



AGL Energy Limited

T 02 9921 2999

F 02 9921 2552

agl.com.au

ABN: 74 115 061 375

Level 24, 200 George St

Sydney NSW 2000

Locked Bag 1837

St Leonards NSW 2065

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Stephen Procter

Strategic Delivery Manager, Sustainability Programs

Energy, Climate Change and Sustainability

Office of Energy and Climate Change

GPO Box 39

SYDNEY NSW 2001

Sent via email: sustainability@environment.nsw.gov.au.

NSW Peak Demand Reduction Scheme

AGL Energy (AGL) welcomes the opportunity to make a submission in response to the Consultation Paper on Rule 1 of the Peak Demand Reduction Scheme (PDRS) regulatory framework and activities.

AGL is one of Australia's largest energy-led multi-service retailers, providing over 4.2 million electricity, gas and telco services to residential, small, and large businesses, and wholesale customers. We service approximately 900,000 electricity customers in NSW.¹ Our diverse power generation portfolio includes base, peaking, and intermediate generation plants, spread across traditional thermal generation and renewable sources. AGL is market leader in the development of innovative products and services that enable consumers to make informed decisions on how and when to use their distributed energy resource (DER) assets to optimise their energy load profile and better manage their energy costs.

AGL expresses its support for Rule 1 of the PDRS, and the scheme, broadly. It is evident that energy schemes such as the PDRS will have an important part to play in Australia's energy transition and ensuring that energy remains reliable and affordable.

AGL welcomes the phased implementation of Recognised Peak Activities (RPAs) which will initially focus on installation, replacement or removal of end-user equipment that can reduce peak demand during the relevant periods. It is proposed that subsequent iterations of the Rule will expand to include demand-shifting and demand-response activities. We look forward to collaborating closely with the NSW Government on the introduction of these products and services which will support our customers to better manage their energy at home and in their business. AGL agrees that a gradual ramp-up to the full scope of activities will allow for proper development, implementation, and testing of methodologies in the market, and ensure that the PDRS works harmoniously and as intended with the Energy Savings Scheme (ESS).

¹ 893,443 small and large electricity customers, Australian Energy Regulator Retail Markets Performance Reporting, AGL Q3 2022 Performance Indicator Report, 31 March 2022.



We reiterate our strong view that the PDRS should focus on developing products and services that generate flexible energy solutions to support not only peak events on the system but also support other emerging demand response trends. AGL believes the scheme is well placed to encourage low-cost and market driven solutions for minimum demand scenarios by allowing certificates to be generated for having capacity available to support minimum demand.

In AGL's previous correspondence to the Department in September 2021, we recommended that the PDRS look at other schemes such as the SA Retailer Energy Productivity Scheme (REPS) to identify products and services to help with peak demand reduction. Similar schemes have tried and tested blueprints already available in the market which offer frameworks, methodologies, and activities that are suitable for the NSW energy system and compatible with the objectives of the PDRS. For example, the SA REPS incentivises demand-response activities such as connecting a new or existing battery to an approved Virtual Power Plant (VPP) which should be considered for Rule 2 of the PDRS.

The PDRS should leverage existing scheme designs for VPPs and other suitable activities from similar jurisdictional schemes to:

- Streamline the roll out and implementation of subsequent PDRS rules and activities.
- Capitalise on cost efficiencies by replicating designs where possible.
- Enhance cross-state scheme harmonisation.
- Reduce the cost of implementation and therefore, the overall cost of the scheme for NSW residents.

Our feedback and recommendations in the Attachment below are based on our extensive experience with jurisdictional energy efficiency and productivity schemes, and our insights into various demand-response activities and innovative technologies.

If you would like to discuss any aspect of AGL's submission, please contact Valeriya Kalpakidis at vkalpakidis@agl.com.au.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Elizabeth Molyneux'.

Elizabeth Molyneux

General Manager, Policy and Market Regulation

AGL Energy



Attachment 1

Certificate Validity Period

AGL recommends a five-year certificate validity period for the PDRS which we believe will create costs efficiencies from a sourcing perspective and therefore, keep the overall costs of the scheme for NSW residents as low as possible.

Technical Standards

Should the PDRS have a requirement for the installed end-user equipment under HVAC1, HVAC2, WH1, WH2 and SYS2 to have DRM 1, 2 and 3 capability under AS/NZS 4755? What are the alternatives?

AGL believes that the focus should be on interoperability and modern communications standards (e.g., two-way enabled communication, Wi-Fi) with aggregators retaining their own discretion as to how they integrate the device. AGL maintains the view that “while promoting interoperability through technical standards will be a key enabler for the optimisation of distributed energy resources across Australia’s energy markets, substantial work remains to develop Australia’s technical standards framework in alignment with international standards that are considered best practice.”² Mandating the requirements for demand-response enabled devices in AS/NZS 4755 (a legacy voluntary standard), may prevent new technologies and solutions from entering the market that would facilitate greater uptake with additional benefits for customers.³ Some devices, such as the Sensibo are a demand-response facilitation device rather than a demand-response device itself and therefore, does not comply to AS/ANZ 4755 as it has no embedded demand response technologies.⁴

We believe the AS/NZS 4755 is an outdated standard and has many problems with its implementation (e.g., upgrading existing systems with DRED capability) and which, regarding customer participation through two-way comms, could lead to poor customer outcomes (e.g., overriding the dialling down of air conditioning during a heatwave).

Activities recommended for the next phase of the PDRS

Activity

1. *Connect a new or pre-existing solar PV-battery system to a remote management system, such as a Virtual Power Plant*

AGL launched its Virtual Power Plant (VPP) in SA in 2016, partnering with ARENA to deliver the sale, installation, and orchestration of 1,000 energy storage systems installed behind-the-meter in homes and small businesses.⁵ The project set out to create 5 MW of distributed, flexible capacity that could be

² AGL Energy, [Submission on the E3 Consultation Paper: ‘Smart’ Demand Response Capabilities for Selected Appliances](#), August 2019.

³ AGL Energy, [Submission in response on proposed Retailer Energy Productivity Scheme \(REPS\) activities, credits and targets](#), 12 October 2020, p9.

⁴ [Sensibo device specifications](#).

⁵ For further information regarding AGL’s ARENA SA VPP program, including the two milestone reports published to date, please refer to <https://arena.gov.au/projects/agl-virtual-power-plant/>.



dispatched to meet the needs of the energy system and reward customers for participating; this was achieved in 2019.

Since its inception, AGL's VPP program has continued its expansion in the NEM and now welcomes customers across all east coast markets in which AGL operates, specifically, SA, Victoria, NSW, and Queensland. It has also been approved by the SA Department of Energy & Mining as a REPS activity.

Importantly, VPPs are able to unlock consumer benefits from reduced energy prices through:

- Financial incentives and rewards for using their battery at peak times; and
- Charging the home battery (and electric vehicles) in the middle of the day, during off-peak times.

A VPP framework will complement the PDRS objectives by reducing the strain on the electricity grid through shifting demand to the middle of the day when there is excess solar electricity in the grid. As VPP participants are drawing electricity from their battery reserve, there is little to no drain on the grid at peak electricity times. In an extreme event, excess battery energy could be diverted to the grid.

AGL suggests that the methodology developed by the SA DEM could be considered for inclusion into the NSW PDRS, as it is straight-forward, auditable, and transparent.

2. Install smart meter at premises

While installation of a smart meter is not a direct peak demand reduction measure, most of the proposed activities in the PDRS require a smart meter to be installed at the property (at the least, to fully realise the benefits of the RPA). Incentivising the installation of smart meters would contribute to both a higher uptake of smart meters in NSW and open the accessibility of RPAs to a broader customer base, particularly in situations where the customer's premises would not be suitable for a PV and/or battery installation, or other installation (i.e., renters).

Further, if installation of smart meters were included as an RPA, it could enable low-income households to participate in broader demand-response activities proposed under the PDRS which may assist them with better managing their energy consumption costs, as well as enabling this customer cohort to track their energy usage using retailers' energy apps, customer portals and/or in-home displays.

We also consider that a higher penetration of smart meters is important to the operation of the PDRS in order for retailers to accurately gauge customers' consumption during the relevant peak periods, including to assess what impact, if any, each of the proposed RPAs has on peak demand in NSW.

3. Install local device capable of orchestration of non-demand response enabled equipment (such as infrared remote-controlled air conditioners)

One such device available on the market is the Sensibo Wi-Fi-orchestrated smart control device which allows users to control any air-conditioner that has an infrared remote. While also not direct demand response-enabled technology itself, the device allows air conditioners which were not manufactured with embedded demand-response technology to be orchestrated remotely to lower demand at peak energy times, e.g., it allows more air conditioners to come out of peak, quicker.



While the Sensibo device has some limitations⁶, it offers orchestration capabilities to customers at an expedited pace whose participation in demand response activities may otherwise be constrained by older, less sophisticated appliances. Sensibo can be considered as a ‘fast start’ technology to bridge the gap while more efficient and lower cost residential air conditioners are manufactured or imported into Australia to comply with increasing GEMs efficiency requirements.

We consider that lower-income households and customers in rental or public housing will draw the most benefit from the speed and ease of the Sensibo (or like device) installation, which empowers users with local or remote (i.e., controlled by retailer) orchestration capabilities to reduce their electricity use during peak times

4. Undertake Home Energy Audit

AGL’s experience with Home Energy Audits (HEA) across a number of jurisdictions and schemes indicates that undertaking a HEA activity can be one of the most effective behavioural modification tools available to residential customers.

Under the SA Retailer Energy Efficiency Scheme (2009 – 2020) approximately five million GJ of deemed energy savings and 69,500 energy audits were delivered to approximately 210,700 priority group households.⁷ While AGL did not individually track reduction in energy usage post-HEA as it had undertaken audits in both customer and non-customer households, the energy savings were nevertheless considerable.

In 2021, AGL undertook a pilot energy efficiency project in SA, targeting metro and regional customers enrolled in its hardship program, Staying Connected, who were making repayments below their average energy consumption during a billing period. The Home Energy Audit & Retrofit Project (HEA&R) set out to assess if and how undertaking an in-person, in-depth HEA impacted the customer’s behaviour and energy consumption patterns. As part of the project, the auditor made behavioural energy efficiency recommendations as well as potential appliance upgrades, with AGL facilitating appliance replacements (including reverse cycle air conditioning and electric hot water systems to efficient heat pumps).

The findings showed that:

- the average total kWh per day compared to the corresponding period in the previous year had decreased just over 4%, with some customers significantly decreasing their daily consumption (up to 10 kWh/day) (see Figure 1) and a small portion of customers increasing their consumption; and
- In some limited case, households that received only the HEA also demonstrated a reduction in their average daily usage (see Figure 2).

⁶ Limitations of the Sensibo device were explored in the [‘Smart’ Demand Response Capabilities for Selected Appliances. Consultation Paper](#), August 2019 p 62-63.

⁷ Essential Services Commission of South Australia, Retailer Energy Efficiency Scheme, [Regulatory Performance Report 2020](#), June 2021 p1.

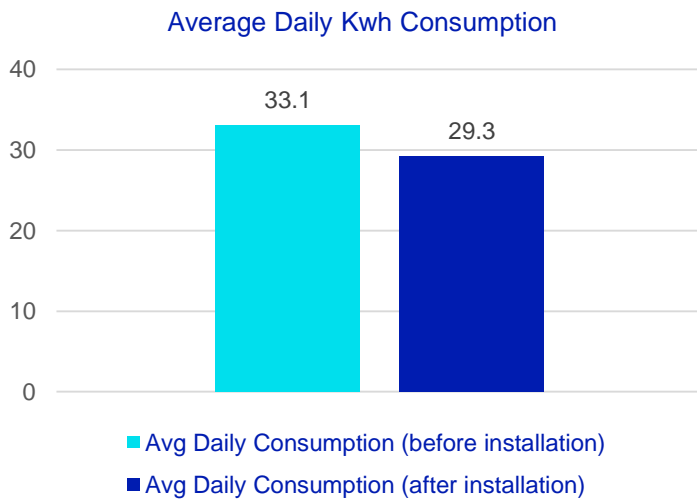


Fig. 1: HEA&R aggregated data – average daily residential customer consumption before appliance upgrade/installation compared to corresponding time in the previous year.

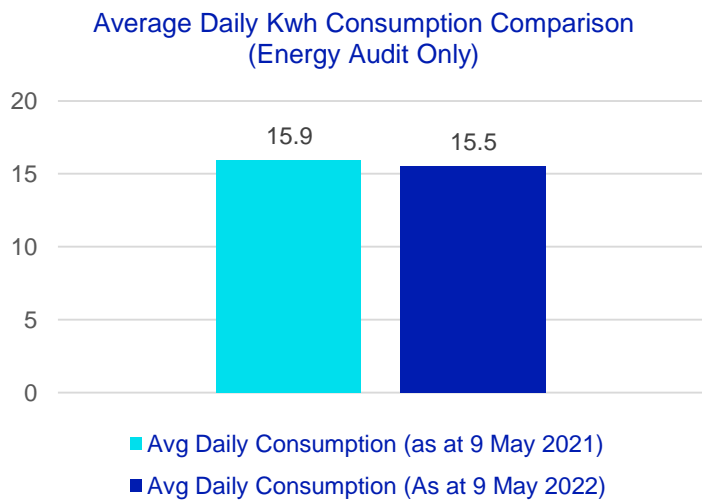


Fig 2: Year-on-year comparison - average daily residential consumption where the customer undertook an energy audit only.

5. Implement Behavioural Demand-Response Programs

AGL had previously recommended that the PDRS should not only include installation of physical products that generate relevant peak reduction certificates but also allow for certificates to be generated for services like behavioral demand-response programs.

AGL undertook an ARENA and NSW Government-funded trial, comprising of up to 8,000 customers in a residential behavioural demand response program. The trial successfully demonstrated the use of



demand response as an effective source of reserve capacity in the NEM. A key finding of the trial was that the behavioural program demonstrated a net reduction in demand of up to 3.9MW.⁸

There are currently over 30,000 NSW residential customers registered to AGL's residential behavioural demand response program (Peak Energy Rewards). In summer 2021/22, participating customers have delivered an average net reduction of up to 6.5MW across four demand response events. The inclusion of behavioural demand response in the PDRS would support further growth and investment in behavioural programs and deliver a stronger incentive for residential customers to participate.

Another potential benefit of behavioural demand response is delivering an ongoing reduction in electricity consumption, thereby supporting the objectives of the ESS and the PDRS where the reduction can be demonstrated during relevant periods. AGL's analysis indicates that customers participating in its Peak Energy Rewards program have a sustained reduction in electricity consumption compared to those who do not participate in the program. Findings show that more than 80% of participating customers apply the knowledge and skills provided by the program to reduce their electricity usage year-round.

6. Installation of load or market responsive control over electric hot water heaters.

7. Install new battery with on-site charge-discharge management coupled to an existing solar PV system.

8. Switch household from uncontrolled tariff to Time of Use pricing.

While AGL generally supports cost-reflective pricing, the underlying issue for many households, (particularly households with children and where both parents or caregivers work) is that their peak load usage relates to essential activities such as, preparing the evening meal, baths, heating/cooling for the family, and washing of uniforms and work clothes for the next day. While some of these activities can be rescheduled (e.g. showers in the morning and washing clothes overnight on off-peak rates); most cannot, therefore, potentially disadvantaging certain customer cohorts which may already include customers in financially vulnerable circumstances.

Conversely, households where at least one adult is at home most of the day could benefit from the Time of Use tariff. However, the benefit is only likely to be unlocked with timely and meaningful information and education around optimal appliance use, and how to effectively control demand during peak times (e.g., self- or remote orchestration of HVAC system/s).

As this activity may create the risk that customers are worse off, AGL recommends it be linked to the installation of a smart meter activity and complemented by an awareness raising campaign on cost-reflective tariffs for NSW residential electricity customers by the NSW Government.

9. Switching Electric (Heat Pump or Resistance) Storage Water Heater to Off-Peak Controlled Load

⁸ AGL NSW Demand Response, [Final ARENA Knowledge Sharing Report](#), May 2021.