ENERGY CONSUMERS AUSTRALIA

NEM Review – Initial consultation

Energy Consumers Australia's submission to the NEM Review initial consultation

Summary of recommendations

Energy Consumers Australia (ECA) is the national voice for household and small business energy consumers. We advocate for an energy transition that benefits all Australians and provides opportunities for every household and small business to participate.

In summary, we argue that the National Electricity Market (NEM) Review should ensure that:

1. Households and small businesses are offered fair value for the services they provide to the energy system.
2. It identifies the multiple benefits locational marginal pricing offers consumers, including creating a market-based mechanism for additional dispatchable capacity.
3. Any new market mechanisms are designed to ensure the most vulnerable and disadvantaged households are not overburdened.

Demand-side measures, such as household batteries and flexible appliances — for example, water heaters, pool pumps, electric car chargers, and other smart devices — can provide a substantial source of low-cost capacity, but face barriers, including limited consumer engagement, complex tariff structures, and regulatory barriers. If well integrated, such measures could reduce the need for peaking plants, transmission augmentation, and large-scale storage, thus lowering costs to energy consumers. The NEM Review should seek to ensure that demand-side measures have sufficient support to unlock their full potential, both for consumer benefit and to provide firmed, renewable generation and storage capacity in the NEM.

Introduction

ECA thanks the NEM Review for welcoming views on wholesale market settings to promote investment in firmed, renewable generation and storage capacity in the NEM following the conclusion of Capacity Investment Scheme (CIS) tenders in 2027. The CIS plays a critical role in encouraging investment in firmed renewable generation and storage by underwriting revenue.

Our submission to the Energy Security Board's (ESB) Capacity Mechanism High Level Design Paper[1] advocated for targeted actions to be undertaken to "pursue all cost-effective demand response [...] in the capacity mechanism"[2]. We showed that demand response is a low-cost resource that should be clearly included in the mechanism's design, addressing a common misconception that if demand response were an economic way of meeting energy or capacity needs, the market would already cater to it. The reality is that there are multiple barriers to demand-side resources being fully utilised. We reiterate in this submission that demand response is a unique capacity resource that requires a carefully designed approach to unlock its distinct characteristics.

As the national voice for household and small business energy users, ECA advocates for a future Australian energy system that works for, and benefits, the households and small businesses that rely on it. Our vision is that consumer values, expectations, and needs are realised through a modern, flexible, and resilient energy system, and that consumers receive fair value for the services to the grid they provide with consumer energy resources (CER).

Several international capacity markets include demand-side participation, such as PJM Interconnection and Independent System Operator New England in the US and Ontario Independent Electric System Operator in Canada. The UK Power Responsive program, facilitated by the UK's National Energy

[1] Energy Consumers Australia, 2022 – Response to Capacity Mechanism Project High-Level Design Paper
[2] Energy Consumers Australia, 2022 – Response to Capacity Mechanism Project High-Level Design Paper p.2

System Operator, enables increased demand-side response and storage participation.[3] Demand response participation tends to be greater in capacity mechanisms than in typical energy markets.[4] Several reviews of demand-side participation in the NEM wholesale markets have been conducted,[5,6] but have thus far not resulted in inclusion.

Households and small businesses are offered fair value for the services they provide to the energy system

Demand-side technologies face unique barriers compared to large-scale infrastructure. They are less predictable than traditional resources, their generation is more difficult to forecast, and they often suffer from telecom/Wi-Fi issues that reduce their dispatchability. Despite this, they are often the lowest cost resources for multiple reasons: they are close to load and thus more efficient; they are less risky to build than large-scale infrastructure resources, and often avoid large capital costs by leveraging existing flexibility (e.g., electric vehicles; EVs). Indeed, in his 2002 book, *Small is Profitable: the Hidden Economic Benefits of Making Electrical Resources the Right Size,* Amory Lovins identifies 207 discrete benefits of small-scale, distributed resources.

A relatively recent study funded by the Australian Renewable Energy Agency (ARENA) found that enabling demand flexibility is expected to result in $8-18 billion in savings due to the reduced need to invest in large-scale generation and storage.[7]

The existing market structure, dispatch algorithms, metering requirements, and other factors are all designed to support large sources of generation and storage. In order to get the least-cost (i.e. demand side) investment in resources, we need to support demand-side technologies rather than assuming that they can evenly compete in a traditional auction against large-scale resources.

The Review should outline the benefits of integrating CER into a future CIS or other mechanism to procure dispatchable capacity and identify the barriers demand-side technologies face. It should then identify several approaches for overcoming these barriers and determine which technologies are most valuable to pursue.

Our initial thinking on the best approach to integrate CER is two-fold. We need to level the playing field and create discrete approaches to ensure we procure capacity from the demand side.

On the first point, the existing eligibility threshold for participation in a CIS is a minimum size of 30 MW,[8] which locks out individual and small aggregations of demand-side resources. By contrast, FERC Order 2222 in the US mandates that system operators there – i.e., American versions of AEMO – must establish CER as a category of market participant and set a size requirement for aggregations that is under 100 kW.[9] In other words, the CIS sets a requirement for individual resources that is 300 times larger than markets in the US.

South Australia's Electricity Development Plan forecasts that an additional 500 MW of additional firm capacity is required for the state for FY 26/27,[10] and the 2024 Firm Energy Reliability Mechanism

[3] National Energy System Operator – Power Responsive
[4] AEMC, 2019 – International Review of Demand Response Mechanisms in Wholesale Markets p 6.
[5] AEMC, 2008 – The Wholesale Market and Financial Contracting: AEMC Review of Demand-side Participation in the NEM
[6] AEMC, 2019 – International Review of Demand Response Mechanisms in Wholesale Markets
[7] ARENA, 2022 – Load flexibility study technical summary
[8] DCCEEW, 2024 – Capacity Investment Scheme Tender 3 now open
[9] Federal Energy Regulatory Commission, 2020 – Order No. 2222
[10] Office of the Technical Regulator, 2024 – South Australian Electricity Development Plan p. 58

consultation paper[11] proposed a new capacity tender mechanism for South Australia to secure long duration firm generation capacity. Like the Capacity Investment Scheme tenders, this tender mechanism excludes generation under 30 MW.

The Review needs to ensure that small-scale resources aren't discriminated against in this way in the future, and, importantly, identify precisely why the designers of the CIS failed to cater to small-scale resources in the first place. In a country that leads the world in the adoption of rooftop solar, why have other small-scale and demand-side resources been intentionally excluded from participating in even early versions of capacity markets?

Lessons should be learned from Western Australia, where the Project Symphony pilot has shown encouraging results. Launched in 2021, the WA Distributed Energy Resources Orchestration Pilot project aimed to unlock the potential offered by the uptake of CER while also addressing threats it may pose to grid stability. To date, the orchestration of 900 demand-side devices in 500 households into a single VPP[12] has been successful in managing the "peaks and troughs"[13] of electricity demand, proving that VPPs could be a reliable and cost-effective option in the future.[14] Indeed, the project included a study to examine the potential costs and benefits of orchestrating CER across the Southwest Interconnected System (SWIS) and identified economic net benefits ranging from a present value low of $453m to $967m over the 15-year modelling period.[15]

In addition to reducing barriers, we need to refine capacity market products to encourage investment in small scale resources. The more specific a tender can be about the location, advance notice, flexibility, and adjustments required to meet the system's capacity requirements, the simpler it is for aggregators to design offers for household and small business consumers. A well-designed capacity approach that effectively integrates CER provides direct benefits to those consumers that participate, while lowering the costs of the energy system for all consumers.

Energy Consumers Australia has recently commissioned research to examine the opportunities for CER to provide grid services and load management. This study will examine successful implementations, best practices and lessons learned from other jurisdictions. It will also engage with identified Australian stakeholders to better understand barriers to participation and assess sentiment regarding potential solutions identified through the jurisdictional scan. We look forward to engaging with the Review Panel and other interested stakeholders to ensure this research is as relevant and impactful as possible.

Promote locational marginal pricing to support additional dispatchable capacity

The existing open access regime for generators connecting to transmission in the NEM fails to deliver for consumers. Generators are often constrained due to a lack of transmission and storage capacity, and new generators cannibalise the existing capacity, thus requiring new transmission capacity to reduce congestion. This does not promote a least-cost system. Consumers pay for transmission infrastructure, not generators, which is one important reason why existing generators tend to favour an open access regime. If additional transmission needs to be built as a result of an inefficient market, consumers pay and they don't.

[11] Department for Energy and Mining, 2024 – Firm Energy Reliability Mechanism. Proposed Scheme Design Consultation Paper
[12] ARENA, 2023 – Western Australia Distributed Energy Resources Orchestration Pilot (Project Symphony)
[13] ARENA, 2024 – Project Symphony Final Report
[14] ARENA, 2024 – Project Symphony Final Report p. 122
[15] ARENA, 2024 – Project Symphony Final Report p. 90

Locational marginal pricing (LMP) — introducing nodal pricing throughout the NEM and replacing the current five dispatch zones (NEM states) with dozens of additional pricing nodes — is a proven way to benefit all consumers and create a market-based signal for dispatchable capacity. When there is no transmission congestion, the LMP will be equal at all nodes, but when there is transmission congestion, the LMP will reflect the value of transmission.[16]

Importantly, LMP is not inconsistent with a CIS or other capacity mechanisms. Rather, it offers an important complement to the CIS or a capacity mechanism by providing an additional, market-based approach to incentivise the development of dispatchable capacity. In this way, it can reduce the amount of capacity a CIS or capacity mechanism needs to procure and/or reduce the price paid for such resources, because capacity resources have additional sources of revenue.

The NEM has the least geographically granular electricity prices in the OECD. USA, New Zealand, Chile, Mexico, Canada, and Israel have all adopted nodal prices/LMP. By contrast, the NEM sets prices based on the price at the most expensive node in each state. Consumers in these other nations only pay generators their clearing price at their local “intersection” – the point at which they can enter the market. This significant design flaw and market failure increases all of our electricity bills with no discernible benefit, except for increased profits for power plants.

Evidence from other markets suggests that LMP would enable more efficient dispatch operation and lower electricity prices, resulting in benefits for all Australian consumers. The ESB and AEMC have identified billions in net benefits from LMP and financial transmission rights.[17,18] The difference in prices would promote storage development, because nodes with large amounts of wind and solar would have highly volatile prices, thus creating an additional arbitrage opportunity for storage. This would also tend to increase the value received by CER, given its proximity to load.

The Integrated System Plan (ISP) assumes that the NEM has locational marginal pricing, and nevertheless identifies the need to build additional transmission worth tens of billions of dollars. Meanwhile, the ACCC estimated that a typical household already pays $675 for network costs – which represents 45% of their annual bill.[19] Without LMP, the NEM will likely require significantly more transmission than the ISP currently indicates. The NEM Dispatch Engine (NEMDE) already calculates LMP, making implementation technically simple – though it may be politically difficult.

There are some impacts associated with introducing LMP to the NEM that will need to be considered, such as requiring a renegotiation of legacy contracts. However, given the substantial benefits to consumers from introducing LMP, this should be explored as an option by the NEM Review.

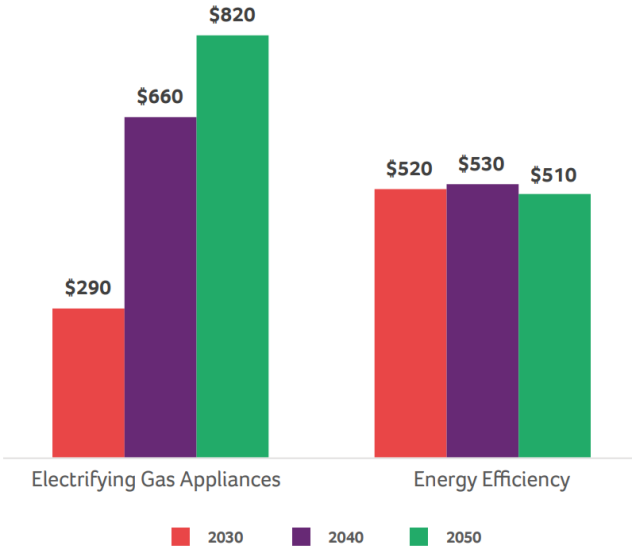
Ensure any new market mechanisms do not burden vulnerable and disadvantaged households

The energy transition is underway, and a significant amount of the investment involved is in consumer energy resources (CER). The 2024 ISP Step Change scenario assumes that in 2030 there will be 18 times more EVs on the road than today, more than a 50% increase in rooftop solar PV, more than a

[16] Pennsylvania State University – Locational Marginal Pricing
[17] Energy Security Board, 2023 – Transmission access reform. Cost benefit analysis pp 53-55
[18] AEMC, 2020 – Costs and benefits of access reform
[19] ACCC, 2023 – Inquiry into the National Electricity Market Report p. 30

600% increase in small-scale energy storage, and that there will be nearly 30 TWh of additional electricity use from electrification.[20]

CER provides a host of benefits, primarily that of being able to reduce energy costs. By 2050, the average difference in total energy costs, including transport, between a fossil-fuelled home and an electrified home are anticipated to be $2,850 per year.[21] Buying an EV today is expected to result in a saving of $100 per year on average over 20 years, and significant savings will be available from electrifying gas appliances and investing in energy efficiency (Figure 1).[22]



Projected individual household savings available to some customers, NEM average. From Stepping Up.

However, there exist a number of barriers that prevent every consumer from receiving the benefits from CER and the energy transition. CER and investing in energy efficiency have high upfront costs, making it difficult for low-income households to participate. They either can't afford or lack the agency to have rooftop solar and flexible heating or water heaters. Consumers whose physical circumstances prevent them from investing in CER will also be unable to reap the benefits, such as renters and multi-unit dwellers who typically pay more for energy services because of inefficient homes and relatively inefficient appliances.[23] Landlords typically have limited incentives to invest in CER, and our research suggests that even if they do, they expect to charge more for rent, reducing the benefit that renters would see.[24] 31% of Australians live in rentals as of 2021, with 16% in apartments and 13% in townhouses, with the proportion of each broadly increasing over time.[25] This is an issue that affects many Australians, and will become an increasing challenge over time.

There are also a number of consumers who we expect simply don't want to invest in CER or engage in the energy system in any meaningful way. Most households aren't aware of how the transition will impact them. 65% of household consumers have not given any thought to electrifying their home, and only 9%

[20] AEMO, 2024 – 2024 Integrated System Plan pp 25-26.
[21] Energy Consumers Australia, 2023 – Stepping Up: A smoother pathway to decarbonising homes
[22] Energy Consumers Australia, 2023 – Stepping Up: A smoother pathway to decarbonising homes
[23] SEC Newgate, 2022 – Energy efficient housing research
[24] SEC Newgate, 2022 – Energy efficient housing research
[25] Australian Bureau of Statistics, 2021 – Dwellings

have thought seriously about electrifying their gas usage.[26] More than half (54%) of households say they just want a simple and reliable electricity service at a good price.[27]

Under the current network tariff framework, customers who don't want to, can't invest in or otherwise lack CER tend to pay a higher proportion of network costs than those who are able to reduce their operational demand. Households earning less than $50k per annum pay on average 5.9% of their income as energy bills, and those earning between $50k and $100k pay 3.1% of their income, compared to those earning over $100k who pay 1.8% or less.[28] Three are 3.3 million Australians, including 761,000 children, living below the poverty line of $25,428 annual income.[29] These impacts are likely to grow as the energy transition accelerates, particularly in the absence of investment in energy performance.

In the design of new market mechanisms to promote investment in firmed renewable generation and storage, the Review should ensure that the most vulnerable consumers won't become further burdened. Existing programs such as the Commonwealth Government's Household Energy Upgrades Fund help, but this only covers 60,000 social housing upgrades and another 110,000 home upgrades, which doesn't cover all vulnerable households.[30]

The Review should ensure that no additional cross subsidies between low-income households and more capable consumers or market participants are created. This may require additional government-funded capacity schemes, similar to the CIS, to enable vulnerable households to access CER, thus ensuring that these consumers don't inadvertently face a disproportionate amount of the burden for paying for new dispatchable capacity.

Energy efficiency should be considered as the 'first fuel' — in other words, the energy you don't need to use is the cheapest and cleanest form of energy. Schemes established to reduce energy use through efficiency measures, such as the Energy Trust of Oregon, have helped put downward pressure on energy costs by reducing peak and overall demand.[31] Conversely, Australia has to date had a relatively low uptake of energy efficiency programs, and Australia ranks 18th in energy efficiency metrics out of the world's 25 largest energy users.[32] The Australian National Energy Productivity Plan target of 40% improvement in energy productivity from 2015 to 2030[33] is less ambitious than other jurisdictions, such as California's target of doubling statewide energy efficiency savings from 2015 to 2030.[34] This Review should explore Federal or state-based energy efficiency schemes targeted at vulnerable consumers.

Reducing the energy divide may require compulsory investment by networks or to install CER technology in certain dwellings, thus reducing the need for network augmentation which would increase the burden on vulnerable consumers.

Moreover, the implementation of the existing CIS further entrenched inequities in the energy system, largely between all consumers and generators. The CIS was announced in November 2023 to, among other things, "deliver an additional 32 GW of capacity by 2030 and support electricity generation growth and reliability as demand grows and ageing coal power stations retire."[35] One month later, the AEMC

[26] Energy Consumers Australia – Energy Consumer Sentiment & Behaviour Surveys
[27] Energy Consumers Australia, 2024 – Consumer Energy Report Card: Consumer knowledge of electricity pricing
[28] Energy Consumers Australia, 2024 – Consumer Energy Report Card
[29] Australian Council of Social Service, 2022 – 2022 poverty in Australia snapshot
[30] DCCEEW – Social Energy Housing Performance
[31] Energy Trust of Oregon, 2023 – 2023 resource assessment model
[32] DC American Council for an Energy-Efficient Economy, 2022 – 2022 International Energy Efficiency Scorecard
[33] COAG Energy Council, 2015 – National energy productivity plan 2015-2030
[34] California Energy Commission – Achieving energy efficiency
[35] DCCEEW, 2023 - Capacity Investment Scheme

amended the market price settings in the NEM for the period 1 July 2025 to 30 June 2028, increasing the Market Price Cap by more than 30%. The AEMC argued that "these price settings…have a significant impact in encouraging more supply into the system when we need it most."[36]

The AEMC argued that the increase in the Market Price Cap and other administratively determined prices were important even in light of the CIS, but they provided no analysis demonstrating this was true. The AEMC should have done more substantial modelling to determine that price cap increases were still necessary in light of the CIS — in the absence of this, we can only assume that consumers are paying for new dispatchable capacity twice: once as taxpayers via the CIS and again as electricity consumers when prices reach their highest levels. As the Panel contemplates a new CIS or new approach to incentivise capacity, it must also examine and revise the other market settings and ensure all consumers do not pay twice for new capacity.

Conclusion

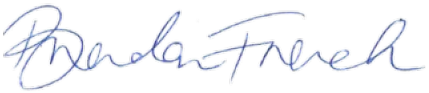
The NEM Review represents a significant opportunity to assess how the market settings in the NEM are delivering for consumers. ECA believes that there are three important ways in which the NEM is failing to deliver for consumers that the NEM Review should investigate.

1. Levelling the playing field between large sources of generation and CER as well as procuring CER to help provide capacity at least-cost and ensure that residential and small business consumers receive fair value for the services they provide to the energy system.
2. Introducing LMP to the NEM, to ensure consumers receive the benefits of the transmission investments they have made and will continue to make.
3. Ensuring that the existing cross-subsidies in the energy system don't get worse as a result of the outcomes of the Review. This is essential to ensure that vulnerable consumers don't become further burdened.

We thank the NEM Review panel for the opportunity to provide feedback and make ourselves available for further discussion and collaboration throughout the consultation process.

For any questions or comments about our submission, please contact Michael Dello-Iacovo at Michael.d@energyconsumersaustralia.com.au.

Yours sincerely,



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[36] AEMC, 2023 - Amendment of the Market Price Cap, Cumulative Price Threshold and Administered Price Cap

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