

11 February 2025

Andrew Turley
Group Manager, Forecasting
Australian Energy Market Operator
Submitted via email: forecasting.planning@aemo.com.au

Dear Mr Turley

Ausgrid submission to the Draft 2025 Inputs, Assumptions and Scenarios Report Stage 1

Ausgrid welcomes the opportunity to provide this submission to the Australian Energy Market Operator (**AEMO**) on its Draft 2025 Inputs, Assumptions and Scenarios Report Stage One (**Draft IASR**).

Ausgrid operates the electricity distribution network that powers the homes and businesses of more than 4 million Australians living and working in an area that covers over 22,000 square kilometres from the Sydney CBD to the Upper Hunter in New South Wales. Ausgrid appreciates the engagement with distribution network service providers (**DNSPs**) carried out to date by AEMO, in particular, via the Forecasting Reference Group and the DNSP/AEMO Hosting Capacity Working Group. We welcome the opportunity for continued engagement with AEMO through these forums.

Feedback on select themes in this Draft IASR consultation round is in **Attachment A**, with a focus on:

- Additional scenario selection and relevant sensitivity analysis AEMO should undertake, particularly in light of a range of uncertainties relating to future demand and supply (e.g. datacentre growth, managing the variability of renewable energy).
- AEMO's operational and commercial modelling and the need for more detailed modelling to consider the impact and role of distribution networks.

Ausgrid notes AEMO intends to consult on the Draft 2025 IASR Stage 2 shortly, which we understand will further consider distribution capabilities, electrification and gas opportunities. Ausgrid has identified a range of opportunities at lower voltage levels that can leverage existing distribution capabilities and support the energy transition. We look forward to engaging further with AEMO as part of the Stage 2 consultation on the Draft 2025 IASR on the role DNSPs can play in the energy transition. If you would like to discuss our submission in further detail, please contact Saskia Peters, Senior Policy Advisor, at Saskia.Peters@ausgrid.com.au.

Regards,



Junayd Hollis
Group Executive, Customer Assets and Digital

Attachment A: Detailed Ausgrid Response to Draft IASR Stage 1 consultation

Scenario selection and relevant sensitivity analysis

Ausgrid is broadly comfortable with the scenarios proposed by AEMO. We agree there is merit in retaining consistency from one Integrated System Plan (**ISP**) to the next, and so preserving scenarios with similar objectives and outcomes is useful. With regard to the *Green Energy* scenarios, Ausgrid agrees that it is appropriate for AEMO to reduce expected levels of hydrogen activity. Recent developments in the hydrogen sector suggest that the Green Energy Industries scenario should be the main scenario tested, with Green Energy Exports retained as a high-end sensitivity.

There remains considerable uncertainty about developments in the hydrogen market and key parameters including levels of competition, new infrastructure requirements and technology advancement, which will impact how quickly hydrogen becomes commercially viable. However, these issues may be better addressed through the assignment of likelihood and weightings to the scenarios via the Delphi Panel process, than at the scenario design stage.

Ausgrid recommends exploring the following other key topics with sensitivity analysis in the ISP:

- The rate of decarbonisation of household and business gas use (high/low sensitivities) including sensitivities around electricity vs. non-electricity decarbonisation with linkages to the Green Energy scenario. Business electrification pathways are highly uncertain and variable. Sensitivities applied to the timing, pace and scale of decarbonisation by dimensions such as industry type, heat processes, economics, available and future technology, could allow testing of the robustness of the core scenarios against this highly uncertain demand driver.
- The rate of electric vehicle (**EV**) uptake (high/low sensitivities). We suggest additional EV sensitivities to explore the potential for technology improvements such as battery life, availability of public charging and consumer preferences for destination vs. enroute charging are considered.
- The rate of vehicle-to-grid (**V2G**) capability within EV uptake. This sensitivity analysis should consider factors such as progress relating to Australian Standards developed for V2G, and sensitivities around how V2G and vehicle to home charging could interact with behind-the-meter battery uptake forecasts, and the upfront and ongoing costs of this technology. Historically, the national take up of new technologies has taken longer than anticipated due to the need to establish appropriate regulation and protections (e.g. smart meter deployment). We note the timing and scale of V2G is likely to have a material impact for DNSPs in how distribution networks are planned and operated.
- The rate of energy efficiency improvement in residential and commercial buildings, which takes into account a slow improvement sensitivity.
- Relative deployment of large-scale vs. small-scale distribution-connected or behind-the-meter storage.
- Rate of demand increase from datacentre load and their growth drivers. In particular these uncertainties include:
 - Global trends and the geographic concentration of datacentre uses and regional competition for the datacentre market.
 - Different business models have evolved to meet the growing datacentre market, such as commercial property developers who buy then on-sell “datacentre-ready” sites, with

datacentre operators themselves then seeking connection to the network. These business models are creating greater uncertainty around the timing of datacentre developments.

- A datacentre's "requested" load vs. their actual load, and their rate of ramp-up.

Ausgrid would welcome the opportunity to continue to work closely with AEMO to develop a consistent methodology for forecasting datacentres given how potentially large and impactful they are for our network.

- Supply chain constraints on major transmission build (including transmission infrastructure required for Renewable Energy Zones (**REZs**)), which should iterate on previous models used by AEMO to take into account recent developments in the cost and progress of these builds. We also suggest AEMO consider the complexity of construction in its cost projections. For example, increased cost contingencies should be included in the cost projections for greenfield geographically diverse builds, compared to upgrades to existing network infrastructure. We also support AEMO's consideration of the impact of social licence factors on the timing and cost of REZs and note AEMO's Consumer and Community Reference Group will assist in advising on these impacts. Where possible, AEMO should consider the local circumstances of each REZ project as social licence factors will differ depending on the needs of each community.
- The variability of renewable energy, including taking into account times of low renewable energy output and its coincidence with high demand events.

Ausgrid supports AEMO expanding its operational and commercial models

We note AEMO's ISP is intended as a whole-of system plan whose primary objective is to optimise the efficient development of the power system for the long-term interests of the consumers. The focus of the ISP to date has been on the generation, firming and transmission investment needed to support the transition of the National Electricity Market (**NEM**) to meet future energy needs. However, we note and welcome AEMO's acknowledgement in the 2024 ISP that distribution will play a major role in Australia's electricity system transition.

As it begins preparations for its fourth iteration of the ISP, Ausgrid strongly encourages AEMO to strengthen its understanding of distribution networks, particularly as distribution networks are the source of NEM load and will host a growing amount of generation and storage through consumer and distributed energy resources. A more detailed consideration of the impact and role of distribution networks in the energy transition through an expansion of AEMO's operational and commercial modelling, will support more efficient investment decision making across the energy sector and a lower cost and impact for customers of the energy transition.

Ideally, AEMO's operational and commercial visibility should extend down below the bulk supply point and into the sub-transmission network. We recognise this will impose additional costs on AEMO and will be challenging for the 2026 ISP. To support the transition to this more detailed modelling, we recommend AEMO prioritise expanding its regional model to improve visibility of the NEM's major load centres to ensure that the opportunities and implications of efficiently managing the rapid uptake of customer and distributed energy resources is captured.

Ausgrid and Endeavor Energy's distribution network areas expand across Sydney, Newcastle and Wollongong. Together, these cities represent approximately 46% (12.8 GW) of the NEM's average total

demand (23.7 GW)¹. Despite this, the ISP treats these three regions as one single regional node, which significantly limits the ability for the impact of these regions to be assessed in the ISP. The size of the load centres in the Sydney, Newcastle and Wollongong regions is too significant - contributing well over 20% of Australia's GDP - to not also have more detailed consideration in the ISP. While Ausgrid will continue to participate in joint planning exercises with Transgrid, we note it is difficult to address the constraints within this node under the current planning arrangements.

This lack of visibility of distribution networks will impact AEMO's ability to strategically consider load and distributed resources and its consideration of the development of REZs. For example, on 18 December 2024, Ausgrid was formerly established as the preferred Network Operator for the Hunter Central Coast REZ in New South Wales. In this role, we will deliver the backbone infrastructure needed to connect at least 1 GW of new renewable energy by 2028, powering around one million homes and setting up these regions to take advantage of the energy transition through increased economic and employment opportunities. Ausgrid will deliver this project through the upgrading of approximately 85km of existing sub-transmission (66kV and 132kV) lines, with connection assets between 66-132kV. We note the Hunter Central Coast REZ is currently within a single region considered by AEMO, almost completely limiting appropriate consideration of this type of REZ investment in the ISP modelling for this region.

We are working with the NSW DNSPs to create a 'Distribution ISP', to identify opportunities on the distribution network and quantify their benefits to consumers. This will add detail to how distribution network capabilities can support energy system planning activities. We are happy to share how we are approaching this work to inform AEMO's assessment of how distribution networks can support the energy transition.

We are also developing a 'Distributed Energy Zone' sandbox trial for consideration by the Australian Energy Regulator (**AER**). The Distributed Energy Zone (**DEZ**) is an accelerated deployment of both supply and demand Distributed/Consumer Energy Resources (**DER/CER**) in a local network area, planned and funded by Ausgrid. The DEZ will pool surplus solar generated on available rooftops in the zone to redistribute during the evening peak as a cheap source of power for all customers. The storage used to do this will be strategically placed across the network.

Our hypothesis is that this DNSP-coordinated approach will be able to extract more value from assets employed, lowering unit rate energy costs for all customers in the zone, not just those with CER. This will decouple the need to personally own DER to share in its benefits and support a faster realisation of national decarbonisation targets.

Expanding AEMO's operational model to reliably show networks below 330kV will be an essential foundation to supporting these distribution level opportunities, which will also enable contingency studies on inter-related constraints across multiple DEZs. More detailed consideration of the impact and opportunities available on distribution networks will enable AEMO to identify ways the energy transition can be delivered for consumers in a more accessible, faster and cheaper way, with a lower community impact.

¹ AEMO Quarterly Energy Dynamics report for Q4 2024