August 2025

Review report – 2025 Inputs, Assumptions and Scenarios Report

Integrated System Plan

The Australian Energy Market Operator (AEMO) is responsible for publishing the Integrated System Plan (ISP) every 2 years and an ISP methodology at least every 4 years. The ISP is a forward-looking roadmap for eastern Australia's power system that sets out a whole of system plan for the efficient investment in, operation and use of electricity services for the long-term interest of consumers. The ISP identifies the needed generation, storage and network investments to transition to net zero by 2050 through current policy settings and deliver significant net market benefits for consumers.

The Inputs, Assumptions and Scenarios Report (IASR) sets out the inputs and assumptions used in AEMO's forecasting and planning publications for the National Electricity Market (NEM) and is a crucial input for the modelling and cost-benefit analysis used to develop the ISP. In preparing an ISP, AEMO identifies a large number of inputs for its model. These inputs are forecasts over the 20 year ISP planning horizon, and use different trajectories to match different scenarios. The scenarios, developed through a process that includes stakeholder consultation, are intended to serve as likely potential future states of the world for planning purposes. These scenarios should be informed by reasonable assumptions associated with future economic, technological and energy market developments.

Our review role in the ISP development process

The Australian Energy Regulator's (AER) role is to scrutinise ISP documents making certain AEMO's processes are robust, credible and transparent. The requirements and considerations that the AER places on AEMO's forecasting processes are specified in our Forecasting Best Practice (FBP) and Cost Benefit Analysis (CBA) guidelines.

The AER's forecasting guidelines require AEMO's forecasting practices and processes to have regard to the following principles:

- forecasts should be as accurate as possible, based on comprehensive information and prepared in an unbiased manner
- the basic inputs, assumptions and methodology that underpin forecasts should be disclosed
- stakeholders should have as much opportunity to engage as is practicable, through effective consultation and access to documents and information.

Our CBA guidelines aim to ensure that AEMO has, in the IASR, identified all the necessary inputs and assumptions to facilitate the modelling of an accurate and representative ISP.[1]

Further information on the AER's role in the ISP development process can be found here.

Transparency Review

The National Electricity Rules (NER) require the AER to review the transparency of inputs and assumptions determined by AEMO in the IASR for use in developing the ISP.[2]

Our Transparency Review process is not intended to assess the merits of AEMO's decisions or contents of the IASR nor is it an assessment of AEMO's compliance with requirements in the NER or the guidelines. Rather, our role through the Transparency Review process is to focus on the adequacy of AEMO's explanations of key inputs and assumptions and how these have contributed to the content of the IASR. We will undertake a similar process and release a transparency review of AEMO's draft ISP following its release.[3]

As AEMO published its 2025 IASR on 31 July 2025 we are required to publish this transparency review by 31 August 2025.[4]

1 AER – Cost Benefit Analysis guidelines, Nov 2024, p. 65
2 NER, cl. 5.22.9.
3 NER, cl. 5.22.13.
4 NER, cl. 5.22.9(a).

Rule requirements

The NER require the AER to provide our views on the adequacy of AEMO's explanations of:[5]

- how it has derived key inputs and assumptions
- how inputs and assumptions have changed since the previous ISP
- if key inputs and assumptions are based on verifiable sources, or that stakeholders had adequate opportunity to propose alternatives.

The NER also require AEMO to take the following actions to address any issues identified in this IASR review report:[6]

- provide further explanatory material in an addendum to the IASR
- consult on these issues in the draft ISP.

Monitoring and compliance

The AER has a separate role in monitoring the ISP's compliance with our FBP and CBA guidelines. AEMO is required to submit a compliance report outlining how its IASR has complied with our CBA and FBP guidelines. However, our transparency review of the IASR precedes our evaluation of that compliance report. Further, findings in this report have no interaction with our compliance monitoring process and are made independently of that process.

Our review strategy

We approach our role in reviewing the IASR in 3 stages.

Firstly, in order to support the quality of AEMO's process and reports, we raise issues through regular engagement with AEMO throughout the development of the ISP. AEMO facilitates active AER involvement when developing the IASR, consistent with the FBP Guidelines.[7] Our active involvement improves our knowledge of the inputs and consultation that AEMO has undertaken and allow us to see how it has properly consulted and considered stakeholder input.

Secondly, following finalisation of the IASR we review it systematically with reference to the rule requirements and any issues that have arisen in our previous engagement with AEMO. We have a particular focus on issues where stakeholders have raised a need for greater transparency as well as new and significantly changed inputs and assumptions.

Thirdly, we summarise the outcomes of our systematic review in the transparency report. We then monitor how AEMO responds to the issues raised in developing the draft ISP and continue our involvement in the ISP process.

Our assessment

We consider the 2025 IASR has set out the basis for key inputs, assumptions and scenarios to be used in the draft and final 2026 ISP. The majority of AEMO's chosen inputs and assumptions have been adequately explained and are based on verifiable sources or have been the subject of adequate stakeholder consultation. AEMO provided opportunities for stakeholders to submit feedback and demonstrated how it has responded to feedback, and how this feedback has influenced the inputs and assumptions.

Our assessment in this report highlights:

- parts of the report that fully explain new or complex subjects, providing improved transparency
- identified issues – inputs or assumptions in the IASR that have not met the requirements of the Rules as outlined above
- areas where AEMO should focus to support transparency in the draft ISP.

Improvements in transparency

We have noted an improvement in the accessibility and quality of key explanations in the 2025 IASR compared to previous similar reports. We also note the extensive and tailored consultation process that AEMO hosted throughout its development of the 2025 IASR. We consider these elements provide a high general

5 NER, cl. 5.22.9(a).
6 NER, cl. 5.22.9(c).
7 AER, Forecasting best practice guidelines, Australian Energy Regulator, August 2020, p. 7.

level of transparency for the inputs and assumptions contained in the 2025 IASR.

Policy settings

AEMO, over the development of the 2025 IASR, has improved the explanation of how and when policies are considered for inclusion and how they impact the ISP compared to previous reports. We think this additional explanation provides greater clarity and accessibility of this important section of the IASR. AEMO has also added section 3.1.9[8] to the IASR which clearly sets out the changes in policy inclusions compared to the 2024 ISP, addressing a potential source of confusion.

Technology specific weighted average cost of capital

In Section 3.7[9] of the Stage 1 and 2 drafts of the IASR, AEMO reported a change in how they intended to model the weighted-average cost of capital (WACC) of different technologies. The final IASR[10] presents information to clarify in greater detail the reasoning behind the change to technology specific WACCs from a core 7% that was used in the 2024 ISP. It also contains a broader discussion of how these WACCs are intended to be used in the ISP and how they will interact with the discount rate. We consider the additional content and detail included in the final 2025 IASR provides transparency on this significant change since the 2024 ISP.

Hydrogen production forecasts

Feedback received from stakeholder submissions to the Stage 1 draft IASR identified that the explanation of changes in forecast production of hydrogen in the ISP was not adequately explained. Further, it is important that the effect of this change in hydrogen production forecasts flows through to the explanation of the identification of scenarios, especially in the case of the Accelerated Transition (previously, the 'green energy') scenario. The final IASR explains in greater detail throughout the report the sources and reasons for the decrease in forecast hydrogen production and how it is modelled, particularly in the Accelerated Transition scenario. This is a good example of how transparency has been improved as a result of consultation in the development of the IASR.

Multisectoral modelling

In submissions on the Stage 2 draft IASR, stakeholders noted that the expected supporting consultant report on multisectoral modelling had not been released. This report is important because it determines the way many of the inputs and assumptions are converted into inputs for ISP modelling. Despite the delay in this report being available, AEMO subsequently published the full report, presented it to the Forecasting Reference Group and provided stakeholders with an opportunity to provide feedback. This approach by AEMO resolved a potential issue and satisfies the transparency requirements outlined above.

Outstanding issues in the IASR

This section identifies issues for which AEMO must, as soon as practicable, provide further explanatory information in an addendum to the IASR. AEMO must also consult on these issues in the draft 2026 ISP.

Policies affecting consumer demand

Section 3.1.8[11] of the 2025 IASR contains a list of policies that are identified as able to affect consumer demand. A brief description of the policy and its intent is included for many of these policies.

However, it is unclear how these policies are used as inputs or assumptions for demand forecasts or ISP modelling. We note that Table 8 in the 2023 IASR included additional contextual information about the impact a policy has on specific inputs, for example a home battery subsidy scheme increasing forecast uptake of residential batteries by a specified amount.

We expect AEMO to outline how these included policies result in inputs or assumptions for ISP modelling, or which inputs and assumptions in the IASR are based on these policies.

8 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 46
9 AEMO – Draft 2025 Inputs, Assumptions and Scenarios Report, Feb 2025, p. 154-156
10 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 157-159
11 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 43-46

Data Centre forecasts

AEMO's forecasts of data centre energy consumption was published in the final IASR, figure 48.[12] These forecasts are materially different to the inputs consulted on in the draft IASR. AEMO also published a consultant report with the final IASR that sets out how these forecasts were developed.

The method applied by the consultant refines the methodology that was consulted on for the 2024–25 update to the Electricity Demand Forecasting Methodology, such that the forecasts differ materially from what may have been expected prior to the release of these forecasts. We consider that AEMO has not adequately explained how these forecasts were derived, such that they could materially change without changing the description of content in the IASR. While we note AEMO ran consultation activities on the inclusion of data centres in the Forecasting Reference Group meeting held on 30 April, we consider stakeholders have not been given adequate opportunity to propose alternative forecasts based on the data and some specific material elements of the consultant's report. These elements include for example the decision to apply an unweighted average between the trace for known projects included according to the ISP Methodology, and the projection based on economic development.

We expect AEMO to provide further explanation of how the data centre demand forecasts were derived and to outline any opportunities for consultation regarding this input in their addendum to the IASR.

Off-grid hydrogen production

The section of the IASR presenting electricity demand for hydrogen production has been significantly revised and updated. The IASR provides a good explanation of how these inputs and assumptions are derived and how this approach has changed since the 2024 ISP.

However, the explanation of which off-grid hydrogen production is included in demand forecasts does not sufficiently explain how AEMO derived the amount of hydrogen production that will be modelled as not sourcing electricity from the grid.[13]

Table 15 presents assumptions that 60% of hypothetical production in Queensland and South Australia are Renewable Energy Zone (REZ) based. The report further states that the portion outside a REZ is assumed to be off-grid and not included in demand.

We expect AEMO to provide further explanation of how it derived the proportion of hydrogen production that is REZ based, its assumption that all non-REZ hydrogen production is off-grid, and what this means for the proportion of hydrogen production that is assumed to be grid-connected.

Biomethane forecast

The growth forecasts for biomethane have changed materially since the 2023 IASR, both in magnitude and shape. While the IASR describes how the forecasts were derived and AEMO has published reference information, the IASR does not directly address how this input has changed since the 2024 ISP.[14] The explanation points to several potential reasons for the differences but does not identify what those differences are or make a clear link to why the magnitude or shape of the forecasts have changed.

We expect AEMO to explain how these forecasts have changed since the 2024 ISP, and the drivers of those changes.

Data from the Victorian Transmission Plan

For the 31 July 2025 release of the IASR and Electricity Network Options Report (ENOR), data relating to Victorian projects and Renewable Energy Zones were omitted as the information was confidential pending the release of the 2025 Victorian Transmission Plan. This affected section 3.3.9 and 3.3.10 of the IASR, various omitted data in the IASR Workbook and projects throughout the ENOR. The Victorian Transmission Plan was published on 17 August 2025. We expect AEMO to update the IASR with this data and to outline any opportunities for consultation regarding this update in its addendum to the IASR.

12 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 112
13 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 71-74
14 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 79-81

Community battery forecasts

Section 3.3.7[15] of the IASR outlines the forecast of community batteries as part of the 'large commercial' sector of battery forecasts but does not clearly identify where that series is set out in the IASR. We expect AEMO to more clearly identify where the forecasts of community batteries are included, how they have been derived including any identifiable drivers, and provide the data for the series that includes these forecasts.

Electricity price elasticity

In Section 3.3.14, table 20[16] presents the price elasticities of demand for various appliances and sectors. We note these values have changed and reversed trend for the business sector since the 2023 IASR without an explanation or reference.

We expect AEMO to explain how the price elasticity factors were derived and provide the data and reasoning behind the change in price elasticity values for the 2025 IASR.

Hydrogen pipeline cost assumptions

The IASR's assumptions around the timing and cost of creation of hydrogen pipelines are not clear. While the IASR workbook contains cost data for building out hydrogen pipelines to each Renewable Energy Zone in each scenario, it is unclear how these costs were derived and how they will be used. The description of hydrogen infrastructure identifies locations for production and consumption,[17] but does not address how the transport costs are modelled. The description of hydrogen cost under fuel switching indicates that multisectoral modelling allowed for pipeline capital costs proportionate to hydrogen production costs,[18] but does not explain how similar costs will be included in the ISP.

We expect AEMO to provide further explanation of how hydrogen infrastructure costs have been derived and how they have changed to account for differences in modelling assumptions since the 2024 ISP.

Topics of focus for transparency in the draft ISP

In this section we highlight areas where AEMO should focus to support transparency in the draft ISP. For clarity, these are not issues that require AEMO to provide further explanation in an addendum to the IASR.

Sensitivities

Sensitivity testing varies one or multiple inputs to test how robust the output is to its input assumptions. It is an important requirement for ISP modelling and the selection of the optimal development path. We have noted the interest stakeholders have expressed concerning the sensitivities that AEMO intends to use to ensure the robustness of their ISP modelling. AEMO is not required to include a detailed list of sensitivities in the IASR. While AEMO has identified likely sensitivities as relevant to the content of the IASR, they have outlined their intention to focus on the inclusion and explanation of significant sensitivities in the draft ISP. We encourage AEMO to have specific focus on how the sensitivities have been selected and their significance to the optimal development path. We look forward to engaging with AEMO during the development of this analysis.

Scenario weighting

The scenarios discussed in section 2 of the IASR represent future states of the world. Although the scenarios are intended to be a broad set of future states of the world, the relative likelihood of each may be different. We expect that AEMO will be able to provide rationale for its assessment of the (relative or absolute) likelihood of each scenario, choice of corresponding weights, and how these likelihoods may have changed since the 2024 ISP.

15 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 87
16 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 118
17 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 209
18 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 73

Demand side factors

We note that the demand side factors statement will be included in the ISP for the first time for the 2026 draft ISP. AEMO has specified that the Demand Side Factors Statement will leverage the inputs and assumptions already present in the IASR[19]. The statement should adequately explain how developments at the distribution level will contribute to the efficient development of the power system and it will be important for AEMO to underpin the transparency of this approach.

19 AEMO – 2025 Inputs, Assumptions and Scenarios Report, Jul 2025, p. 25