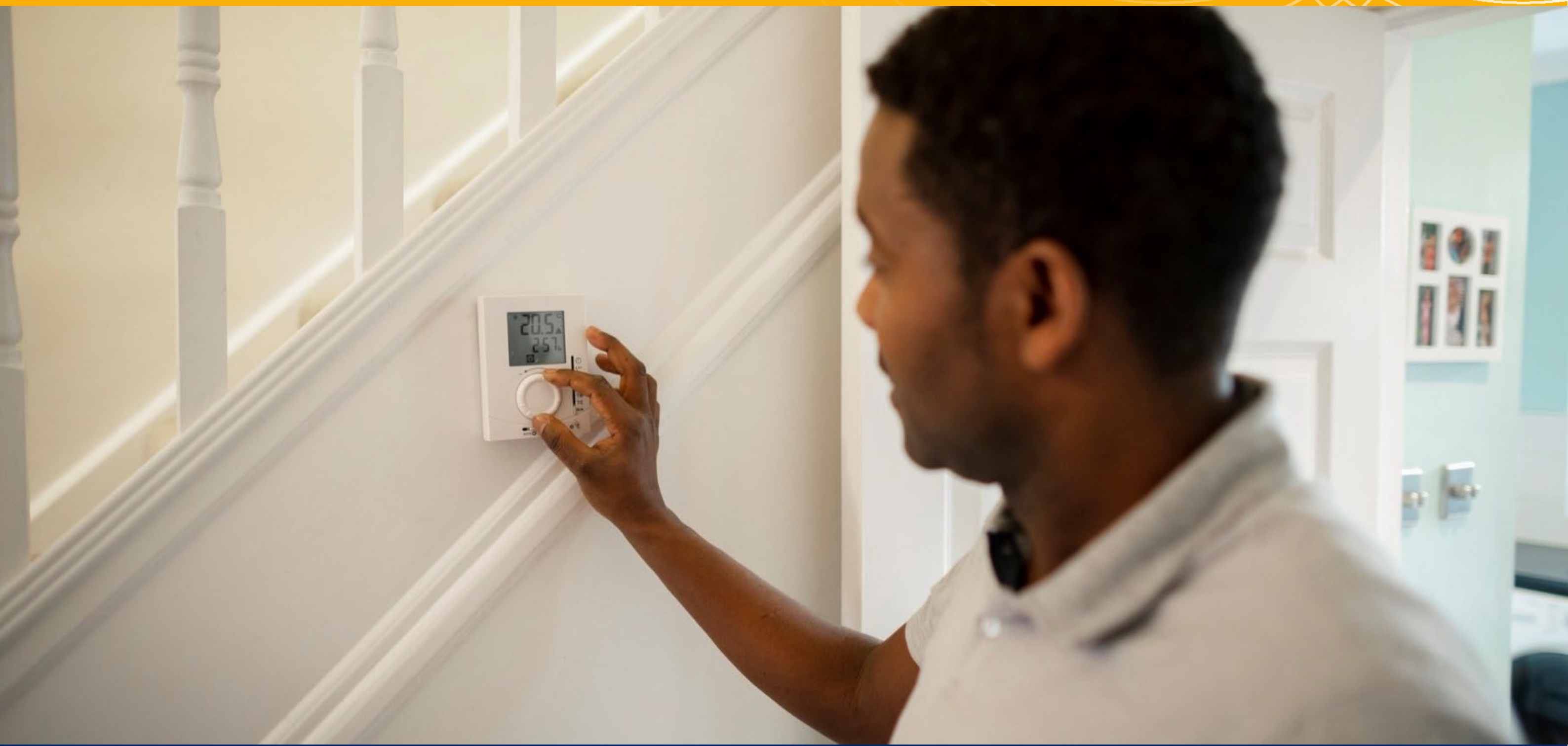
Office of Energy & Climate Change

Peak Demand Reduction Scheme



Rule change 2 consultation paper

October 2023

NSW GOVERNMENT

Acknowledgment of Country

The Office of Energy and Climate Change acknowledges the Traditional Owners and Custodians of the land on which we live and work and pays respect to Elders past, present and future.

Published by Office of Energy and Climate Change, NSW Treasury

energy.nsw.gov.au

Published by Office of Energy and Climate Change, NSW Treasury
Title Peak Demand Reduction Scheme
Sub title Rule Change 2 Consultation Paper
First Published: October 2023
ISBN number: 978-1-923076-73-0

Contents

Introduction

The Peak Demand Reduction Scheme (PDRS) is a certificate scheme which aims to reduce electricity demand during peak hours in NSW. The PDRS started in the summer of 2022-23. The primary objective of the PDRS is to create a financial incentive to reduce peak electricity demand by encouraging activities that will reduce demand during peak hours. Reducing peak demand improves the reliability and resilience of the energy system, while also improving affordability.

The Energy Security Safeguard (the Safeguard) consists of 3 schemes. Aside from the PDRS, there is also:

- the Energy Savings Scheme, which provides financial incentives to install energy efficient equipment and appliances
- the Renewable Fuel Scheme, which will encourage the production of green hydrogen in NSW.

The Safeguard aims to help ensure the NSW energy system is more reliable, affordable, and sustainable. It supports the transition to a renewable energy system in NSW and helps to achieve the emissions reduction target of net zero by 2050.

Call for submissions

The release of this paper on 18 October 2023 starts the consultation period. The NSW Government invites submissions from all interested parties on the proposed changes outlined in this consultation paper. The closing date for written submissions is 5:00 pm **AEDT** on **15 November 2023**. Please send your submission as a PDF document to:

Terry Niemeier, Director - Program and Market Development - Safeguard

NSW Office of Energy and Climate Change

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Publication of submissions

The NSW Government is committed to an open and transparent process, and all consultation responses and submissions will be made available on our website. Written submissions should be provided as PDF documents that can be published on our website.

If you wish for your written submission to remain confidential, please clearly state this in your submission, and only your organisation's name will be published. We will remove personal details from submissions made by individuals.

Please be aware that even if you state that you do not wish certain information to be published, there may be legal circumstances that require the NSW Government to release that information (for example, under the *Government Information (Public Access) Act 2009*).

Status of the PDRS

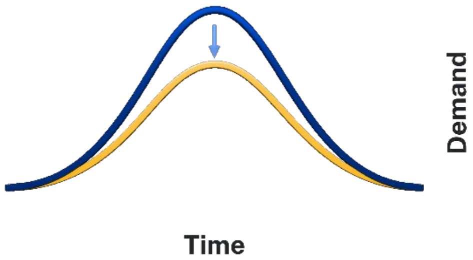
When the Peak Demand Reduction Scheme (PDRS) commenced in 2022, only demand saving activities were eligible for a financial incentive. Demand saving activities incentivise users to install energy efficient equipment to reduce peak electricity demand. These activities aligned with select activities in the Energy Savings Scheme (ESS) and included residential air conditioners, commercial air conditioners, commercial heat pump water heaters, non-primary refrigerators and freezers, refrigerated cabinets, motors (refrigeration and ventilation) and residential pool pumps.

This rule change will update some of the existing demand saving activities to ensure they more accurately reflect peak demand savings, are consistent with the energy savings scheme activities, and provide positive outcomes to consumers. We are also adding new demand response and shifting activities.

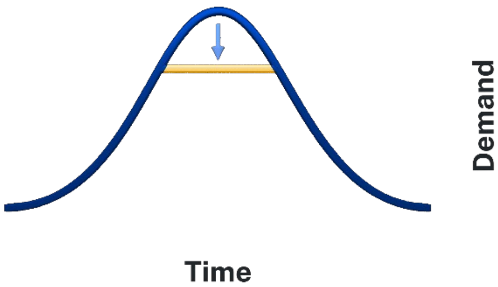
The PDRS is expanding beyond demand savings

The scheme's peak demand reduction target increases to 10% in 2029-30.[1] To fully achieve the objectives of the PDRS and its target, additional activities will be introduced in this PDRS rule change. Peak demand shifting and peak demand response activities will be introduced into the scheme for the first time. These terms are explained below.

- **Peak demand savings**: permanently reducing peak demand by installing energy efficient equipment.

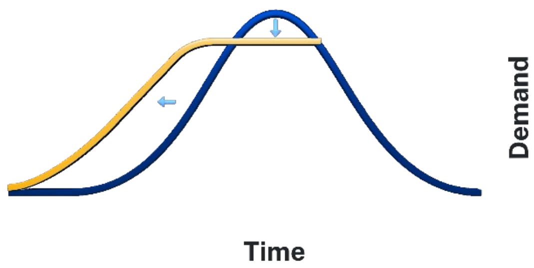


- **Peak demand response**: temporarily reducing operating load of certain equipment at peak times.



[1] https://www.energysustainabilityschemes.nsw.gov.au/pdrs/peak-demand-reduction-target

- **Peak demand shifting:** routinely changing equipment to shift demand away from peak periods to the middle of the day.



Demand response

Demand response is a dispatchable resource deployed in response to a signal. For example, it could be dispatched in response to:

- a market signal of high electricity prices
- a distributor managing grid congestion.

Unlike peak demand savings and ESS activities, which are based on the one-time installation of energy efficient equipment, demand response under the PDRS requires an annual commitment to provide peak demand reduction capacity during peak demand months (November to March). This ongoing commitment requires consumers to have equipment capable of receiving and responding to signals, and an agreement that this equipment will provide capacity under certain conditions. For example, for specified periods and in return for a financial incentive.

While one battery in one household might not have a critical impact on peak demand, battery capacity when aggregated contributes capacity equivalent to a large generating unit. By enabling third party control of devices such as batteries, their demand response capacity can be managed when needed to reduce electrical load on the grid.

These new processes and responsibilities will be delivered by an 'aggregator', and include establishing contracts, and testing demand response capabilities to ensure the demand response capacity can be dispatched when it is needed. The aggregator will work with, or become, an Accredited Certificate Provider (ACP) to create Peak Reduction Certificates (PRCs). The aggregator will also work with, or become, a market participant or network service provider to ensure there is an incentive for dispatch of capacity.

Demand shifting

Peak demand shifting involves routinely changing appliance or equipment operation to shift electricity use away from peak periods. It is also an opportunity to shift electrical loads into the middle of the day to increase consumption of renewable generation, including from solar. This can also help reduce the local grid impacts of rooftop solar generation.

Differences between demand response, shifting, and savings

Demand savings activities involve the installation of equipment with higher efficiency that consumes less electricity during summer peak hours. The peak demand savings are based on the reduction in load profile caused by the installation of new equipment over each year. As the savings are predictable, certificates can be created up front for the deemed equipment lifetime.

For demand response activities, it is not appropriate to award upfront certificates based on a deemed equipment lifetime as the capacity they provide requires an ongoing demand response arrangement. As participation in a demand response arrangement is voluntary, customers can opt out at any time and therefore remove the demand response capacity. For example, a customer may move premises, remove equipment or a demand response contract may not be renewed. Demand response activities therefore require ongoing evidence of capacity.

Installing a battery provides firm peak load shifting which can be approximated to enable upfront incentives to be created for the battery installation. For example, a residential behind-the-meter battery, as an energy storage device that enables demand shifting, will typically provide peak demand capacity even when not coordinated or aggregated through a contract with a third party. This is because the most economic use of a battery is charging from rooftop solar photovoltaics (PV) and discharging during the peak period. Installing a battery therefore provides firm peak load reduction which can be approximated to enable upfront incentives to be created for the battery installation. Further incentives can then be created for optimising battery capacity through a demand response arrangement, such as with an aggregator as part of a virtual power plant.

Next steps

We welcome stakeholder feedback on the proposed changes and additions to the PDRS rule. This feedback will inform the final rule and the introduction of new activities to the scheme.

The timeline below indicates key milestones ahead of the rule commencing. We aim to conclude consultation by the middle of November 2023. We will then review all feedback and draft the final rule – which we expect to be completed in December. During this time we will also work with IPART and stakeholders on evidence requirements and streamlined service delivery. The final rule will be released in the first quarter of 2024. Commencement of the rule is expected in April, and the creation of the first certificates will be possible from this point.

Changes to existing activities

Improvements to the pool pump activity for SYS2

The PDRS pool pump activity has been simplified to remove the pool volume as a calculation input and instead use the projected annual energy consumption and daily run time values as listed in the Greenhouse and Energy Minimum Standards (GEMS) Registry. This update is necessary to align the incentives with the adjustments to the pool pump star ratings came with the updates to the pool pump regulations in 2021 and the AS5102.1 test method.

In addition to the simplified equation, the following changes have been made:

- the baseline input power has been simplified to a single value being 1.052 kW. This is based on the average input power of the 267 single speed pool pumps listed on the GEMS Registry at the time of analysis.
- adjustment factors for this activity have been increased from 0.28 to 0.42 by taking a less conservative view of typical pool pump operational hours.
- the deemed lifetime for this activity has been decreased from 12 years to 7 years to align with the equivalent activity in the Victorian Energy Upgrades program.

We are also interested to understand how prepared the pool pump industry is for implementing demand response capability and the cost implication of including a demand response requirement under the PDRS.

Example

For a 6-star Madimack eFlow 300 variable speed pool pump, the projected annual energy consumption is 396 kWh/year while the daily run time is 6.26 hours as listed in the GEMS Registry.

Currently, under the SYS2 activity, the replacement of a pool pump with this high efficiency pool pump for a 50,000 litre pool will result in 99 PRCs.

With the proposed update, from Equation SYS2.1:

Input Power = PAEC ÷ (365 × DRT)

= 396 kWh ÷ (365 days per year × 6.26 hours per day)

= 0.174 kW

Putting this value into the Peak Demand Savings Equation:

Peak Demand Savings Capacity = (Baseline Input Power × Baseline Peak Adjustment Factor – Input Power × Peak Adjustment Factor) × Firmness Factor

Where:

Baseline Input Power = 1.052 kW
Baseline Peak Adjustment Factor = 0.42
Peak Adjustment Factor = 0.42
Firmness Factor = 1

= (1.052 kW × 0.42 – 0.174 kW × 0.42) × 1

= 0.369 kW

Putting this value into Equation 2a:

Peak Demand Reduction Capacity = Peak Demand Savings Capacity × Summer Peak Demand Reduction Duration × Lifetime

= 0.369 kW × 6 hours × 7 years

= 15.5 kW

Therefore, from Equation 1 in the PDRS Rule:

Number of Certificates = Peak Demand Reduction Capacity × Network Loss Factor × 10

= 15.5 kW × 1.045 × 10

= 161 PRCs over 7 years (equating to about 23 PRCs annually)

Update the equation and add a capacity factor for WH1

Capacity factor

The peak demand savings capacity for commercial water heaters is calculated using the baseline input power and input power. The baseline input power is determined using the *ComPkLoad* which is the peak daily (winter) load in megajoules a day as recorded in the Accepted Products List.

The WH1 activity is closely aligned with activity definition F16 in the *Energy Savings Scheme Rule of 2009* (ESS rule) for the replacement of electric boilers and water heaters with heat pump water heaters. The F16[2] activity in the ESS includes a capacity factor to limit the energy savings to new equipment with a rated capacity less than the original equipment.

A capacity factor will be added to the WH1 activity to align it with the ESS rule.

Equation updates

Activity definitions F16 and F17[3] in the ESS rule may also be changed as part of the annual ESS rule change. Changes made to those activities will be reflected in the PDRS. While they are not included in this consultation paper, the final position paper on this PDRS rule change will provide details on these changes.

[2] Replace one of more existing hot water boilers or water heaters with one or more air source heat pump water heater system
[3] Install one of more air source heat pump water heater systems

Controlled load

Stakeholders have raised concerns about the potential for heat pump hot water to increase peak load where customers move off a controlled-load tariff when they install a heat pump. Modelling assumptions for commercial heat pump hot water use a load profile based on continuous hot water use throughout the day, where customers are not on controlled-load tariffs. There are currently no requirements to demonstrate that the existing electric resistance water heater isn't on controlled load. This creates the risk that Peak Demand Certificates may be created for activities that increase electricity use during peak demand events.

Addition of the requirement for demand response capability for HVAC1 and HVAC2

While infrared and Wi-Fi enabled devices can be retrofitted to air conditioners, the standardised inclusion of demand response capabilities by the manufacturer is preferable. This requirement would enable all consumers that install a new high efficiency air conditioner under HVAC1 and HVAC2 of the PDRS to participate in demand response programs immediately without further intervention.

During consultation on the first PDRS rule we asked about whether to mandate demand response capability for demand savings equipment, specifically air conditioners. The feedback from stakeholders was that industry was not yet ready for such a requirement. There are issues with the relevant standard (AS/NZS 4755) that make it unsuitable for measurable demand response. It was also suggested that by 2024, the number of air conditioning models with inbuilt demand response capability will have increased to a level that gives consumers choice over which demand response capable product they wish to install.

The aggregated air conditioner load on peak days is approximately a third of total demand. Further delay to the decision to require demand response capabilities in all new air conditioners can do significant harm to the goal of making the NSW energy system more reliable, affordable, and sustainable.

Seeing that many manufacturers have started to include inbuilt demand response capabilities, we have decided to add a requirement that these are included in all new air conditioners installed. Consumers that purchase an air conditioner will then have the option to engage in a demand response program. These devices must have internet connectivity – discussed in further detail in the Residential Demand Response section below – which sidesteps the shortcomings of AS4755 raised in the consultation on the first PDRS rule.

Consultation questions

1. Do you agree with the update to the equation, adjustment factors and lifetime 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?
3. Do you agree with adding a capacity factor to WH1?

4. What evidence should be required under WH1 to ensure that customers aren't being taken off controlled load?
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?
6. Do you need a transitional period to prepare for the new demand response requirements?

Additions to the PDRS

Four new PDRS activities are proposed. Tables 1 and 2 provide a brief explanation of the activities, how they will work works and the relevant rule clauses.

Table 1 Summary of new PDRS activities

Activity	Demand reduction type	How does the incentive work?
Wholesale Annual Response Mechanism (WARM)	Demand response	Available to end-users with capacity participating in the Wholesale Demand Response Mechanism. Incentives are based on the amount of demand response capacity provided to the market over the summer period.
BESS1 Install a new behind the meter residential battery energy storage system	Demand shifting	Available to households. Incentives are based on an estimated load shifted by the battery outside of the peak period.
BESS2 Sign a behind the meter residential battery energy storage system into a demand response contract	Demand response	Available to households. Incentives are based on an estimated portion of the battery that is available during a demand response event.
HVAC3 Sign a residential air conditioner into a demand response contract	Demand response	Available to households. Incentives are based on an estimate of the air conditioner load reduction when the set point temperature is increased.

Table 2 Summary of PDRS rule methods, sub-methods, and activities

PDRS method	Sub-method (rule clause)	Equation	Timing of certificate creation	Activities
Peak demand savings	7. Reducing demand using efficiency	2a	Upfront for equipment lifetime	HVAC1, HVAC2 SYS1, SYS2 RF1, RF2 WH1
Peak demand shifting	8. Store and shift	2b	Upfront for equipment lifetime	BESS1
Peak demand response	9.2 Wholesale annual response mechanism	2c	Annual	WARM
Peak demand response	9.3 Household annual demand response	2d	Annual	BESS2 HVAC3

Calculating peak reduction certificates

The calculation of peak demand reduction certificates from demand response and shifting follows a similar approach to calculations under demand savings activities. Equation 1 from the PDRS rule will continue to be used for the calculation of peak reduction certificates:

Equation 1

Number of Certificates = Peak Demand Reduction Capacity × *Network Loss Factor* × 10

Where:

- Number of Certificates is based on 1 Certificate = 0.1 kW of Peak Demand Reduction Capacity averaged over 1 hour.
- Peak Demand Reduction Capacity, in kW, is calculated using Equation 2a, Equation 2b, Equation 2c or Equation 2d.
- Network Loss Factor is the value from Table A3 in Schedule A corresponding to the distribution network.
- 10 is to convert from kW to 0.1 kW.

Existing demand savings activities in the PDRS

The Peak Demand Reduction Capacity is calculated using equation 2a for Reducing Demand Using Efficiency, as per Clause 7 of the PDRS rule.

Peak Demand Reduction Capacity = Peak Demand savings Capacity × Summer Peak Demand Reduction Duration × Lifetime

Where:

- Peak Demand Savings Capacity, in kW, is calculated using the relevant equations in Schedule B.
- Summer Peak Demand Reduction Duration is 6 hours based on the Peak Demand Reduction Period of 2:30 pm to 8:30 pm AEST.
- Lifetime, in years, is the default lifetime of the End-User Equipment as defined for the relevant Activity Definition in Schedule B.

Residential demand shifting (BESS1)

The Peak Demand Reduction Capacity is calculated using equation 2b for Store and Shift, as per Clause 8 of the draft PDRS rule.

Equation 2b

Peak Demand Reduction Capacity = Peak Demand Shifting Capacity × Summer Peak Demand Reduction Duration × Lifetime

Where:

- Peak Demand Shifting Capacity, in kW, is calculated using the relevant equations in Schedule C.
- Summer Peak Demand Reduction Duration is 6 hours based on the Peak Demand Reduction Period of 2:30 pm to 8:30 pm AEST.
- Lifetime, in years, is the default lifetime of the End-User Equipment as defined for the relevant Activity Definition in Schedule C.

Wholesale Annual Response Mechanism (WARM)

The Peak Demand Reduction Capacity is calculated using equation 2c for Wholesale Annual Response Mechanism, as per Clause 9 of the draft PDRS rule.

Equation 2c

Peak Demand Reduction Capacity = Peak Demand Response Capacity × Summer Peak Demand Reduction Duration

Where:

- Peak Demand Response Capacity, in kW, is the average Dispatch Capacity over the Summer Peak Demand Reduction Duration.
- Summer Peak Demand Reduction Duration is the longest consecutive single dispatch duration, up to 6 hours, that occurs during the Peak Demand Reduction Period of 2:30 pm to 8:30 pm AEST and during the Compliance Period.

Residential demand response (BESS2, HVAC3)

The Peak Demand Reduction Capacity is calculated using equation 2d for Household Annual Demand Response, as per Clause 9 of the draft PDRS rule.

Equation 2d

Peak Demand Reduction Capacity = Peak Demand Response Capacity × Summer Peak Demand Reduction Duration

Where:

- Peak Demand Response Capacity, in kW, is calculated using the relevant equations in Schedule D.
- Summer Peak Demand Reduction Duration is 6 hours based on the Peak Demand Reduction Period of 2:30 pm to 8:30 pm AEST.

Commercial and industrial demand response

Wholesale Annual Response Mechanism (WARM)

The 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 WDRM is the most accessible way for large users to access the spot market (either directly or through an aggregator) and monetise demand response capacity available at their sites. Large users can bid their demand response capacity at prices up to the maximum electricity market price (or market cap) for each megawatt-hour (MWh) of demand response they provide in a 5-minute settlement period. While this may be commercially attractive in some years when spot prices are high, in other years spot prices may not be high enough in summer months for demand response capacity to be delivered through the WDRM. This may result in demand response capacity leaving the WDRM and therefore being unavailable to help reduce peak demand.

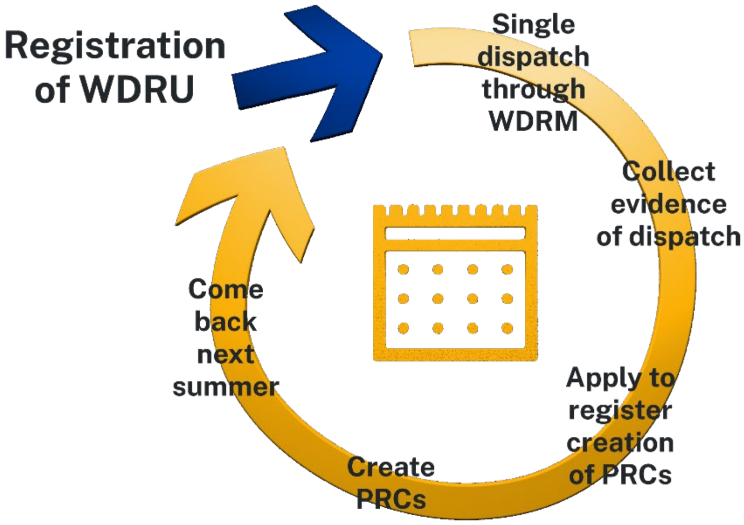
To ensure demand response capacity is available to help reduce peak demand, the PDRS will provide incentives for demand response capacity that is available during the summer peak demand reduction period. The PDRS will require evidence of capacity in the form of WDRM dispatch data provided to IPART annually. Ongoing dispatch provides reliable measurement and verification of the capacity. The alignment between the PDRS and WDRM will result in:

- the PDRS providing a financial incentive for capacity availability
- the WDRM paying for dispatch of that capacity.

By making annual capacity payments, the PDRS provides a more certain revenue stream than the WDRM. It will facilitate investment in capital equipment and in turn facilitate greater WDRM participation.

How the activity works

This activity is for demand response capacity registered in the WDRM and participating in the National Electricity Market (NEM). It assumes that the end-user has invested in the equipment, metering, and control systems that will enable it to respond during a market signal. It also assumes that the end-user can bid and dispatch or has otherwise engaged a demand response service provider (DRSP) to manage its bidding and dispatch in the WDRM.



The ACP is required to provide annual proof that capacity exists and can be used for demand response by providing data showing the amount of capacity that was dispatched through AEMO's National Electricity Market Dispatch Engine (NEMDE). 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 AEST (the peak demand reduction period)
- a single dispatch period of up to 6 hours.

Additionally, the capacity must not be contracted for the Reliability and Emergency Reserve Trader) or Long-Term Energy Service Agreement (see Interactions with other schemes and additionality section).

The annual peak reduction capacity is given by Equation 2c:

Peak Demand Reduction Capacity (kilowatt hour (kWh)) = Peak Demand Response Capacity (kW) × Summer Peak Demand Reduction Duration (hours)

Example

Wholesale Demand Response Unit ABC dispatches 1 MW of demand response capacity through the WDRM for 4 consecutive hours during the peak demand reduction period.

From Equation 2c:

Peak Demand Reduction Capacity = Peak Demand Response Capacity × Summer Peak Demand Reduction Duration

= 1,000 kW × 4 hours

= 4,000 kWh

Therefore, from Equation 1 in the PDRS rule:

Number of Certificates = Peak Demand Reduction Capacity × Network Loss Factor × 10

= 4,000 kWh × 1.045 × 10

= 41,800 PRCs per year

The capacity enrolled in the WDRM will be eligible to create 41,800 PRCs each year if it continues to dispatch 1 MW annually.

Certificate creation

Under WARM, the implementation date of the activity is the date of dispatch.

The data requirements for certificate creation will be examined as part of the consultation, taking account of the existing requirements for participation in the WDRM and the data available from AEMO to support the activity.

The ACP is required to get a nomination from the capacity holder annually.

Interactions with other schemes and additionality

There are several other market-based mechanisms that provide incentives for end-users to participate in the electricity market and help operators manage the grid. These include:

- Firming Long Term Energy Service Agreements
- Reliability and Emergency Reserve Trader
- Frequency Control Ancillary Services
- Network Support Control Ancillary Services).

We assessed the potential for these schemes to complement or duplicate with the aims of the PDRS. Our position on each mechanism is presented below.

Firming Long Term Energy Service Agreement

The consumer trustee under the *Electricity Infrastructure Investment Act 2020* (NSW), AEMO Services, is currently contracting demand response capacity through the WDRM via firming Long Term Energy Service Agreements (LTESAs). These LTESAs provide up to 10 years of revenue support for eligible demand response loads where revenue through the energy market does not meet a certain threshold.

To ensure physical and financial additionality, projects with firming LTESAs will not be eligible to create PDRS certificates. This is because the firming LTESA aims to reduce the forecast Energy Security Target (EST) breach, and capacity from the PDRS is already included in the Energy Security Target assessment.

Reliability and Emergency Reserve Trader

The Reliability and Emergency Reserve Trader (RERT) mechanism contracts demand response from businesses that can reduce load during times when there is a supply demand imbalance. Contracts are out of market, meaning there is no way to dispatch RERT capacity through the usual bidding and dispatch market. Any RERT capacity is dispatched as an emergency backstop to prevent blackouts. The PDRS will create demand response capacity in the market and reduce the need for RERT by increasing market reserves that can be dispatched before RERT is required. Any loads that have been contracted for RERT are excluded from participating in the PDRS. Also, to be eligible for a RERT contract, that capacity must not be available to the electricity market through any other arrangements for the trading intervals which the reserve is required. This would preclude capacity from being dispatched through the WDRM at a lower price than RERT.

Frequency Control Ancillary Service

The Frequency Control Ancillary Service (FCAS) provides system frequency control and does not aim to reduce peak demand. Loads used in FCAS under a market ancillary services provider (MASP) can also be used in the WDRM. Given the different aims, the capacity participating in FCAS markets is also eligible to create incentives under the PDRS.

Network Support and Control Ancillary Service

The Network Support and Control Ancillary Service (NSCAS) is an emergency option available to AEMO to respond to system security and reliability issues in the NEM. It is procured by AEMO as needed. There is no material cross-over and therefore no reason to preclude NSCAS capacity from being used in the PDRS.

Consultation questions

7. Do you agree with the requirement to verify demand response capacity through dispatch data?
8. Do you agree with the proposal to leverage data from the Wholesale Demand Response Mechanism to validate PDRS capacity?
9. Do you agree with the exclusion of RERT and LTESA loads from the PDRS?

Residential demand shifting

BESS 1 Install a new behind the meter residential battery energy storage system

Residential batteries can contribute to both demand response and demand shifting capacity, provided that usable capacity is available during the peak period.

How the activity works

This activity provides incentives for households with solar PV to invest in a battery. The capital cost of a battery is a significant barrier to uptake and the PDRS can help overcome this barrier by providing upfront incentives.

To receive a financial incentive for a battery installation, a homeowner would contact an ACP that is either an accredited battery installer or works with an installer that has an accreditation. The ACP will be required to provide evidence of their accreditation to the scheme administrator. The household will nominate the ACP to create PRCs for the battery installation, and in return receive an upfront discount or other financial incentive for the installation.

The installer accreditation system we intend to leverage is currently administered by the Clean Energy Council, however, the Clean Energy Regulator is running a tender for the accreditation scheme operator[4]. We also intend to leverage the Clean Energy Council's Approved Battery List to ensure consumers are getting quality products. We are seeking any other measures or processes that can help reduce the risk of fire and other safety risks for consumers.

Certificate creation for this activity would align with the timeline for existing PDRS activities, where the implementation date is the date the end-user equipment is installed. Certificates will be created based on the amount of peak reduction capacity provided. Certificates can be created upfront for the lifetime of the battery.

To determine the amount of peak reduction capacity, BESS 1 assumes a linear relationship between a battery's demand reduction capacity (kW) and usable storage capacity (kWh). The

[4] www.cleanenergyregulator.gov.au/RET/Pages/About%20the%20Renewable%20Energy%20Target/Small-scale-Renewable-Energy-Scheme-(SRES)-installer-and-designer-accreditation-scheme-application-round.aspx

proposed formula assumes that a battery discharges 51.2%[5] of its usable capacity during the peak period (2:30 pm to 8:30 pm).

A minimum $200 co-payment is required. The co-payment aims to encourage customer engagement with product selection without creating a significant upfront cost barrier, given that batteries usually cost much more than this.

We also require that the battery is registered on AEMO's Distributed Energy Resource (DER) Register before a certificate can be created. This ensures grid planners have visibility into the assets available to help manage the grid.

Batteries must have a minimum 7-year product warranty to be eligible for the activity. For batteries that only have a performance (or throughput) warranty based on number of cycles, it will be assumed that the battery cycles once per day. For example, a battery warranted for 3,000 cycles equates to 8.2 years (3,000 cycles/365 days) and is therefore eligible.

Derivation of calculation parameters

The ACT's NextGen dataset was used to derive the parameters used in the certificate calculations as it was the largest complete dataset we were able to source.[6] This dataset contains anonymised 5-minute battery, solar, and load operational data for recipients of NextGen battery subsidies (approximately 3,000 installations). There is also accompanying standing data containing the size of the batteries in kWh.

Analysis was conducted on post 2020 data by measuring the amount of energy discharged by batteries between 2:30 and 8:30 pm on hot weekdays (temperatures higher than 30°C) during the peak demand months (November to March). Data for battery systems already in demand response programs was removed for the days in which they provided demand response.

The data was used to characterise the behaviour of un-orchestrated battery installations, meaning batteries not participating in a demand response program. The findings were:

- On average, batteries in the NextGen database reduced their state of charge by 61.2% of their total energy on selected days between 2:30 and 8:30 pm.
- 10% of this discharged capacity is considered to be losses. The round-trip efficiency of lithium batteries is commonly specified as being between 90% and 99%.
- Therefore, a theoretical 1 kWh reference battery is expected to have 38.8% state of charge remaining at the end of the peak period.

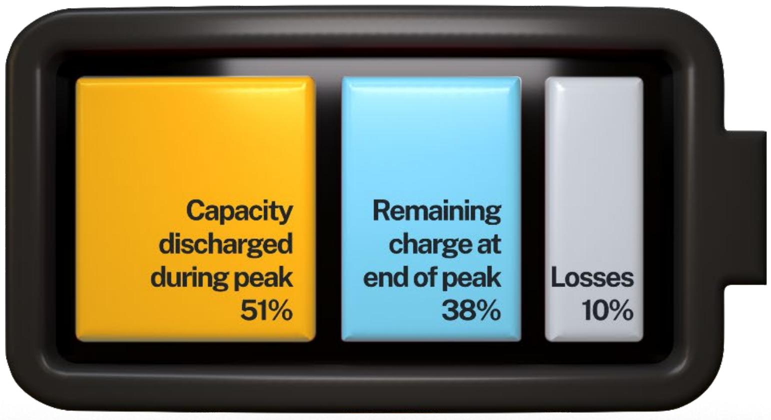
Manufacturers list round trip efficiency percentage at the start of the battery lifetime for a certain set of conditions, usually a temperature of 25°C and a recommended charge/discharge power (or C rate).

At high temperatures and discharge rate – both of which are expected during a demand response event on the hottest days of the year – efficiencies have been shown to drop between 90% and 93%.[7]

[5] This is derived from the ACT's NextGen dataset, and more information is provided in next section.
[6] https://www.energydata.act.gov.au/
[7] https://www.researchgate.net/publication/282984341_Effect_of_Current_and_SOC_on_Round-Trip_Energy_Efficiency_of_a_Lithium-Iron_Phosphate_LiFePO4_Battery_Pack

As such, a 10% figure for losses represents a conservative figure for the performance of a lithium battery that is discharging at maximum output on a hot day.

Compared to the base case of no battery, the installation of the battery provided 51.2% of the battery's usable capacity as demand shifting capacity over the 6-hour peak period. Therefore, for a 1 kWh battery, the shifting capacity provided was 0.512 kWh. When averaged over the 6-hour peak period, this corresponds to a demand reduction factor of 0.0853 kWh per hour.



Degradation of battery capacity was also considered for the new battery activities. At high temperatures, batteries gain approximately 10% to 15% of their capacity due to an increase in chemical reaction speed.[8] Considering that lithium batteries would on average degrade by a similar amount in their first 8 years, this increased capacity due to high ambient temperatures can be considered, on average, to offset the degradation.[9] As such, no figure for degradation has been included in the new battery activities.

The peak demand shifting capacity created by the installation of a battery is given by Equation BESS 1.1:

Peak Demand Shifting Capacity (kW) = Demand Shifting Component × Firmness Factor

The ratio of capacity that becomes available for demand shifting, averaged over an hour, is given by Equation BESS 1.2:

Demand Shifting Component (kW) = Battery Capacity (kWh) × Demand Reduction Factor (kW/kWh)

Where:

[8] https://www.mdpi.com/1996-1073/15/1/60
[9] https://iopscience.iop.org/article/10.1149/1945-7111/abae37

- Battery Capacity, in kWh, is the Usable Battery Capacity as recorded in the Clean Energy Council Approved Product List.
- The Demand Reduction Factor, based on 51.2% household consumption between 2:30 pm and 8:30 pm is 0.0853 kW/kWh.

The annual peak shifting capacity, averaged over a 6-hour period, is then given by Equation 2b:

Peak Demand Reduction Capacity (kWh) = Peak Demand Shifting Capacity (kW) × Summer Peak Demand Reduction Duration (hours)

Example

A resident has a 14 kWh battery installed to complement a PV solar installation. The usable capacity of the battery is 13.5 kWh.

Therefore, from Equation BESS 1.2:

Demand Shifting Component = Battery Capacity (kWh) × 0.0853 kW/kWh

= 13.5 kWh x 0.0853 kW/kWh

= 1.15 kW

Putting this value into Equation BESS 1.1:

Peak Demand Shifting Capacity = Demand Shifting Component × Firmness Factor

Where:

Firmness Factor = 1
= 1.15 kW x 1
= 1.15 kW

Putting this value into Equation 2b:

Peak Demand Reduction Capacity = Peak Demand Shifting Capacity × Summer Peak Demand Reduction Duration × Lifetime

= 1.15 kW × 6 hours × 8 years

= 55.3 kW (equating 6.9 kW annually)

Therefore, from Equation 1 in the PDRS Rule:

Number of Certificates = Peak Demand Reduction Capacity × Network Loss Factor × 10

= 55.3 kW × 1.045 × 10

= 577 PRCs over 8 years (equating to about 72 PRCs annually)

Certificate creation

Certificate creation under BESS 1 will work in the same way it does under existing demand savings activities. For an implementation that occurs between 1 April and 31 March, the capacity is taken to have been made available from the first day of each of the compliance periods in the 8 years lifetime. The certificates created are apportioned as evenly as possible across the 8 years of certificate vintage and rounded accordingly.

For example, an implementation with a lifetime of 8 years results in the creation of 55.3 kW of peak demand reduction capacity (equivalent to 577 PRCs, each representing 0.1 kW of peak demand reduction capacity). The PRCs are to be allocated such that 73 certificates are allocated to the first compliance period of the implementation and 72 certificates are allocated to the remaining 7 compliance periods.

Consultation questions

10. Are the implementation requirements sufficient to drive best practice installation of batteries?
11. What additional steps can we take to mitigate fire and other safety risks from batteries supported through the scheme?
12. Will there be any challenges meeting the requirement for batteries to be registered on AEMO's DER register?
13. Are there additional requirements you recommend we add to ensure consumers get the best outcomes?
14. Do you support the dataset used, data assumptions and proposed calculation method for certificates for activity BESS 1?
15. Do you agree with the way we've considered round trip losses in the factor of 10%?

Residential demand response

Household demand response opportunities are individually very small, but can be aggregated to provide significant peak demand reduction potential.

Residential demand response activities can create certificates annually, with no option to create certificates upfront for future years. This will ensure households remain engaged and understand the ongoing requirement to provide capacity through a demand response program. It also mitigates the risk that the PDRS provides incentives for peak demand reduction capacity that is no longer available. For example, if a resident ends a demand response contract or moves house.

The schematic diagram in Figure 1 illustrates the relationship between the scheme administrator (IPART), scheme participants (electricity retailers and market electricity customers), ACPs and customers.

Figure 1 Relationship between the scheme administrator, ACPs, scheme participants, and customers

BESS2 sign a behind the meter residential battery energy storage system up to a demand response contract

Coordinating battery operation across NSW can help alleviate grid issues. Firstly, batteries can absorb behind the meter solar PV generation, which helps manage localised minimum demand issues. Secondly, the controlled discharge of stored battery energy during peak events can help reduce peak demand, price spikes, and the need for infrastructure investment.

If a battery participates in a demand response program, it is assumed that it would have commenced the peak reduction period at 2:30 pm with 100% state of charge. This activity incentivises additional capacity from a battery beyond that achieved from the installation of a battery, whether the installation occurs under BESS1 or has already occurred.

How the activity works

Activity BESS2 is an opportunity for end-users that have installed a battery under BESS 1 or for households that already have solar PV and batteries installed. To access the incentives, households need to enrol in a demand response portfolio with an aggregator with links to an ACP that is accredited for the activity. This activity has a lifetime of one year and each year has a requirement that test data is used to prove that the battery was able to respond to a signal. The demand response aggregators will have discretion over when the test occurs, in agreement with the ACP and household.

Batteries will be eligible to participate in BESS2 for 8 years from their date of installation – as recorded in the AEMO DER Register.

Derivation of calculation parameters

The NextGen dataset was also used as a basis for the derivation of BESS2 parameters. By installing a battery, 51.2% of the capacity is unlocked and used to shift load from the peak to another time of day. As in BESS1, losses of 10% are assumed for dispatch on the hottest days of the year.

This leaves 38.8% of the battery's usable capacity for demand response. Therefore, for a 1 kWh battery, the response capacity would be 0.388 kWh. Averaged over the 6 hour peak period, this corresponds to a demand reduction factor of 0.0647 kWh/h.

The peak demand response capacity created by the orchestration of a battery is given by Equation BESS2.1:

Peak Demand Response Capacity (kW) = Demand Response Component × Firmness Factor

The ratio of capacity that becomes available for demand response, averaged over an hour, is given by Equation BESS2.2:

Demand Response Component (kW) = Battery Capacity (kWh) × Demand Reduction Factor (kW/kWh)

Where:

- Battery Capacity, in kWh, is the Usable Battery Capacity as recorded in the Clean Energy Council approved product list.

- The Demand Reduction Factor, based on 38.8% capacity remaining after factoring in BESS1 and losses, is 0.0647 kW/kWh.

The annual peak reduction capacity, averaged over a 6 hour period, is then given by Equation 2c:

Peak Demand Reduction Capacity (kWh) = Peak Demand Response Capacity (kW) × Summer Peak Demand Reduction Duration (hours)

Example

A resident with an un-orchestrated 14 kWh battery (with usable capacity of 13.5 kWh) signs on to a demand response contract and has the necessary hardware connections between their battery and internet installed.

Therefore, from Equation BESS 2.2:

Demand Response Component (kW) = Battery Capacity (kWh) × 0.0647 (kW/kWh)

= 13.5 kWh x 0.0647 kW/kWh

= 0.87 kW

Putting this value into Equation BESS 2.1:

Peak Demand Response Capacity = Demand Response Component × Firmness Factor

Where:

Firmness Factor = 1

= 0.87 kW x 1

= 0.87 kW

Putting this value into Equation 2c:

Peak Demand Reduction Capacity = Peak Demand Response Capacity × Summer Peak Demand Reduction Duration

= 0.87kW x 6 hours

= 5.24 kW

Therefore, from Equation 1 in the PDRS rule:

Number of Certificates = Peak Demand Reduction Capacity × Network Loss Factor × 10

= 5.24 kW × 1.045 × 10

= 54 PRCs per year

Each year, orchestration of the battery will create 54 PRCs.

For a battery with sufficient warranty, there would be 432 certificates created over an 8 year period.

Certificate creation

The implementation date for activities under BESS2 is the date that the household signed up to a demand response contract. Certificates are taken to be created for the whole of the compliance period. The National Metering Identifier (NMI) that is signed up can't be used in another implementation of the same activity for 12 months. That means that an implementation that occurs on 31 December 2024 will not be able to undertake the activity in the following compliance period until 31 December 2025.

Consultation questions

16. Do you support the data assumptions and proposed calculation method for certificates for activity BESS2?
17. Are there additional requirements you recommend we add to BESS2 to ensure consumers get the best outcomes?
18. Can you provide evidence of what proportion of a battery's capacity is available for demand response under orchestration contracts?
19. Can you see any potential issues with the 12-month cadence of certificate creation for each NMI?

HVAC3 sign a residential air conditioner up to a demand response contract

It is estimated that 75% of households in NSW have one or more air conditioners.[10] This represents more than 5 GW of electrical load on the hottest days of the year and is a significant opportunity for peak demand reduction capacity.

Several distribution network service providers (DNSPs) have already introduced or trialled air conditioner demand response programs, including Ausgrid, Essential Energy, and Energex. Retailers are also pursuing the opportunity, with offerings including AGL's Peak Energy Rewards, Origin's Spike, and Energy Australia's PowerResponse.

How the activity works

The activity is based on an aggregator having a portfolio of residential customers signed up to demand response contracts. Provided that each member of the portfolio meets minimum equipment and communication requirements, the ACP can create PRCs based on the aggregated demand response capacity of the portfolio, multiplied by a firmness factor. The firmness factor reflects the likelihood that the aggregated demand reduction capacity will be available during a system peak event. This has been estimated at 80% - a factor of 0.8 - to account for the rate of customers opting out of demand response events.

Air conditioners consume power primarily via the compressor and to a lesser degree through the fan, which distributes the cooled air through ducts, or for split systems conveys the air into the treated room. Methods of third-party control of air-conditioners include internet or Wi-Fi

[10] AEMO estimate. https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/Inputs-Assumptions-Methodologies/2019/StrategyPolicyResearch_2019_Energy_Efficiency_Forecasts_Final_Report.pdf

activated control devices, such as smart air conditioner controllers, which can be used to remotely alter the set point temperature or temporarily switch the device on or off.

Devices that make small changes to the set-point temperature can provide compressor load reductions. When making assumptions on the parameters of this activity, we considered the balance between three key factors:

- occupant comfort and health
- customer retention
- maximising energy savings.

When discussing this opportunity with retailers that run residential air conditioner programs, the feedback was that comfort of householders was maintained when set-point temperature was raised by up to 4°C – with many householders not realising that their air conditioner had its settings altered. Beyond 26°C, in hot-humid climates, minimal cooling is delivered, and occupant comfort starts to become impacted, which could risk health impacts and reduce ongoing participation.[11] Defining a maximum set-point temperature of 26°C will help mitigate risks to occupant comfort and health, and the risk customers withdraw capacity from DR programs. Also, for the purposes of this consultation we have capped the duration at 2 hours and included a requirement that customers have the option to opt-out of participating in particular demand response events at any time. This will allow customers to prioritise health over program participation.

Typical energy savings from an air-conditioner set-point temperature change are 5 to 10% reduction in load per 1°C increase in climates comparable to NSW.[12] We have concluded that each degree of set-point temperature change will result in a 7.5% energy saving, as represented in the equations below.

The Rule allows for a maximum set-point temperature change of 4°C, leading to a maximum AC load reduction of 30%.

The ratio of capacity that becomes available for demand response – achieved by a 4°C change in set point temperature and averaged over an hour – is given by Equation HVAC3.1:

Peak Demand Response Capacity (kW) = (Baseline Input Power – Input Power) × Firmness Factor x Temperature Factor

Where:

- Baseline Input Power (kW) = 'C-Power_Inp_Rated' 35°C in kW, as recorded in the GEMS Registry.
- Input Power (kW) = Baseline Input Power × 0.7 (assuming 30% reduction based on relationship between 7.5% per degree of temperature set point increase and a 4°C set point increase).
- Firmness Factor = 0.8
- Temperature Factor = 1.04

[11] https://www.sciencedirect.com/science/article/pii/S2666123322000162
[12] https://apps.ergon.com.au/calculators/airconditioner.aspx
https://www.sciencedirect.com/science/article/pii/S2666123322000162
https://www.researchgate.net/publication/343026694_Effect_of_room_temperature_set_points_on_energy_consumption_in_a_residential_air_conditioning

The annual peak reduction capacity, averaged over a 2-hour period, is then given by Equation 2c:

Peak Demand Reduction Capacity (kWh) = Peak Demand Response Capacity (kW) × Summer Peak Demand Reduction Duration (hours)

Example

A resident with a 1-year-old 6.0 kW split system air-conditioner (Mitsubishi Electric MUZ-AP60VG /MSZ-AP60VG) signs up with an aggregator who provides a smart air conditioner controller connected to the internet via Wi-Fi. The contract commits the resident to allow aggregator control of their air conditioner, with a maximum temperature set-point increase of 4ºC (or to a maximum of 26 ºC, whichever is reached first). The incentive is based on the 4ºC temperature set point increase being available for 2 hours each summer.

Therefore, from equation HVAC3.1:

Peak Demand Response Capacity = (Baseline Input Power – Input Power) × Firmness Factor × Temperature Factor

Where:

- Baseline Input Power is 1.59 kW, as recorded in the GEMS Registry (column O - C-Power_Inp_Rated)
- Input Power = Baseline Input Power × 0.7
- = 1.59 kW × 0.7
- = 1.11 kW

Peak Demand Response Capacity = (1.59 kW – 1.11 kW) × Firmness Factor × Temperature Factor

Where:

Firmness Factor = 0.8

Temperature Factor = 1.04

= (1.59 kW – 1.11 kW) × 0.8 × 1.04

= 0.40 kW

Putting this value into Equation 2c:

Peak Demand Reduction Capacity = Peak Demand Response Capacity × Summer Peak Demand Reduction Duration

= 0.40 kW × 2 hours

= 0.80 kW

Therefore, from Equation 1 in the PDRS rule:

Number of Certificates = Peak Demand Reduction Capacity × Network Loss Factor × 10

= 0.80 kW × 1.045 × 10

= 8 PRCs per year

Each year, orchestration of the air conditioner will create 8 PRCs.

Certificate creation

The implementation date for HVAC3 is the date that the demand response contract was signed. The NMI that is signed up is then locked in and cannot be used in another implementation of the same activity for 12 months. That means that a NMI with an implementation date of 31 December 2024 will not be able to undertake the activity until 31 December 2025.

As this activity is only for 1 year, each year requires an ACP nomination.

Consultation questions

20. Do you support the data assumptions and proposed calculation method for certificates for activity HVAC3, especially those relating to duration and temperature limits?
21. Are there additional requirements you recommend we add to HVAC3 to ensure consumers get the best outcomes?
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?
23. Can you provide evidence of opt out rates for third party control of air conditioners?
24. Can you see any potential issues with the 12-month cadence of certificate creation for each NMI?

What we're continuing to look at

Normalised metered energy consumption

Demand response and shifting in commercial and industrial settings will typically involve bespoke measures tailored to the building or industrial process. Measurement and verification (M&V) under the Safeguard schemes have historically involved daily or monthly energy consumption models. As the PDRS is based on demand during the peak period, there is a need for greater granularity of data to ensure demand reduction occurs when it is needed.

We are working to establish a normalised metered energy consumption (NMEC) method that uses weather normalised interval data to establish baselines and counterfactuals. To do this, we are collaborating with the CSIRO to harness their data clearing house, which will streamline processes for data entry and consolidation, compliance, reporting and governance. The NMEC method will be largely based on the CalTRACK methods used in California for determining demand response delivered through the FLEXmarket[13] [14].

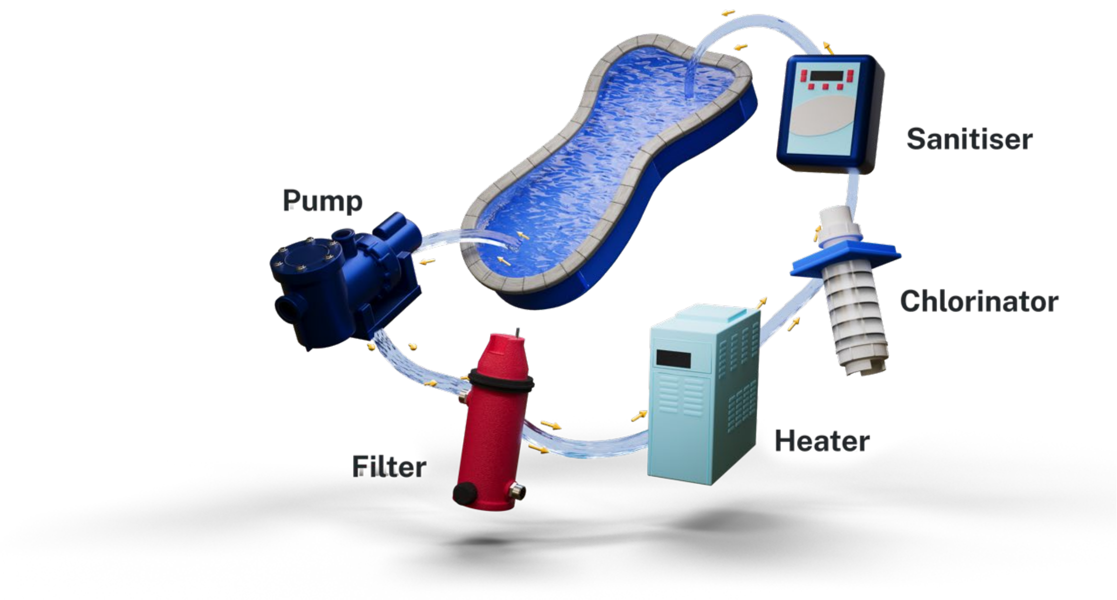
Demand response from pool pumps

Pool pumps represent a significant opportunity for demand reduction in NSW. Much of this reduction can be achieved by incentivising the upgrade of single speed pumps, which represent over three quarters of the existing market. By switching to two speed, multi-speed, or variable speed models, energy savings of approximately 60% can be achieved.

Through targeted consultation with industry stakeholders, several barriers to a demand response or demand shifting activity were raised:

- Demand response and shifting is complicated by the relationship of most pool pumps with other pool components, where the standard order of control is as follows:

[13] http://docs.caltrack.org/en/latest/methods.html
[14] https://www.demandflexmarket.com/#!directory



- Sanitisers are activated by the flow of water through a flow switch. The sanitiser provides power to the pump to begin the priming process. This makes the sanitiser the master timer. The ability to conduct demand response is therefore contingent on the sanitiser being operational. This cannot be known unless enabling technology is implemented in both sanitisers and pool pumps, which would lead to high costs and complexity to enable the capacity, relative to other technologies.

- Health concerns related to excessively reducing flow rate for an extended period. Sanitisers and chlorinators require priming at a high flow rate, which would be prevented by a demand reduction activity occurring at the time of priming.
- Most pool pumps are installed with timers set to operate in the morning for 2-3 hours, and then from 1 pm to 5 pm. This corresponds to a 2.5 hour overlap with the peak summer reduction period window of 2:30 pm to 8:30 pm. As solar production is still high during the overlap period of 2:30 pm to 5 pm, the capacity offered by pool pumps is unlikely to contribute to peak events, which tend to occur after 6 pm.
- The additional demand reduction capacity enabled by this activity would provide minimal financial incentive – especially when accounting for the costs of including a Wi-Fi chip on the pump, contract setup, annual verification, and certification creation.

Ultimately, these barriers suggest that it would not be financially or technologically viable for ACPs to pursue a demand response or demand shifting activity for pool pumps and that such activities would not contribute to the goals of the PDRS.

It has been determined that the energy efficiency and demand savings activities in the ESS (D5) and PDRS rules (SYS2) are better suited to driving market transformation than demand response and demand shifting activities. Our current position is that pool pump demand response and demand shifting should *not* be included as a PDRS activity.

Electric vehicle charging

Beyond 2030, electrical vehicles (EV), including chargers, are set to become one of the largest contributors to peak demand and electrical demand. It is also likely that bi-directional charging and vehicle to grid systems will add flexibility and storage to the network. We require more data on EV charging before introducing it as an activity into the PDRS.

Currently, there several barriers to inclusion of EV charging in the PDRS including the lack of data upon which charging baselines can be established and minimum standards for chargers.

We will revisit these barriers for future rule changes and continue to assess the potential for EV charging in the PDRS.

Commercial and industrial batteries

Commercial and industrial (C&I) batteries may eventually represent a major source of demand response capacity. However, as C&I load profiles are highly dependent on various production and site-specific factors, we require more high-quality data to prioritise the target sectors for a battery activity. Once we acquire this, we can work to substantiate calculations based on the additionality of C&I batteries in different use cases.

Alternatively, participation of C&I batteries may be driven through the WARM pathway, as outlined previously, for sites that reach the minimum consumption requirements for participation. This would streamline compliance requirements for both parties and enable participants to access multiple revenue streams for their capacity, ultimately making it more viable to pursue installations or orchestration of batteries.

Behavioural demand response

Behavioural demand response involves customers voluntarily changing their energy consumption in response to an external signal, such as a request from a retailer. This may be in response to an electricity network constraint or high wholesale electricity prices.

Behavioural response presents several challenges, which include:

- Reliability compared with DR facilitated through a contract with an aggregator who may be able to access device controls
- Determination of the related firmness factor
- Verification of baseline demand and demand response capacity

Although energy retailers, including AGL and Energy Australia, have trialled behavioural demand response programs with some success, we will not introduce behavioural schemes until further evidence is available on their peak demand reduction potential.

Consultation questions
25. For any of the activities we are continuing to look at, can you provide any relevant information on baseline demand/discharge, demand response or shifting, and other key operational characteristics that the NSW Government could use for rule development?

Appendix

Appendix A: Glossary of acronyms

Acronym	Full Term
ACP	Accredited Certificate Provider
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
BESS	Battery energy storage system
C&I	Commercial and industrial
DER	Distributed Energy Resource
DNSP	Distributed Network Service Provider
DRED	Demand response enabling device
DRSP	Demand Response Service Provider
ESS	Energy Savings Scheme
EV	Electric vehicle
FCAS	Frequency control ancillary services
GEMS	Greenhouse and Minimum Energy Standards
HVAC	Heating, Ventilation and Air Cooling
IEEE	Institute of Electrical & Electronics Engineers
IPART	Independent Pricing and Regulatory Tribunal
LTESA	Long Term Energy Service Agreements
M&V	Measurement and verification
NEMDE	National Electricity Market Dispatch Engine
NMI	National Meter Identifier
NSCAS	Network support and control ancillary services
NSW	New South Wales
PDRS	Peak Demand Reduction Scheme
PRC	Peak Reduction Certificate
RERT	Reliability and emergency reserve trader
Safeguard	Energy Security Safeguard

WARM	Wholesale Annual Response Mechanism
WDRM	Wholesale Demand Response Mechanism

Appendix B: Consultation questions

Please be specific in your responses and provide evidence where available.

Questions	
1	Do you agree with the update to the equation, adjustment factors and lifetime 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?
3	Do you agree with adding a capacity factor to WH1?
4	What evidence should be required under WH1 to ensure that customers aren't being taken off controlled load?
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?
6	Do you need a transitional period to prepare for the new demand response requirements?
7	Do you agree with the requirement to verify demand response capacity through dispatch data?
8	Do you agree with the proposal to leverage data from the Wholesale Demand Response Mechanism to validate PDRS capacity?
9	Do you agree with the exclusion of RERT and LTESA loads from the PDRS?
10	Are the implementation requirements sufficient to drive best practice installation of batteries?
11	What additional steps can we take to mitigate fire and other safety risks from batteries supported through the scheme?
12	Will there be any challenges meeting the requirement for batteries to be registered on AEMO's DER register?
13	Are there additional requirements you recommend we add to ensure consumers get the best outcomes?
14	Do you support the dataset used, data assumptions and proposed calculation method for certificates for activity BESS 1?

15	Do you agree with the way we've considered round trip losses in the factor of 10%?
16	Do you support the data assumptions and proposed calculation method for certificates for activity BESS2?
17	Are there additional requirements you recommend we add to BESS2 to ensure consumers get the best outcomes?
18	Can you provide evidence of what proportion of a battery's capacity is available for demand response under orchestration contracts?
19	Can you see any potential issues with the 12-month cadence of certificate creation for each NMI?
20	Do you support the data assumptions and proposed calculation method for certificates for activity HVAC3?
21	Are there additional requirements you recommend we add to HVAC3 ensure consumers get the best outcomes?
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?
23	Can you provide evidence of opt out rates for third party control of air conditioners?
24	Can you see any potential issues with the 12-month cadence of certificate creation for each NMI?
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?

Energy Security Safeguard

For more information

To learn more about the Peak Demand Reduction Scheme or the Energy Security Safeguard, please visit our website www.energy.nsw.gov.au or contact us:tsustainability@environment.nsw.gov.au