextGen data being too small, though no alternative data set was suggested or provided.
Demand response aggregator	Reposit Power noted that, batteries can contribute to minimum demand as well as peak.
DNSPs	DNSPs gave general support for leveraging AEMO's DER Register, though it was noted that they require more visibility of residential storage capacity. Ausgrid noted that their VPP Trial report found average performance on non-VPP dispatch days corresponded to 39.1% of the available capacity at the start of the peak period being used for self-consumption.
Electricity retailers	All retailer submissions were broadly supportive of the activity. AGL mimicked Ausgrid's concerns around broadening visibility to the DER Registry by engaging with AEMO to expand the visibility to retailers, at least at the NMI level or where the retailer is the financially responsible market participant.
Government agencies	IPART was broadly supportive of the activity.
Industry associations	The CEC was broadly supportive and noted that CEC members have suggested that evidence of compliance could be added to demonstrating submission by the installer (photo, screen capture etc.) of the installation details to the DER register. The ESIA was broadly supportive with the exclusion of the calculation methods, which they noted do "not recognise

Stakeholder group	Feedback summary
	and value the real demand reduction benefits that could be delivered by BESS" and "request further targeted consultation to explore the possibilities further."
Manufacturers	Rheem was broadly supportive yet called for prioritisation of interoperability of CER and avoiding consumer lock-in. Sonnen was broadly supportive but warned of potential timing implications from the processing of updates to the register. They recommended that any evidence of compliance is linked to demonstrating submission by the installer (photo, screen capture etc.) of the installation details to the DER register. They also highlighted the need to protect consumers from lock-in. SwitchDin was broadly supportive. A manufacturer was broadly supportive yet noted that whilst the NextGen dataset is robust, it does not account the difference in climate zones and solar production.

Demand response from a battery: BESS2

The proposed Rule to include this activity aims to incentivise households and businesses to enrol their batteries in demand response programs.

The Rule initially proposed an annual certificate creation cycle, which requires a householder to annually renew their capacity each summer for ongoing consumer engagement and capacity upkeep.

Summary of position

- The BESS2 activity will commence November 2024, with some amendments.
- The activity allows the forward creation of certificates for 3 years.
- To be eligible, batteries must have at least 6 years remaining on their warranty.
- The incentive can be claimed up to a maximum of two times.
- Participation in a VPP must not reduce the warranty below the minimum of 70% usable capacity remaining 10 years from installation.

Issue analysis

Much of the feedback on this activity centred around the annual cycle of certificate creation. With this activity change, we sought to balance concerns about the administration costs of an annual cycle with the need to protect consumers and minimise the likelihood of consumers

being locked-in with a demand response aggregator. We have updated the activity to allow forward creation certificates for 3 years, which we believe achieves a balance between these 2 factors.

Customers will be able to switch VPPs at any time throughout the period (subject to any conditions of the arrangement with the VPP provider), however, won't be eligible to generate PRCs again until 3 years have elapsed. The list of NMIs submitted by ACPs will be checked by IPART to ensure no double-counting occurs for households that have generated certificates in the last 3 years.

Batteries will be required to have a minimum of 6 years remaining on the warranty to be eligible. Additionally, participation in a VPP must not reduce the battery warranty below the minimum threshold of 10 years and 70% residual capacity.

To ensure that demand response capacity is real and available when needed, we have introduced the requirement that the demand response aggregator is a market participant, network service provider, or maintains a contractual agreement with either one of these entities.

One submission raised suggestions on dynamic network pricing. Whilst we are not discrediting the value that this approach can add to incentivising demand side participation, it is currently not in the remit of the PDRS (a capacity-based scheme) to focus on this approach. Dynamic network pricing can be included in VPP offerings at the ACPs and customers discretion. We will continue to consult on this to identify any potential opportunities.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	Most ACPs suggested that the activity should be changed from annual certificate creation to deeming upfront. The responses suggested that if a customer signs up to a 3-year VPP contract then they should be able to claim 3 years' worth of incentives upfront. Electric Future Sustainability Services acknowledged that existing VPPs have a level of flexibility for customers and a 'light touch' approach. They also pointed out that the Retailer Energy Productivity Scheme in South Australia has a long term VPP activity and suggested there are minimal households that dropout of the program each year. National Carbon Bank of Australia and Green Energy Trading submission suggested a forward creation could be tied to contract length, with capacity to be verified at the end of the contract.

Stakeholder group	Feedback summary
	Smart Life Australia did not support the data assumptions and calculation method on the basis that the number of certificates will be insufficient for equipment suppliers and consumers to sign up to a VPP. Shell Energy suggested that having a 12 month period incentivises effective ongoing VPP operation but suggested that administration costs could mean minimal incentive is passed through to the consumer.
Community groups	Geni Energy supported the activity as one that can have a positive impact on the financial viability of installing household batteries. Solar Citizens highlighted some information from their annual survey that showed there is wide household interest in batteries, but the capital cost is a main barrier. The survey also showed that most households would prefer to receive government support in the form of a subsidy or rebate. Solar Citizens also highlighted there is federal government support for large-scale batteries but an absence of incentives at the state and federal level for households.
Demand response service providers	Reposit Power suggested that the peak demand reduction that can be achieved from batteries differs greatly depending on real-time incentives. Reposit Power's key argument was that to maximise the amount of demand response capacity available from a battery, the frequency of incentive needs to coincide with the need for demand reduction. They also acknowledged that registration into a contract does not guarantee delivery of demand response and may result in a conservative approach to calculations. It was also suggested that the use of dynamic network pricing was crucial to maximise value either through BESS2 or a new BESS activity. Reposit demonstrated the findings from Project Edith to make the case that the benefit from dynamic network pricing in filling midday minimum demand and reducing peak demand provides greater benefit than typical network tariff arrangements.
Distribution network service providers	Ausgrid provided information based on its experience operating a VPP trial. They suggested that VPP operators optimise battery state-of-charge for dispatch event days by pre-charging. Ausgrid suggested that as PRCs are time critical and the availability of peak demand reduction is also dependent on the year and that annual certificate creation is a reasonable approach. They recognise that a 12 month period provides a mechanism to maintain long-term customer engagement, while reducing the impact of changes to tenancy or withdrawal from a program.

Stakeholder group	Feedback summary
Electricity retailers	Both EnergyAustralia and Origin Energy support the inclusion of the battery demand response activity. Origin Energy highlighted that this activity needs streamlined annual verification to ensure minimal administration costs.
Government agencies	IPART suggested the annual engagement will potentially be a barrier to uptake if the risks aren't mitigated. They suggested a streamlined approach to balance the administrative burden and the need for ongoing consumer engagement.
Industry associations	The CEC agreed with the key requirements and supported the use of their approved product list, installer accreditation scheme and the New Energy Technology Consumer Code. The CEC also suggested that there are no additional regulations required beyond what is already mandated in the current installation and inverter standards.
Manufacturers	Sonnen suggested that the 12-month cadence lines up with what consumers expect and practical. They also suggested that this approach is in line with customer expectations of flexibility and portability by not locking consumers in long-term contracts. Another battery manufacturer agreed that the requirements are appropriate and represent best practice. Rheem suggested that DR aggregators often don't participate in demand response events unless the financial incentive is high enough. They also suggested capacity and responsiveness was highly dependent on characteristics such as battery chemistry and ambient temperature.
Technology providers	Intellihub supported the inclusion of BESS2. Myenergi agrees that a 12 month period is sensible due to the flexibility. They also suggested that the use of an average calculation method was suitable while smart metering levels are low and present a barrier to measuring actual demand response. Myenergi also commended the decision to allow the DR aggregator to be someone other than the ACP suggesting this increases market innovation. SwitchDin welcomed the introduction of a battery demand response activity.

Still in development

Summary of changes

Rule changes to proposed activities that did not proceed are outlined in Table 3.

Table 3 Summary of changes to proposed activities.

Activity	Change
WARM	Delaying to undertake further consultation
HVAC3	Delaying until data becomes available

Commercial and industrial demand response: WARM

The Wholesale Annual Response Mechanism (WARM) leverages the Wholesale Demand Response Mechanism (WDRM) to incentivise the availability of demand response capacity from large energy users in the form of Wholesale Demand Response Units (WDRU).

The proposed Rule change to this activity requires an ACP to provide annual proof that capacity exists and can be used for demand response. ACPs would do this by providing data showing the amount of capacity that was dispatched through AEMO's National Electricity Market Dispatch Engine. This data can be from an actual response to high prices or a dispatch test to prove capacity, and must be sufficient to demonstrate that dispatch occurs:

- through the WDRM at a site in NSW
- between 1 November and 31 March (in the relevant compliance year)
- between 2:30 pm and 8:30 pm Australian Eastern Standard Time (the peak demand reduction period)
- in a single dispatch period of up to 6 hours.

Summary of position

Stakeholders' feedback suggested that DCCEEW should further develop this activity before introducing it to the PDRS Rule.

We will continue to consult with industry before proposing an improved commercial and industrial demand response activity.

Issue analysis

Several submissions highlighted the constraints of the WDRM and raised concerns on the non-additionality of the 30 MW of capacity already registered in the WDRM in NSW and the capacity contracted by electricity retailers in out-of-market contracts. This was countered by calls to specifically include out-of-market capacity through the activity.

We have no insight on capacity maintained in retailer portfolios, including how much of it would be eligible for the WDRM and thus not providing new demand response capacity. By participating in the WDRM, value is added through capacity becoming visible in the market. However, we need to further assess the marginal benefit of paying for this visibility compared to paying for additional demand response capacity that the proposed calculations reflect.

We will consult with AEMO and retailers to leverage any data sets available, such as AEMO's Demand Side Participation Information Portal, to identify a mechanism that can effectively exclude any currently contracted loads from participating in the WDRM to ensure that the PDRS is creating new demand response capacity.

We will explore out-of-market capacity contracted in electricity retailer portfolios in future Rule changes as we advance our work with the CSIRO on the Data Clearing House project. This project will offer a platform to conduct streamlined measurement and verification activities for a wide range of loads, enabling participation of temperature sensitive loads.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	ACPs were all in support of leveraging the WDRM in general, use of dispatch data to verify capacity, and exclusion of RERT and LTESA capacity. There were some concerns around additionality as incentives will be given to capacity already registered in the WDRM. ACPs also noted the potential impact on the PRC price, due to high volumes of future creation. One ACP noted that they were uncertain of the activity's practicality and how the market would respond. Another was unclear which stakeholder would be responsible for meeting the data and compliance requirements. They also called for alignment with the existing evidencing framework in the PDRS.
DRSPs	Enel X was broadly supportive, with 2 suggested alterations: 1. Base calculations on the demand response delivered by a WDRU upon dispatch, rather than the value it was dispatched by AEMO for. DRSPs are dispatched by AEMO on a Dispatchable Unit Identifier (DUID) basis, which can be an aggregation of loads, and contain several WDRUs. Baselines and settlement are determined

Stakeholder group	Feedback summary
	at the individual WDRU level, where metering data can determine the capacity delivered by each individual WDRU within a DUID. 2. Expand baseline methodologies and change the dispatch requirements from a contiguous dispatch to the total capacity dispatched within the 6 hour peak period. This is suited to the capabilities of refrigeration and HVAC assets that cycle over the peak window and aligns better with WDRM pricing dynamics. Enel X was supportive of RERT and LTESA exclusion and noted that WDRM Rules currently exclude RERT loads. They suggested consideration of the relative value of schedulable demand response resources through the WDRM. VIOTAS was against leveraging the WDRM due to limited participation, and instead called for OECC to tender for DR in batches over 1, 3, and 5-year time horizons
DNSPs	Ausgrid was supportive of using dispatch data and noted the increasing need for achieving visibility of the flexible commercial and industrial loads on their network. They suggested that this Rule change is an opportunity to increase information sharing provisions, as NMI level data for registered participants would support distribution network visibility of Wholesale Demand Response participation.
Electricity retailers	AGL were supportive of excluding LTESAs but noted that only Long Notice RERT capacity should be excluded, as this is already incentivised to be on standby. Financial incentives for Short Notice RERT only occur if the capacity is called upon, so the inclusion of this mechanism within the WARM will help to ensure that DR capacity is available when required during peak demand periods. Retailers highlighted the need for additional baselines to incorporate temperature sensitive loads such as HVAC and refrigeration, as well as sites with inconsistent opening hours or batteries, as the battery discharge creates a load profile that does not allow for accurate baselining. Retailers also called for the inclusion of retailer-led demand response and suggested that IPART seek to leverage AEMO's Demand Side Participation Information Portal (DSPIP) or the proposed 'Scheduled lite' mechanism. Flow Power was against use of the WDRM, noting that activities like load shifting may encounter baselining difficulties. They proposed prioritising out of market demand response, such as customers who opt for price signals through their retailer. Flow Power also suggested expanding the activity to credit customers that can demonstrate a retail arrangement that encourages reductions in energy use in peak periods, have the

Stakeholder group	Feedback summary
	capability to reduce demand on call before summer, and are registered in AEMO's demand side participation portal.
Government agencies	IPART was broadly supportive and acknowledged that verifying demand response through dispatch is a pragmatic use of AEMO data, if the data is suitable and readily available. IPART was supportive of RERT and LTESA exclusion.
Industry associations	The ESIA agreed with the use of dispatch data, RERT and LTESA exclusion, and called for an exclusion to retailer demand response capacity. The ESIA also had some concerns around additionality. The EEC was broadly supportive, noting the need for incentives that offset upfront costs of demand response. The EEC highlighted the restrictive baselines and desire to incorporate loads that can deliver response in a non-contiguous manner over the peak period. The CEC was supportive but called for expansion of the activity to customers who opt for price signals through their retailer.
Manufacturers	Rheem suggested that this activity is prone to gaming, as sites will choose the most opportune time to conduct dispatch. They suggested instead that IPART receive historical dispatch data to randomly analyse and verify demand response capacity. They also suggested to consider the ability of demand response in the WDRM to help regulate high and low voltages on the network by reducing or increasing energy consumption. Rheem was supportive of RERT and LTESA exclusion. Sonnen suggested further consultation on RERT exclusion as it sets a negative precedent on the use of demand response resources. Sonnen also raised that the PDRS may not provide sufficient incentive alone to support development of flexible demand and suggested permitting some overlap between the 2 programs. A manufacturer was broadly supportive of the use of dispatch data and the WDRM.

Residential air conditioner demand response: HVAC3

The proposed Rule change for the HVAC3 activity aims to present typical energy savings from an air conditioner set-point temperature change from 5 to 10% reduction in load per 1°C increase in climates comparable to NSW. We concluded that each degree of set-point temperature change will result in a 7.5% energy saving. The proposed Rule allows for a maximum set-point temperature change of 4°C, leading to a maximum air conditioner load reduction of 30%.

We also included a firmness factor of 0.8 which assumed of a dropout rate of 80%.

Summary of position

- DCCEEW needs more time to develop this activity before it is ready for inclusion in the PDRS Rule.
- We will continue to consult with industry, seek better data sources and research successful air conditioner demand response programs before proposing an improved HVAC3 activity.

Issue analysis

There was minimal air conditioner demand response data available when developing this activity for consultation. We looked at programs such as the Ausgrid CoolSaver trials, however, these programs use AS4755 demand response mode 2. This mode cuts power to the compressor to reduce demand and operates differently to increasing the set-point temperature. We consulted on a Rule change that would allow for a maximum set-point temperature change as this provides more flexibility and better outcomes for consumers.

Further stakeholder consultation is needed to ensure the activity operates effectively.

Stakeholder feedback

Stakeholder group	Feedback summary
ACPs	Most ACPs stressed the importance of the annual sign-up process being streamlined. All ACPs suggested that the level of incentive would make it challenging to come up with a viable business model. Several suggestions were raised, including changes to the set-point temperatures, increasing the response duration, age of equipment and ambient temperature.
DNSPs	Ausgrid's submission referred to the CoolSaver trial that it held between 2014 and 2017 in 5 phases. This trial involved demand response events between 3 and 5 hours with retention rates above 80% between years. Ausgrid suggested consumers were highly engaged and satisfied with their involvement in the program with an override percentage of just 4.3%. Ausgrid agreed that the annual need for demand response capacity aligns with the annual approach to this activity.
Electricity retailers	AGL had no major concerns with the data assumptions and calculation methods but questioned the impact of emerging technologies on the calculation of PRCs. AGL noted difficulties with customers participating in some programs due to a lack of end-user knowledge about the type and model of assets. AGL

Stakeholder group	Feedback summary
	noted the information about assets is often targeted for manufacturers and customers struggle to correctly identify their asset.
Government agencies	IPART highlighted the need to minimise administration burden to ensure ongoing engagement of consumers.
Industry associations	The CEC encouraged the use of clear documentation on expectations and limitations, easily accessible data on aggregators use of capacity and resources for consumers. The ESIA proposed increasing the duration from 2 hours to 6 hours. They also suggested looking further into the Energex PeakSmart program, North American studies and Australian retailer programs to ascertain how customer engagement plays out during events and over multiple years of a demand response program. ESIA also highlighted the Ausgrid CoolSaver report as a source of useful information.
Manufacturers	Daikin suggested that the use of third-party control of air conditioners may lead to a reduction in competition as aggregators may choose one specific brand. An alternative approach of using an open-source communications protocol such as OpenADR was suggested. Battery manufacturer and VPP operator, Sonnen, agrees with a 12 month period as it strikes a balance between consumer flexibility and administration costs.

Appendix

Appendix A: Acronyms

Acronym	Definition
ACP	Accredited Certificate Provider
AEMO	Australian Energy Market Operator
BESS	Battery energy storage system
DER	Distributed Energy Resource
DNSP	Distribution Network Service Provider
DRSP	Demand Response Service Provider
ESS	Energy Savings Scheme
HVAC	Heating, Ventilation and Air Cooling
IPART	Independent Pricing and Regulatory Tribunal
LTESA	Long Term Energy Service Agreements
NMI	National Meter Identifier
NSW	New South Wales
PDRS	Peak Demand Reduction Scheme
PRC	Peak Reduction Certificate
PV	Photovoltaic
RERT	Reliability and emergency reserve trader
Safeguard	Energy Security Safeguard
VPP	Virtual Power Plant
WARM	Wholesale Annual Response Mechanism
WDRM	Wholesale Demand Response Mechanism

Energy Security Safeguard

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For more information

To learn more about the Peak Demand Reduction Scheme or Energy Security Safeguard, please visit or contact:

www.energy.nsw.gov.au | sustainability@environment.nsw.gov.au