

Level 15, 60 Castlereagh Street Sydney NSW 2000 T +61 2 8296 7800

E aemc@aemc.gov.au

www.aemc.gov.au ABN 49 236 270 144

13 June 2025

Mr Barry Sterland, Mr Martin Stokie Investing in cheaper, cleaner energy and the net zero transformation Productivity Commission Level 8, Two Melbourne Quarter 697 Collins Street Docklands Vic 3008, Australia By email: 5 Pillars <5pillars@pc.gov.au>

#### AEMC submission to inquiry - cheaper, cleaner energy and the net zero transformation

The Australian Energy Market Commission (AEMC or Commission) welcomes the opportunity to provide a submission to the Productivity Commission's inquiry on cheaper, cleaner energy and the net zero transformation.

As the national rule maker and advisor for Australia's energy markets, the AEMC's mission is to work for Australia's future productivity and living standards by contributing to a decarbonising, affordable, and reliable energy system for consumers.

Energy is an essential input into our economy. As we transition the energy system towards net zero, we are presented with opportunities not just to ensure an efficient, least-cost transition, but also to enhance Australia's economic productivity and global competitiveness. Done right, the energy transition will create new industries and services, further promote competition in energy markets, and move us towards more energy-efficient technologies and a cheaper, cleaner fuel source. For example, our *2024 Residential Electricity Price Trends Report* showed that a customer who electrifies transport and heating in their home could reduce their energy expenditure by 70 per cent.<sup>1</sup>

As consumers increasingly take advantage of the opportunities offered by investing in electric vehicles and batteries, as well as continue investing in solar panels, we need to ensure that these resources are operated efficiently and in a way that delivers benefits to all customers and the system. A recently commissioned AEMC study by Energeia identified that the potential benefits from operating these resources flexibly could be

<sup>&</sup>lt;sup>1</sup> AEMC, <u>Residential Electricity Price Trends 2024</u>, Nov 2024, p.19.

worth \$45 billion over the next 25 years.<sup>2</sup> To ensure that this value is realised, the AEMC is working to better align consumer and system values through our Pricing Review.<sup>3</sup>

We have also made several recent rule changes to facilitate retail service innovation. For example, *Accelerating Smart Meter Deployment* will ensure that we will have the foundations needed for a digital grid in place by 2030,<sup>4</sup> while *Unlocking CER Benefits* allows customers to create secondary connection points using in-built metering, unlocking the way for device-specific services and flexibility.<sup>5</sup> *Our Integrated Price-Responsive Resources* rule change provides incentives for small-scale behind-the-meter resources – often owned by households – to be operated more efficiently.<sup>6</sup> By integrating these resources into the operation of the wholesale electricity market, the total cost of providing consumers with reliable electricity supply will be reduced, translating to least-cost prices for consumers overall.

We note that the Productivity Commission is seeking input on 13 questions across the three policy reform areas. Our submission provides responses from an energy sector perspective to selected questions below.

### Policy area 1: Reduce the cost of meeting carbon targets

# Q1: What could be done to improve the cost-effectiveness and alignment of policies to reduce emissions across the industrial, electricity and transport sectors?

The AEMC has identified that unpriced externalities impacting exit decisions are a key issue in both the electricity and gas sectors. This is impacting generation investment decisions in the wholesale electricity market and creating uncertainty in the gas sector.

- 1. Consider a uniform value of emissions reductions across the energy sector or economy. The AEMC can only make and amend the electricity, gas and energy retail rules, or recommend changes to the national energy framework in reviews, if doing so will contribute to the relevant energy objective. The energy objectives refer to several components of the long-term interests of consumers. In 2023, emissions reductions were added to the national energy objectives, supported in 2024 with an interim Value of Emissions Reductions (VER). The AEMC considers the VER as a benefit (or cost) in our rule changes, and broadening this approach across the energy sector or the economy could contribute to making more efficient, least-cost decisions.
- 2. The National Energy Objectives could be combined to serve energy consumers rather than gas and electricity consumers separately. The National Electricity Objective (NEO) refers to the long-term interests of electricity consumers, while the National Gas Objective (NGO) refers to the long-term interests of gas consumers separately. As a result, the AEMC is limited in how we consider the scope of benefits in rule changes that affect both sectors. For example, AEMC's *Residential Electricity Price Trends 2024* shows that a customer electrifying their transport and heating use could save 70 per

<sup>&</sup>lt;sup>2</sup> Energeia, <u>CER Flexibility Benefit Analysis Final Report</u>, Mar 2025.

<sup>&</sup>lt;sup>3</sup> AEMC, <u>Pricing Review: Electricity pricing for a consumer-driven future</u>, Jul 2024.

<sup>&</sup>lt;sup>4</sup> AEMC, <u>Accelerating smart meter deployment</u>, Nov 2024.

<sup>&</sup>lt;sup>5</sup> AEMC, <u>Unlocking CER benefits through flexible trading</u>, Aug 2024.

<sup>&</sup>lt;sup>6</sup> AEMC, <u>Integrating price-responsive resources into the NEM</u>, Dec 2024.

cent on their energy bills.<sup>7</sup> There is potential for efficiency gains from switching to more energy-efficient technologies and a cheaper, lower-carbon fuel source. However, the NGO constrains us from considering these benefits (apart from emissions savings) when considering customers switching fuels, since these benefits do not accrue to gas customers. In the context of government policies that seek to encourage electrification and fuel switching, rules that seek to implement these policies would likely benefit from a more holistic approach to evaluating consumer benefits in a decarbonising world and will reflect the increasing interconnection between the two sectors.

# Q2: Are there gaps in the emissions-reduction policies in the industrial, electricity and transport sectors which should be addressed?

The AEMC has identified a number of areas and comments below.

### Integrating Consumer Energy Resources

Consumer Energy Resources (CER) and Distributed Energy Resources (DER) will play a critically important role in Australia's energy transformation, helping to reduce overall system costs, improve reliability, and achieve a secure, low-emission energy supply for all. Such resources include home batteries, solar PV systems, electric vehicles and controllable appliances such as hot water heaters and heat pumps.

CER can reduce carbon emissions by directly replacing utility-scale fossil fuel generators, electrifying fossil fuel services such as heating and transport, and helping to better integrate renewables.

If CER are integrated well, the power system will operate more smoothly, and consumers and industry will enjoy the benefits of least-cost supply.<sup>8</sup> The benefits for consumers:

- with CER are improved flexibility in how and when they use their CER so they can save money within their own home or business, and be rewarded for their CER participation in the power system (financial incentive)
- without CER are better energy use and savings on bills as system costs are reduced, benefiting from a lower-emission energy system.

Effective CER integration does not require all consumers to participate in a market/CER program. However, we need to have the market arrangements in place to support those who are currently participating and wish to participate in the future.

A CER Taskforce convened by Energy Ministers has developed and published an implementation plan in the form of a 'CER Roadmap' that defines and will help drive the necessary CER integration actions.<sup>9</sup>

The AEMC is directly contributing by driving keystone CER reforms under the roadmap that will help pave the way for innovation in the market. Our recent reforms include:

<sup>&</sup>lt;sup>7</sup> AEMC, <u>Residential Electricity Price Trends 2024</u>, Nov 2024, p 19.

<sup>&</sup>lt;sup>8</sup> A range of studies have estimated the net benefit of effective integration and coordination of CER to be between \$1 billion and \$6.3 billion by 2030-2040 (CSIRO and Baringa consulting, 2019; ARENA, NERA consulting, 2022)

<sup>&</sup>lt;sup>9</sup> DCCEW, <u>Consumer Energy Resources Taskforce Overview</u>

- Integrating price-responsive resources in the NEM rule change,<sup>10</sup> which makes price-responsive CER, such as batteries, more visible to the market operator.
- Unlocking CER benefits through flexible trading rule change,<sup>11</sup> which allows customers to use meters on their devices as a separate metering point, allowing for more innovative electricity service offerings.
- AEMC CER technical standards review.<sup>12</sup> Our technical standards review was based on a view that large-scale non-compliance with CER technical standards will have a significant impact on all electricity users as it may threaten power system security and reduce the amount of CER that can be connected to the grid.
- Accelerating the rollout of smart meters rule change, which will accelerate the transition to a digital, real-time grid by requiring a full roll-out of smart meters by 2030.<sup>13</sup>
- AEMC pricing review, which is looking at how to create the framework to ensure that customers receive better retail products and services that reduce costs for all customers.<sup>14</sup>
- *Real-time data for consumers* rule change, which is investigating how to best leverage real-time smart-meter data for customers.<sup>15</sup>
- Other related reforms, including work AEMC staff are undertaking for the CER Taskforce on the Distribution system and market operation review.

It is critical that the reforms under the CER Taskforce and ECMC National CER Roadmap are delivered to achieve the intended outcomes. It is also important that there is a commitment to the timelines and ongoing coordination of the roadmap.

We continue to advocate for foundational pieces to be implemented as no-regrets options:

- 1. Establishing nationally consistent standards and the national regulatory framework for CER to set and enforce technical standards (including a national regulator) (led by CER Taskforce).
- 2. Implementing the recommendations of the distribution system and market operation working group (led by CER Taskforce).
- 3. Establishing appropriate consumer protections for CER, which is important to enable an innovative retail energy service market (ECMC, led by the Department of Climate Change, Energy, the Environment and Water, along with state and territory governments).<sup>16</sup>

### **Electric Vehicle Charging**

In addition to supporting CER integration in general, the AEMC has identified a gap in the electrification of transport. The transport sector is currently Australia's third-largest source of emissions, at 21 per cent of total emissions.<sup>17</sup> Electrification of transport is key

<sup>&</sup>lt;sup>10</sup> AEMC, <u>Integrating price-responsiveness resources into the NEM</u>, Dec 2024.

<sup>&</sup>lt;sup>11</sup> AEMC, <u>Unlocking CER benefits through flexible trading</u>, Aug 2024.

<sup>&</sup>lt;sup>12</sup> AEMC, <u>Review into consumer energy resources technical standards</u>, Sep 2023.

<sup>&</sup>lt;sup>13</sup> AEMC, <u>Accelerating smart meter deployment</u>, Nov 2024.

<sup>&</sup>lt;sup>14</sup> AEMC, <u>Pricing Review: Electricity pricing for a consumer-driven future</u>, Jul 2024.

<sup>&</sup>lt;sup>15</sup>AEMC, <u>Real-time data for consumers</u>, Jan 2025.

<sup>&</sup>lt;sup>16</sup> https://consult.dcceew.gov.au/better-energy-customer-experiences

<sup>&</sup>lt;sup>17</sup> https://www.infrastructure.gov.au/infrastructure-transport-vehicles/towards-net-zero-transport-and-infrastructure

to achieving net zero. As well as reducing emissions, the benefits of increased EV uptake include improved reliability, enhanced grid management and lower overall power system costs.

The availability of EV charging infrastructure can be a barrier to increased EV uptake. Charging infrastructure needs to be conveniently located and equitably distributed to support the necessary acceleration of EV uptake. A collaborative approach is needed between governments (including local government), market bodies, and industry for a faster and more coordinated rollout of publicly accessible EV charging infrastructure.

Kerbside, destination, and highway fast charging are to a large degree separate markets, and the optimal policies for supporting infrastructure roll-out are likely to vary across each use case. The preferred approach would also consider who bears the cost of charging infrastructure. We recognise that EV owners and users directly benefit from charger availability. We also note that all consumers would benefit to some extent from increased EV uptake through grid coordination that could reduce system costs and form a lower emissions energy system.

# Q3: Are there any duplicative emissions-reduction policies in the industrial, electricity and transport sectors which could be streamlined?

Please see response in question 1.

#### Policy area 2: Speed up approvals for new energy infrastructure

### Q4: Are planning and approvals processes for large energy infrastructure taking too long? If so, what causes the most delay?

The AEMC has conducted several recent reviews and is progressing priority reforms to address challenges in delivering large energy infrastructure. In response to this question, we have outlined some of the key findings from this recent work, which relates to the planning, approval and connection of new generation.<sup>18</sup> The key points are as follows:

- The time it takes to connect new generation to the market can be a barrier to entry for new investors. Reducing this as much as practicable supports competition and least-cost energy for consumers.
- Planning approvals are only one of several barriers that can be addressed to reduce project timelines.
- Social licence concerns can also be addressed alongside the planning process. For example, through early engagement with the community before projects are 'locked in', maintaining multiple channels for community input to develop stronger partnerships, and to consider local benefit-sharing arrangements.
- Barriers to planning, approval, construction and connection processes can have a cumulative impact that increases investor caution, reduces the ability to access finance, and raises the hurdle rate that investors require to proceed with new projects.

We have an active workstream making and considering rules that seek to lower connection costs and promote faster connections. This includes work to make the NEM technical

<sup>&</sup>lt;sup>18</sup> AEMC has published multiple reviews on access standards and consideration on the ISP, including <u>Improving the NEM access standards – Package 1</u> and <u>Better integration of gas and community sentiment</u> <u>into the ISP</u>.

access standards fit for purpose in a world where inverter-based resources are more prevalent. This is discussed further below.

### Review of the Form of the Reliability Standard

In its recent *Review of the form of the reliability standard*, the AEMC's Reliability Panel noted that delays that result in deviations from the anticipated market development forecast in the Integrated System Plan (ISP) increase the challenges and difficulties for AEMO in managing the system. There are several programs underway to support timely project delivery. However, it is recognised that Governments have a role to play in working to address the non-market barriers to the delivery of the ISP, including:

- supply chain constraints
- workforce training and upskilling
- planning and environmental approvals
- social licence

#### Grid connections for new generation and access standards

Grid connections and access standards from the basis of a key work stream for the AEMC.

This includes completion of a rule change (*Improving the National Electricity Market (NEM*) *Access Standards – Package 1*) on 22 May 2025 to improve the technical requirements for connection to the NEM.<sup>19</sup> This is the most significant modernisation of the connection standards since 2018.

The finalised Package 1 reforms will make the grid connection process more efficient by:

- adding more prescription and clarity to technical requirements, reducing costly negotiations
- better accommodating inverter-based resources like solar, wind and batteries
- broadening application to synchronous condensers and high voltage direct current (HVDC) links needed for system stability.

The finalised Package 1 reforms will commence on 21 August 2025, with transitional provisions to minimise disruptions to ongoing connection applications.

The improved access standards will contribute to lowering overall connection costs for most applicants. They will also reduce the burden on network service providers (NSPs) and AEMO and simplify their function by streamlining the connections process, providing clarity and reducing the need for negotiations.

The Commission is currently working on a second rule change (*Improving the NEM Access Standards – Package 2*) which seeks to address the projected growth of large-scale electricity users, particularly data centres, driven by AI development.

These rule changes are in response to a review undertaken by AEMO. Under clause 5.2.6A of the NER,<sup>20</sup> AEMO is required to conduct a review of the NEM access standards at least once every five years. AEMO conducted its first such review in 2022-23, undertaking extensive public consultation (three rounds), and identified numerous opportunities to improve the existing access standards and their application.

#### Electricity system strength

The Commission also understands that system security issues, most notably in relation to system strength, are manifesting in the NEM in the near-term as synchronous generators retire. Recent reforms led by the AEMC and AEMO have sought to more proactively

<sup>&</sup>lt;sup>19</sup>AEMC, <u>Improving the NEM access standards - Package 1</u>, May 2025.

<sup>&</sup>lt;sup>20</sup> Clause 5.2.6A of the NER.

enhance market signals to support investment in critical security services.<sup>21</sup> We made rules that sought to introduce efficient management of system strength in the power system, which are still being implemented. We consider that this framework and other ongoing work programs in the system security space should be allowed to play out before we make any further significant regulatory framework changes.

However, we recognise the fact that the impending retirement of thermal synchronous generators will materially reduce the availability of the critical services that ensure the power system remains within its technical operating envelope.

Proven and emerging technologies (such as synchronous condensers or grid-forming inverters, respectively) can deliver the required system needs. However, the deployment of proven technologies has been slow in practice, while that of emerging technologies is limited by performance uncertainty and insufficient operational experience, in the NEM and worldwide.

We believe that reforms to the existing system security frameworks could be made to support the timely delivery of essential system services in the medium to longer term. We are closely collaborating with AEMO to explore and progress several reform options, which we would be happy to discuss with the Productivity Commission.

Further, the NEM Wholesale Market Settings Review is also investigating how better coordinating incremental security and reliability investments could result in more efficient and timely outcomes for customers by minimising the risk of duplicated investments.

#### New transmission projects and implementing TPIR

The AEMC looked at ways to improve the economic assessment framework for actionable ISP projects in our *Transmission planning and investment review (TPIR)*. We recommended two reforms. The first reform focuses on incentivising more and earlier works to be undertaken to derisk project delivery. This reform was delivered with our *Bringing early works forward to improve transmission planning* rule change in 2024.<sup>22</sup>

The second reform recommends that the ISP become the centralised process for assessing the cumulative benefits of a transmission project. The RIT-T (or a new process) would then become a more focused process of undertaking a least-cost assessment for a credible option. This would include detailed consideration of environmental factors, land use and community sentiment. These changes could reduce the time taken to complete the economic assessment process and therefore deliver actionable ISPs to assist in the transition to Net Zero.

We noted that we plan to consider this further reform in our upcoming review of the ISP (due by 1 July 2027). We would also welcome a rule change in this area.

#### Gas projects

The AEMC has not received any information that the National Gas Rules (NGR) include provisions that slow or prevent the efficient investment in gas infrastructure. Instead, the NGR provides some specific support for new pipeline infrastructure. The economic regulatory framework that applies to gas pipelines includes the ability for proponents of new projects to seek an exemption from the fullest form of regulation for a specified period. This mechanism provides regulatory certainty for new pipelines, supporting new investments.

<sup>&</sup>lt;sup>21</sup> The <u>Integrating Security Frameworks (ISF)</u> and <u>system strength rules</u> sought to enable proactive and longterm Transmission Network Service Provider (TNSP) investment by recognising the asymmetry of delivery risks versus increased costs.

<sup>&</sup>lt;sup>22</sup> AEMC, <u>Bringing early works forward to improve transmission planning</u>, September 2024.

#### Planning and approvals processes and investment signals

It is not just the time it takes to approve new projects, but uncertainty over timing, the likelihood of success and the interdependence of multiple approval processes, that can 'chill' the signal for new investment. As an example, a recent project that was awarded a Commonwealth Capacity Investment Scheme (CIS) contract was not awarded NSW Renewable Energy Zone (REZ) access rights.<sup>23</sup> The CIS contract loses value as a result. This is particularly problematic if policymakers are simultaneously seeking certainty that renewable generation is in place before the exit of coal generation, delivering the least cost to consumers and taxpayers, while significant uncertainties remain within the planning and approvals processes.

## Q5: How can planning and approvals processes be sped up without unduly compromising regulatory standards?

Please see response to Q4.

# Q6: Should clean energy projects be treated differently to other projects for the purpose of environmental and other approvals? If so, how?

Over the past four years, jurisdictions have introduced regulations to enable the development of REZs. Jurisdictional REZ frameworks cover matters such as network planning and investment (including investment tests), economic regulation of network projects delivered under the REZ framework, access schemes (including access fees) and connection process innovations.<sup>24</sup> The AEMC undertook a comparative assessment of the jurisdictional REZ frameworks to understand their features. One of the key findings was that there are interactions between the national and jurisdictional frameworks. Taking network planning as an example:

- Each jurisdiction has appointed its own state transmission infrastructure planner, which is separate from the local Transmission Network Service Provider (TNSP).
- Jurisdictional infrastructure planners play a similar role to AEMO on the national level.
- Each jurisdiction is producing a statewide strategic network plan.
- Projects identified in the ISP may be brought into jurisdictional planning frameworks.

In our view, these interactions between the national and jurisdictional frameworks require further consideration, for example, in relation to the integration of state and national planning documents and the application of jurisdictional vs. national processes to different types of projects. We currently plan to consider these questions in our ISP review.

## Q7: What can be done to build local community support for new energy infrastructure projects?

Building community support for new energy infrastructure is important to ensure projects are delivered efficiently. While this is not an area we specialise in, some approaches that have consistently come through in our work and appear helpful include:

• Improved land use mapping and transparency: clearer land use mapping and better communication about why certain locations are chosen for new projects may help communities understand the rationale behind decisions.

<sup>&</sup>lt;sup>23</sup> For more information on CIS: <u>https://www.dcceew.gov.au/energy/renewable/capacity-investment-scheme</u>.

<sup>&</sup>lt;sup>24</sup> AEMC, <u>Jurisdictional REZ frameworks review</u>, December 2024

- Earlier community engagement: engaging with communities early can help identify local concerns and priorities, and address potential impacts.
- Creating local benefits where possible: considering how projects might leave a lasting positive legacy such as designing worker accommodation that can be repurposed for community use may support greater acceptance.

We identified many of these issues in *TPIR* and identified that clear, early and consistent community engagement was important for major transmission projects.<sup>25</sup>

Our *Enhancing community engagement in transmission building* rule change improved engagement with communities by clarifying how transmission network service providers are required to engage with stakeholders who are reasonably expected to be affected by the development of actionable integrated system plan projects. It also clarified that these stakeholders should be engaged with when transmission network businesses are undertaking their regulatory investment tests and introduced wider community engagement expectations.<sup>26</sup>

## Q8: Please outline any evidence showing the productivity benefits of faster approvals for energy projects.

In our 2024 Residential Price Trends report, we looked at the outlook for residential electricity prices over the next 10 years, using AEMO's ISP Step Change as a base case. To shed light on several risks and opportunities to the outlook – including the impact of delays to energy projects – we ran a number of scenarios and modelled their impact on electricity prices over the 10-year window. These scenarios included:

- Wind and transmission delays: The connection of new wind farm builds in Renewable Energy Zones, and selected transmission projects, are delayed by 12 months.
- Hydro and battery storage delays: 12-month delays to the majority of new grid-scale battery projects, and the Snowy 2.0 and the Borumba Hydro Schemes.

Figure 1 below shows that the wind and transmission connection delay scenario had the most significant price impact, demonstrating the critical role of wind in diversifying the electricity supply portfolio, as well as the importance of timely and efficient investment in connecting renewable generation and transmission to the market.





<sup>&</sup>lt;sup>25</sup> AEMC, <u>Transmission Planning and Investment Review</u>, May 2023

<sup>&</sup>lt;sup>26</sup> AEMC, <u>Enhancing community engagement in transmission building</u>, November 2023.

The benefits of faster approvals go beyond least-cost electricity prices (and lower emissions). Our Price Trends report also showed that electrification is projected to reduce average household energy costs by nearly \$1,000 per year, or by almost 20% of current spending on energy, by the end of the 10-year outlook under our base case. Higher prices and increased volatility caused by connection delays may have a secondary impact on consumers, by slowing down the electrification of transport and heating and reducing these overall energy cost savings.



#### Figure 2.Timely approvals support household electrification and least-cost energy

#### Policy area 3: Encourage adaptation by addressing barriers to private investment

Q9: What are the barriers and enablers impacting decisions by owner-occupiers, landlords and developers about how housing is built and updated over time so that it is resilient to the effects of climate change?

The future climate is likely to drive more extreme weather. Electricity infrastructure is often exposed to weather, and consequently, many of the blackouts and outages experienced by Australian households and businesses are weather-related.

In May this year, the AEMC made a rule change on *Including distribution network resilience in the National Electricity Rules*,<sup>27</sup> establishing a formal framework for resilience that includes:

- New resilience expenditure factors that Distribution Network Service Providers (DNSPs) and the Australian Energy Regulator (AER) must consider in developing and assessing expenditure proposals.
- A requirement for the AER to develop, publish, and maintain formal Network Resilience Guidelines.
- New annual planning and reporting requirements to improve the transparency and accountability of distribution network performance, and outcomes for consumers,

<sup>&</sup>lt;sup>27</sup> AEMC, <u>Including distribution network resilience in the National Electricity Rules</u>, May 2025.

in severe weather events.

The increased regulatory clarity will help distribution networks to more effectively plan for extreme weather and invest in measures that reduce the risk of power outages while helping customers in need. These could include adaptation investments to strengthen poles and wires in high-risk communities, relocate infrastructure in flood-prone areas, or increase the number of mobile generators and substations that can keep the lights on when the power supply is disrupted.

Apart from utility-led solutions, households and businesses can also take actions to ensure that they are more resilient to extreme weather and other causes of electricity outages. We are seeing growth in, and government policy supporting, the installation of behind-the-meter energy storage. Alongside lowering household energy costs, batteries can provide households with a more resilient electricity supply. We consider that there should be options for more households and businesses, both owner-occupied and renters, to benefit from energy storage. Two technologies that could support this are:

- Plug-in solar and batteries we understand that in 2024, over 400,000 'balcony' solar systems were installed in Germany.<sup>28</sup> These devices are lower cost and portable, allowing renters to own, install and take with them when they move. The current Australian standards do not allow plug-in solar and battery systems.
- Vehicle to home the CSIRO forecast that up to 97% of light passenger vehicles will be electric by 2050.<sup>29</sup> If this forecast is achieved, soon most Australian households and businesses will have access to an electric vehicle. It is currently expensive and difficult to set up vehicle-to-home systems. Making this easy and affordable could provide greater resilience to the majority of Australian households with energy storage in their electric vehicles.

Australian regulations and standards should aim to reduce the barriers to plug-in batteries and electric vehicles, where it can be achieved safely. Minimising the restrictions on what safe products are available will allow competitive pressures to deliver the products customers want at the prices they are willing to pay.

### Q10: What information do people need to make decisions about where to live, how to build and how to upgrade their homes to appropriately factor in climate change?

The AEMC conducted internal research on the potential impacts of climate change on energy infrastructure and how energy systems may need to adapt. We identified that key risk factors for the electricity system are frequent heat waves, high winds in South East and North West Australia, and increased bushfire risks associated with a warmer, more extreme climate.

As noted in response to Question 9, batteries (including batteries in electric vehicles) are emerging as the most important resilience electricity supply technology for households. However, it is not clear that people consider the reliability of their electricity supply when deciding where to live or whether to invest in battery back-up. Improving the accessibility of historic network reliability and exposure of supply infrastructure could help people better understand the electricity supply risks where they are looking to move, build or

<sup>&</sup>lt;sup>28</sup> Bundesnetzagentur, <u>Growth in renewable energy in 2024</u>, Media release, January 2025

<sup>&</sup>lt;sup>29</sup> CSIRO, <u>Unlocking electric vehicles</u>, September 2024

install battery back-up.

# Q11: What are the most cost-effective retrofitting options for improving the resilience of Australia's existing housing stock? What are their costs and benefits?

No comment.

# Q12: What role might minimum standards play in ensuring the resilience of Australia's housing stock?

Well-insulated homes can act as a thermal battery, allowing air-conditioners and electric space heaters to operate less frequently to maintain a given temperature. This would allow them greater opportunity to be orchestrated and help integrate variable renewable generation and better use network assets. This may reduce the need for investment in network (distribution or transmission) assets or alleviate pressure on the energy system while these investments are being delivered. The *AEMC Strategic Narrative* envisions a future energy system with energy-efficient homes and businesses that help to manage demand, support least-cost energy, and make the best use of existing resources.<sup>30</sup> However, we note that these are largely policy, standards or regulatory considerations for jurisdictions.

Q13: The impacts of climate change are being factored into the regulation of where and how houses are built in different ways around Australia. What does leading practice look like? Where is there room for improvement? Are there lessons we can learn from other countries?

No comment.

The AEMC would be happy to provide more information on any matters outlined in this submission that may assist the Productivity Commission.

Yours sincerely

Andrew Lewis Acting Chief Executive Australian Energy Market Commission

<sup>&</sup>lt;sup>30</sup> AEMC, <u>A consumer-focused net zero energy system</u>, September 2024