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Rachel Thomas
Senior Advisor
Australian Energy Market Commission

Integrating Price Responsive resources into the NEM

Dear Rachel,

Energy Consumers Australia appreciates the opportunity to provide comments on the Integrating Price Responsive Resources into the NEM consultation paper. As you know, Energy Consumers Australia is the national voice of residential and small business energy consumers. As such, how price responsive resources are integrated into the market to the benefit of their owners, and ultimately all electricity consumers, is a priority for us.

The consultation paper uses the term 'price-responsive resources' to cover a variety of consumer-owned appliances and devices. Such devices include solar and batteries, large residential loads like electric vehicles, hot water heaters and pool pumps, and other demand response devices, like home energy management systems. All of these devices could respond to real-time price signals, whether on their own, or through a virtual power plant (VPP) that is operated by the customer's retailer, or via a third-party aggregator. At Energy Consumers Australia, we prefer to refer to 'price-responsive resources' as 'consumer energy resources' (CER), because this places importance on the consumers who own these resources. Consumers do not sit outside the system, they *are* the system.

Our submission focusses on visibility and integration[1] of CER into the national electricity market. For the energy transition to be least-cost, consumers will need to rapidly increase their uptake of CER, and these technologies will need to be well integrated into the market.

If the integration of small-scale CER is done successfully, these small-scale resources will grow large in aggregate and be treated equitably with utility-scale resources in the energy system. This will benefit all consumers, by:

- Providing low-cost sources of services, like generation capacity, energy, and voltage and frequency regulation, that the electricity system requires;
- Reducing the quantity of services AEMO must procure, and therefore the cost, by increasing AEMO's visibility of consumer demand; and
- Providing direct benefits to CER owners by rewarding them for the value their resources bring to the system.

The uptake of CER and their integration into the market are interrelated. Providing market access to CER in recognition of the services it provides to the system will increase the value proposition of CER and drive increased consumer adoption. On the other hand, failure to integrate CER into the market will mean that consumers will not be able to access added value from their CER, reducing the value proposition and decreasing the uptake of these products.

[1] By integration, we mean the participation of these services in all markets for which they can provide value.

Similarly, the uptake of CER and requirements for greater visibility are interrelated. Increasing requirements for energy service providers to improve the Australian Energy Market Operator's (AEMO) visibility of CER adds costs to CER, potentially reducing their adoption by consumers. Fewer requirements should help to keep costs low and increase CER uptake.

We view achieving an equitable balance between market access for CER and improving visibility of CER as the problem this consultation is trying to solve. Increased uptake of CER that continues to evade AEMO's view may be an empty victory, because while it may benefit some CER owners, other consumers would face higher costs due to the need for AEMO to operate the system conservatively and potentially over-procure services. At the same time, increased visibility that fails to promote greater adoption of CER is also a missed opportunity. If the appropriate balance is achieved, AEMO will have sufficient visibility to accurately gauge the services the system requires, and CER uptake will increase because it will have a greater value proposition for consumers as the services it brings to the system (and therefore to all consumers) will be appropriately valued and rewarded.

Our submission makes three key points in response to the questions raised in the consultation paper:

1. AEMO will eventually need to have visibility over CER, and consumers will benefit from this visibility.
2. Visibility shouldn't be mandated and should vary by resource type.
3. To incentivise visibility, grant energy service providers access to markets if they provide greater visibility of their resources to AEMO.

Thank you for providing this opportunity to comment on the consultation paper. If you have any questions about our comments in this submission, or require further detail, please contact Ashley Bradshaw at ashley.bradshaw@energyconsumersaustralia.com.au

Yours sincerely

Brian Spak
Director, Energy System Transition

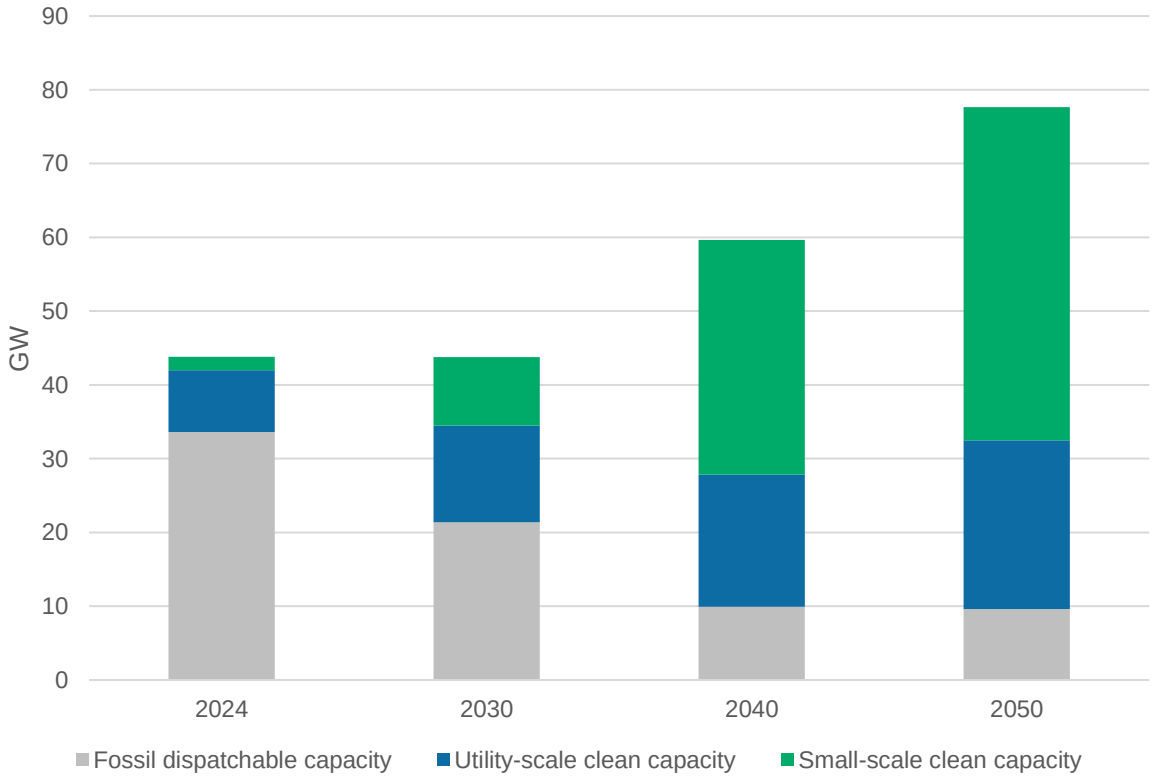
A least-cost transition requires rapid uptake and integration of CER into the market

The Integrated System Plan (ISP) shows the importance of small-scale resources in enabling our transition. The energy market and system must equally value small-scale and large-scale energy resources. Failure to do so will lead to higher than necessary costs, and a lack of consumer trust in the transition.

The 2022 ISP Step Change Scenario forecasts a need for an additional 226GW of installed capacity between 2024 and 2050. Small-scale generation is expected to account for 40%, or 91GW of this growth in capacity.[2]

The ISP projects a need for growth in dispatchable capacity to ensure reliability at times of low sun and wind output. Figure 1 shows that the growth in dispatchable capacity is expected to be mostly delivered by growth in small-scale, clean sources of capacity. By 2050 66% of installed dispatchable capacity is projected to be clean, small-scale capacity.

Figure 1: Forecast dispatchable NEM capacity to 2050, ISP Step Change scenario – select years



Source: Analysis of AEMO 2022 ISP.

[2] https://aemo.com.au/-/media/files/major-publications/isp/2022/2022-documents/2022-integrated-system-plan-isp.pdf?la=en

The Integrated System Plan assumes a rapid increase in CER uptake – but there is little policy support for this to date.

The Federal Government's announced Capacity Investment Scheme is designed to ensure delivery of the required additional 6 GW of dispatchable utility-scale capacity by 2030. However, Figure 1 shows that there is also a forecasted need for 7 GW of dispatchable small-scale capacity by 2030. We are not aware of any plans or significant policy support to deliver this equally necessary capacity.

The 2022 ISP Step Change scenario assumes that by 2050, 65% of homes will have rooftop PV (up from around 33% of homes today) and that many rooftop PV systems will be complemented by battery storage. It is also expected that the majority of consumer batteries will participate in a Virtual Power Plant (VPP) product, and other emerging technologies like electric vehicles, will also provide dispatchable storage capacity. Consumer uptake of VPP products is expected to be rapid; the ISP predicts there will be a more that 13-fold increase between now and 2030.

Implicit in these assumptions is significant investment and action by consumers, in addition to the delivery of reliable business models by aggregators and retailers. While there is some government support for consumers who wish to buy a battery, there is no plan for how these ambitious CER uptake expectations are to be achieved.

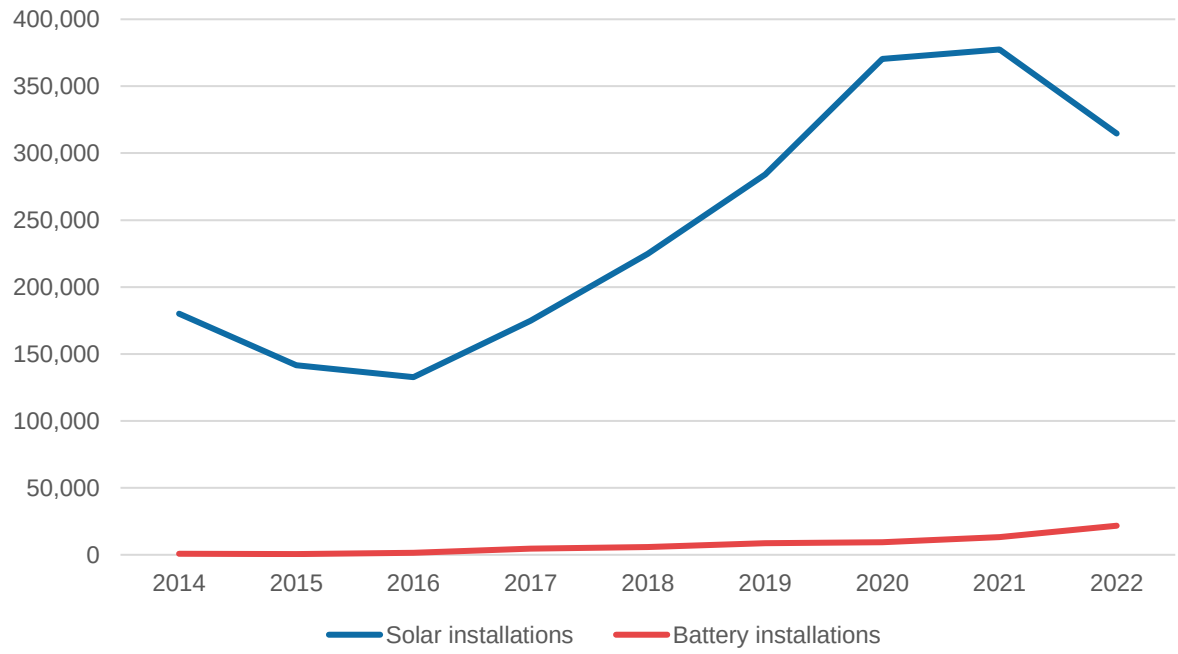
Markets will need to incentivise consumers to purchase batteries, participate in a VPP, or purchase demand response products.

The ISP Step Change assumes that by 2033 small-scale dispatchable capacity will exceed utility-scale capacity - so there is a clear and immediate need to accelerate the uptake of VPPs, demand response, and other small-scale products.

While rooftop solar installation rates have flatlined in recent years, battery installation rates are beginning to increase across Australia. However, the Clean Energy Regulator suggests that only around 7 per cent of new solar installations include a battery.[3] Clearly, current market and policy settings are not strong enough to incentivise the required battery uptake.

[3] ECA analysis of https://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations#Summary-of-postcode-data

Figure 2: Annual solar and battery installations, 2014 to 2022



Source: Analysis of https://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations#Summary-of-postcode-data

A main barrier to battery uptake for consumers is the up-front cost[4], with questions around whether batteries give a positive return on investment to consumers under current settings.[5] VPP products can increase the benefits consumers receive from their batteries, if retailers and aggregators share the benefits with their customers (and if the necessary consumer protections are in place). Increased benefits would likely increase consumer adoption of VPPs and other CER products that provide value to the energy system.

We observe that various VPP business models are emerging that provide such benefits to consumers. In exchange for consenting to participate in the VPP, some retailers and aggregators are giving discounts on the cost of CER in exchange for consumers offering their battery (and potentially other technology)[6], and others are offering long-term discounts on energy bills after the consumer purchases the CER[7]. It is likely that different consumer types will prefer different business models, and it is important that retailers and aggregators can develop these products for all consumers' benefit.

However, like battery uptake, consumer adoption of VPP products is also low. As of 2021, around 25% of consumers with registered batteries in the NEM had signed up to a VPP.[8] This is unsurprising,

[4] https://ecss.energyconsumersaustralia.com.au/sentiment-survey-june-2022/featured-content-household-sentiment-june-2022/
[5] https://www.abc.net.au/news/2023-08-22/investing-battery-rooftop-solar-panels-australia-buyers/102755064;
[6] https://www.originenergy.com.au/solar/panels-batteries/virtual-power-plant/solar-battery-offer/
[7] https://repositpower.com/no-bill
[8] https://arena.gov.au/knowledge-bank/aemo-nem-virtual-power-plant-demonstrations-knowledge-sharing-report-4/

given trials to date have found that margins have been thin on such products, with issues for aggregators monetising the value streams their services can provide (we discuss this in more detail below).

In this context, we support the review into how price-responsive resources can be integrated into the NEM. However, we reiterate that we view achieving an equitable balance between market access for CER and improving visibility of CER as the problem this consultation is trying to solve.

AEMO will eventually need to have visibility over price responsive resources, and consumers will benefit from this visibility.

Price-responsive resources will need to be integrated into the NEM. As VPP and other CER capacity increases, so will their ability to influence the supply-demand balance, as well as the stability of the network.

We consider there is merit in improving AEMO's visibility of small-scale resources, and agree in principle with many of the benefits listed in the consultation paper. Greater visibility of the supply-demand balance should lead to more accurate forecasts of long-term reliability needs. This visibility should also result in lower system costs, as AEMO has suggested that duplicating the 20 percent of small-scale, price-responsive resources with grid-scale storage will result in additional infrastructure costs of around $1.8 billion to 2040, which will be passed on to consumers.

However, visibility shouldn't be mandated and should vary by resource type.

Energy service providers of price-responsive resources should not be mandated to provide greater visibility of these resources to AEMO. Mandating participation will impose costs on the market, which will make consumers less likely to purchase CER.

Also, while each of these consumer-owned devices could respond to market and network price signals, consumers should have the agency over whether they want the devices they own to do so.

As the AEMC acknowledges, CER refers to a variety of different technology types that consumers will interact with differently. These different technologies and produces can interact with the market in different ways. For this reason, we consider that the level of visibility that AEMO has on these resources should likely vary by resource. The optimal case should balance the ability for these resources to positively impact market outcomes against any additional costs that will be incurred to provide that visibility to AEMO.

Our observation and experience in overseas markets suggests the varied levels of visibility and dispatchability market operators have over different types of price responsive resources is a result of finding a balance between market operator visibility and the costs imposed on energy service providers and resource types. We note that the AEMC is considering the lessons from overseas in this process.

To achieve the transition we all want, AEMO will need increased visibility of CER while the total amount of these resources increases. Accordingly, the type of improved visibility needs to be fit for purpose, providing increasing information to AEMO at a reasonable cost to energy service providers. Simultaneously, energy service providers need reasons to provide increased information to AEMO at all.

To incentivise visibility, grant CER access to markets currently not monetised

CER can provide a variety of benefits across the electricity supply chain. Table 1 is adapted from a similar table created for the Australian Energy Regulator in its investigation into the Value of Distributed Energy Resources.[9] The table formed the basis of a methodology to determine the value of distributed energy resources that can be used by networks in investment proposals to integrate CER into the grid.[10]

Table 1: Benefits from CER projects

Benefit Type	Value Stream	Can this value stream currently be monetised?
Wholesale market	Avoided marginal generator SRMC	Yes
	Avoided generation capacity investment	No
	Essential System Services	Yes
Network	Avoided/deferred transmission augmentation	In theory
	Avoided/deferred distribution augmentation	In theory
	Distribution network reliability	No
	Avoid replacement / asset derating	In theory
	Avoided transmission losses	No
	Avoided distribution losses	No
Environment	Avoided greenhouse gas emissions	No
	Reduced health impacts of air pollution	No
Customer	Change in CER investment costs	Yes
	Electricity bill management	Yes
	Willingness to pay for other perceived benefits (e.g. self-reliance, feel good factor, sense of contribution)	N/A

Adapted from: CutlerMerz, CSIRO, Value of Distributed Energy Resources: Methodology Study: Final Report. Commissioned by the Australian Energy Regulator, 2020.

We suggest that participation with AEMO should be incentivised by providing access to one or more of these streams currently not monetised. One key value stream that VPPs provide is low-cost capacity.

[9] https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/distributed-energy-resources-integration-expenditure-guidance-note

[10] https://www.aer.gov.au/system/files/Final%20DER%20integration%20expenditure%20guidance%20note%20-%20June%202022.pdf

In our submission to the Capacity Investment Scheme[11] (CIS), we argued that small-scale projects provide low-cost, reliable sources of capacity and suggested later iterations of the scheme include demand-side projects. Under our proposal, the Department would state that CIS funding is available to small-scale resources, but it is only available to participants who provide the necessary visibility to AEMO.

We suggest alignment between the AEMC, AEMO and the Department on the issue of integrating small-scale resources into the NEM. Doing so presents a great opportunity to support small-scale resources and also provide the necessary incentive for VPP operators to share information with AEMO.

[11] https://energyconsumersaustralia.com.au/publications/submission-to-dcceew-on-the-capacity-investment-scheme-public-consultation-paper