Justice and Equity Centre

Draft ISP Methodology

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About the Justice and Equity Centre

The Justice and Equity Centre is a leading, independent law and policy centre. Established in 1982 as the Public Interest Advocacy Centre (PIAC), we work with people and communities who are marginalised and facing disadvantage.

The Centre tackles injustice and inequality through:

- legal advice and representation, specialising in test cases and strategic casework;
- research, analysis and policy development; and
- advocacy for systems change to deliver social justice.

Energy and Water Justice

Our Energy and Water Justice work improves regulation and policy so all people can access the sustainable, dependable and affordable energy and water they need. We ensure consumer protections improve equity and limit disadvantage and support communities to play a meaningful role in decision-making. We help to accelerate a transition away from fossil fuels that also improves outcomes for people. We work collaboratively with community and consumer groups across the country, and our work receives input from a community-based reference group whose members include:

- Affiliated Residential Park Residents Association NSW;
- Anglicare;
- Combined Pensioners and Superannuants Association of NSW;
- Energy and Water Ombudsman NSW;
- Ethnic Communities Council NSW;
- Financial Counsellors Association of NSW;
- NSW Council of Social Service;
- Physical Disability Council of NSW;
- St Vincent de Paul Society of NSW;
- Salvation Army;
- Tenants Union NSW; and
- The Sydney Alliance.

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The Justice and Equity Centre office is located on the land of the Gadigal of the Eora Nation.

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1. Introduction

The Justice and Equity Centre (JEC) welcomes the opportunity to respond to the Australian Energy Market Operator's (AEMO) Draft ISP Methodology (the draft) and the Draft 2025 ISP Methodology Consultation Paper (the consultation paper).

The planning needs of the energy system are evolving as rapidly as the system itself. The aim of this process must be to implement the substantive changes required for planning to meet these rapidly evolving needs in the 2028 Integrated System Plan (ISP).

Taking these substantive changes as a starting point, the 2026 ISP should incorporate practical adjustments now, aiming to implement measures which are 'as good as possible' given the timeframe limitations AEMO faces.

2. Distribution network capacity and CER

We support the intent to enhance the approach to future ISPs by incorporating analysis of distribution network capabilities and opportunities.

However, we consider the analytical questions asked in the draft to be inappropriately one-sided. They should ask what the efficient balance between network augmentation and other options, including increased CER, is. Instead of this, the draft only examines the cost of CER curtailment as a consideration in determining the efficient level of network augmentation.

The resulting 'skewing' of the analytical question towards network augmentation is made clear by AEMO's opening line in the conclusion on this section in the consultation paper:

> AEMO's proposed approach optimises distribution network augmentations to allow higher levels of CER operation and uptake of other distributed resources.[1]

This is fundamentally not appropriate as an approach to efficient planning which promotes the consumer interest. It runs an increased risk of inefficiently augmenting the network when alternatives enabling higher net benefits for consumers are available.

Further, the consideration of CER curtailment in this way cannot be regarded as a response to calls for co-optimisation – as is proposed on page 22 of the consultation paper. The inadequacy of this as a response to requests for co-optimisation is immediately underlined by the next paragraph in which AEMO provides a clear and direct justification for *not* optimising the uptake of CER:

> as CER investments are driven by household and consumer drivers that sit outside of the ISP's cost-benefit analysis. Rather, AEMO recognises the range of potential CER uptake levels (and their costs) through the forecast uptake diversity across scenarios,

[1] AEMO 2025a, 'Consultation Paper – Draft ISP Methodology', 24.

observing the impact of such diversity on system-wide investments that are optimised.[2]

The significance of having 'household and consumer drivers' is that CER uptake 'is driven by consumer investment decisions at the household level, rather than by a purely economic optimisation.'[3]

There are two errors in this reasoning:

- CER is not limited to households. It includes a substantial set of consumers that can be assumed to be much more driven by economic optimisation than households. Relatedly, the analytical significance of CER uptake includes the 'other distributed resources' that AEMO often refers to when discussing CER. It is not sufficient to dismiss this set of resources with reference only to a subset of CER users.

- Noting that decisions are not driven purely by economic optimisation does not mean that economic drivers and incentives (and changes in them) are not a material determinant in decisions (particularly in aggregate). Not being driven by purely economic incentives is not a reason for a variable to be placed outside of AEMO's analysis (ie. treated as an exogenous variable).

Network co-optimisation to be part of the 20208 ISP

The ISP must evolve to include co-optimisation of network and non-network options and specify that this explicitly means that:

- non-network options are treated as endogenous variables,
- the analytical questions the model is constructed to answer are not skewed towards network augmentation.

We appreciate these changes are not practical in the 2026 ISP. But they should be implemented for the 2028 ISP. It is no longer appropriate to imagine or plan augmentation of the energy system with reference only to network augmentation (whether at transmission or distribution level).

Changes can be commenced in 2026

For the 2026 ISP, we support the inclusion of sensitivities considering different levels of CER and other distributed resource uptake.

As part of this process, we strongly urge AEMO to increase the conservative assumptions about CER uptake in all scenarios, particularly the Green Energy variants. We refer to our detailed comments in response to IASR stage 2.[4]

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[2] AEMO 2025a, 'Consultation Paper – Draft ISP Methodology', 22.
[3] AEMO 2025b, 'Draft ISP Methodology', 55.
[4] Available at https://jec.org.au/resources/submission-on-integrated-system-plan-inputs-and-assumptions-stage-2/

3. Testing timing of previously actionable projects

The JEC does not support the move to test transmission projects previously identified as actionable at the project proponent's timing within the actionable window.

This approach inappropriately elevates the proponent's assessment of the most credible timing to a normative claim for the system and inappropriately elevates issues with the proponent's ability to deliver the project to systemic constraints.

The purpose of the ISP is to identify the network augmentation path which maximises consumer interest, taking account of all elements of the National Electricity Objective (NEO). The fact that a project has previously been deemed actionable, and the actionable window has closed does not change the task or obligations of the planner.

If the proponent is not able to deliver the project within the actionable window for reasons relating to the proponent and its preferred sequencing, this should be resolved by allowing contestability into the delivery and ownership of transmission assets (not their operation) in preference to any weakening the integrity of the planning process.

4. Location and utilisation rates of hydrogen electrolysers

The JEC supports AEMO's unbundling of hydrogen uses (or drivers) for the purposes of modeling electrolyser load. This is in line with the widespread understanding that hydrogen investments will only be made with specific and identified uses.

Electrolyser location

Regarding the question of whether to assume the location of electrolysers in REZs or at ports, we note that this question (at least in those specifics) only arises in relation to the Green Energy Exports variant. We strongly support the removal of this variant in favour of Green Energy Industries.

Other considerations regarding the location of electrolysers:

- The transmission of electricity is much more efficient and economical than the transport of hydrogen. Electricity transmission lines can have multiple 'uses' in the sense of serving multiple assets (and recovering costs through multiple end-users) and allow transmission in both directions, while hydrogen pipelines will only have bespoke (likely dedicated) consumption uses. The outlay cost of these dedicated assets is likely to be substantially higher than that of transmission lines. As a baseline, we recommend it should be assumed that in most cases it will be more economical to transport electricity to electrolysers rather than to transport hydrogen to uses.

- The modeling of electrolyser locations should be done on a REZ-by-REZ basis and include all considerations proponents will need to account for. As an important example, electrolysers need a fresh water supply. The decision about where to place an electrolyser should include the costs of acquiring the rights to and supply of water, up to and including the costs of

desalination where necessary. It will also be necessary to consider the security or potential risks to reliability of this supply. Under the right conditions, it may be viable and preferable to locate an electrolyser in a REZ, but this should only be assumed where all the needs of an electrolysers can be met at reasonable cost with a reasonable likelihood.

- The treatment of various governments' hydrogen policies and commitments should also be subject to the qualifications required of disaggregating hydrogen drivers from electrolysers load. The rules regarding AEMO's consideration of policies demand that any commitment is sufficiently developed to imply meaningful impact. Existing commitments by state and federal governments do not fulfil this requirement, particularly in conjunction with the commitment to only consider electrolyser load as and when there is anticipated and identified uses.

- We reiterate the concern raised by the ISP Consumer Panel of the risk (carried by consumers) of overinvestment/underutilisation of transmission lines built with the purpose of servicing electrolysers. We agree that the viability and likelihood of hydrogen supply chains and markets must be demonstrated before AEMO can justify the inclusion of hydrogen projects – and so their associated electricity infrastructure assets – in the ISP. It is not in consumers' interest to adopt optimistic or portfolio-style positions on hydrogen projects.

In general, it is demonstrably not in consumers' interest to base an entire scenario on the assumption that hydrogen rollout will vastly exceed current expectations and overcome the established limitations of the technology. Accordingly, we reiterate our proposal for the ambitious scenario to be reformed along the lines outlined in our submission to IASR Stage 2.[5]

Electrolyser utilisation rates

A maximum utilisation rate for electrolysers modeled should be added to the minimum utilisation rate based on the average availability of variable renewable energy (VRE) generation technologies.

The value of hydrogen and justification for bearing costs associated with it – from the perspective of energy consumers - is in replacing hard to electrify energy uses while eliminating emissions. If it is made using fossil fuels, it has little or no value to consumers.

Given this, there are three possibilities for assumptions regarding hydrogen production:

- Electrolysers are powered using dedicated VRE assets;
- They soak up excess renewable generation from the system during periods of low demand and high/.100% renewable generation (only); or
- They are supplied by some mixture of excess generation from the network and dedicated VRE firmed with dedicated storage.

The first two imply utilisation rates substantially below 100%. Energisation using dedicated VRE assets implies utilisation rates of approximately 25% if using solar or up to 45% if using wind (likely much lower).

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[5] https://jec.org.au/resources/submission-on-integrated-system-plan-inputs-and-assumptions-stage-2/

Energisation using excess renewable energy from the grid that would otherwise be curtailed implies a utilisation rate of close to 20% today, and potentially rising as high as 30-35% in the mid-2030s.

Energisation using VRE with dedicated storage has theoretical potential for 100% utilisation, but the costs of the dedicated storage must be included in the cost of the electrolysers asset. We are not aware of this currently being included in modeling but propose that it is added if the choice is made not to add utilisation ceilings to electrolysers modeling.

Assumptions regarding hydrogen and electrolysers should be updated and framed accordingly in order to be plausible.

5. Implementing 'imperfect foresight' assumptions

The JEC supports the aim of integrating 'imperfect foresight assumptions' into the ISP model. We acknowledge the limited capacity of AEMO to do this in a holistic way in the 2026 ISP but assert that it must be part of the 2028 ISP.

The aim must be to implement the assumption of imperfect foresight as a building block in the modelling of market participants. We consider the 'add-on options', inserting the assumption of imperfect foresight via proxy, to be inadequate. These will not capture compounding effects or learning.

Implementing a more fundamental integration may involve upgrading or replacing PLEXOS as the operating platform. We note that the ISP is not the only output produced by AEMO using PLEXOS – it is used as the foundation to produce the reliability standard and market settings. We urge AEMO to begin exploring upgrades and alternatives as soon as possible. This should be done with a view to potential uses before 2028.

Using 'footroom' not 'headroom' in assumptions

We support the use of footroom, but not headroom in integrating imperfect foresight assumptions into the 2026 ISP. The value and incentive to retain footroom is much greater in most instances than the value and incentive to retain headroom.

Headroom refers to the practice of not charging a battery fully on the basis energy prices may fall further and it will be more economical to wait to charge completely. However, as charging generally occurs at the many times when the spot market price is low or negative, the upside risk of retaining headroom is very small. By contrast, footroom – which refers to retaining available charge on the basis that prices may rise further – occurs at times of market stress when (assuming the market price cap is not already reached) the upside risk may be substantial.

We recommend AEMO uses only footroom for the purpose of adding imperfect foresight to model storage providers' behaviour, and that the quantum of footroom assumed is increased to ameliorate the removal of the use of headroom.

Headroom is unnecessary

Storage entering a period of market stress with incomplete charge is not a reason to include headroom, as it is not necessary to assume that all storage will be fully charged prior to a period of market stress. We note that this issue is partially still under consideration, as AEMO considers how to treat preparedness of short-duration devices for prolonged or peak demand conditions. This consideration should be extended to all storage devices to produce more robust assumptions than the proxy of headroom.

Footroom modeling asumptions

We do not support linking the metric of footroom with system level metrics, such as anticipated unserved energy. Market proponents do not operate with a systemic viewpoint or with a view to managing system-level metrics. Market participants respond to incentives on an individual basis, and should be modeled as profit-maximising in both operational and investment timeframes.

6. Emissions reductions

6.1 Clarifying policy consideration obligations

The ISP Methodology makes cursory reference in section 2.1 to the requirement that the ISP consider government policies, including the point there are policies that *must* and others that *may* be considered.

This discussion should be expanded so that the exact requirements are more clearly set out. For example, the AEMC Emissions Target Statement is not mentioned in the draft. Existing text for this can be sourced from the discussion of policy considerations in the AEMO Draft IASR 2025 – Section 3.1, ‘Policy Settings’.

6.2 Use of carbon budgets

We reiterate our position on carbon budgets, detailed in our response to the IASR consultation.

The JEC supports the use of carbon budgets and sees them as a useful articulation of Australia’s emission reduction point in time targets in conjunction with the International Energy Authority’s World Energy Outlook (WEO) 2024 scenarios.

The use of carbon budgets has the potential to add positively to energy planning. However, there is a risk that, if used in isolation from other modes of analysis, such as expected value (EV)-based analysis, the carbon budgets may function as a ceiling for aspiration rather than a baseline. This may produce perverse outcomes, such as not making positive EV investments due to a given carbon budget already being achieved.

Importantly, such an approach may not accord with the intentions of the legislators (as indicated in their comments in second reading speeches) who introduced the emission-reduction element to the National Electricity Objective. A use of carbon budgets that allows the NEM to become a ‘backstop’ for economy-wide emission reductions rather than the driver of economy-wide decarbonisation would be counter to the stated intention of the added emissions objective.

The amended Nation Energy Objectives

The intent of the legislators of the *Statutes Amendment (National Energy Laws) (Emissions Reduction Objectives) Act 2023* (South Australia) (the Act) is critical when formulating scenarios in the ISP process.

The intent of the legislators when amending the national energy objectives was for market bodies to consider options for the decarbonisation of the energy sector in relation to impact on the entire economy not only the energy sector.[6]

The Act focuses on consideration of achieving specific emissions reduction targets by market bodies exercising their decision-making functions and powers.[7] The intent gives scope to the market bodies on how to trade off the other elements of the Objectives on a case-by-case basis.

This can be seen in key parts of the second reading speech:

> As currently framed, the energy objectives do not refer to emissions reduction either directly or indirectly. Changing this will send a clear signal to wider industry, market participants, investors and the public, of governments' commitments to achieve a decarbonised, modern and reliable energy system that contributes to the achievement of Australia's emissions targets.
>
> […]
>
> The Bill frames the emissions reduction objective by reference to the achievement of targets set by a participating jurisdiction, be it the Commonwealth, a state or a territory, for reducing or that are likely to reduce Australia's greenhouse gas emissions.[8]

Clearly, the aim of amending the Objectives is that the market bodies' task is to implement the transformation of the NEM as the driver to decarbonise the wider economy.

Impact of the amendment of the Objectives on the purpose of the ISP

The amendment of the Objectives has significant implications for the ISP which are not yet widely appreciated.

Up until the 2024 iteration, the intent of the ISP has been to describe the least-cost paths for energy infrastructure (specifically transmission) development under a range of scenarios and sensitivities. Chief among these is the speed at which the wider Australian economy is decarbonised. The implication of this was that if the wider decarbonisation occurred more slowly than anticipated, the consumer benefit from investments in new infrastructure in the NEM would be maximised by taking a slower path, and vice versa.

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[6] See s. 7, *National Electricity Law - schedule to the National Electricity (South Australia) Law 1996* (**NEL**); s. 23, *National Gas Law – schedule to the National Gas (South Australia) Law 2008* (**NGL**)

[7] 2nd Reading SA House of Assembly 14 June 2023, Hansard pp.4378-4379, 4381-4382; 2nd Reading SA Legislative Council 31 August 2023, Hansard pp.3544-3545.

[8] 2nd Reading SA House of Assembly 14 June 2023, Hansard pp.4378-4379, 4381-4382; 2nd Reading SA Legislative Council 31 August 2023, Hansard pp.3544-3545.

The demand to make the NEM the decarbonisation driver for the wider Australian economy reverses this implication. If the wider economy decarbonises at a slower rate than is anticipated within a given central scenario, the value of more rapid investment in and transformation of the NEM goes *up*, as it makes wider and more rapid decarbonisation more attractive.

Using carbon budgets in the ISP

Carbon budgets should not be used in isolation from other modes of analysis of development paths, and should not be treated as ceilings for ambition. We support the use of carbon budgets in the ISP. As the Consumer Panel has noted, they elevate the path taken to key target points, such as net zero in 2050. However, the risk of embedding complacency rather than ambition in energy planning must be carefully avoided.

Using a 'backstop approach' – rather than seeking to optimise net benefits - may result in sub-optimal choices from the perspective of consumers. For example, a use of a carbon budget that 'trades off' a higher penetration of renewable generation for lower investment in household efficiency may foreclose investments that:

- return net benefits to consumers when considered in isolation, and
- are both financeable.

That is, there is a risk that carbon budgets become a ceiling on the speed or depth of the transition, rather than a baseline.

Using carbon budgets in isolation from other modes of analysis may also produce distortionary effects, such as implying that the risks of overinvestment and underinvestment in energy capacity are equal. While this may be true if the sole metric is the achievement (or not) of carbon budgets, when risk of cost incursion is included, they are very unequal.

6.3 The inclusion of non-Paris-aligned scenarios

The JEC does not support the inclusion of scenarios which are not aligned with Australia's obligations and commitments under the Paris Treaty. Importantly, this includes a larger commitment to ensuring a maximum global warming of two degrees above pre-industrial levels, not only the Nationally Determined Contributions commitments.

The carbon budgets are global temperature increase-aligned. The Progressive Scenario aligns to a 2.6 degree global rise. The Draft 2025 Inputs, Assumptions and Scenarios Report Stage 2 notes,

> The Progressive Change scenario aligns best to STEPS as it reflects currently legislated or funded policy positions only. It also fails to meet the Paris Agreement globally despite Australia fulfilling its commitments under its Nationally Determined Contribution submitted to the United Nations Framework Convention on Climate Change.[9]

[9] AEMO 2025, Draft 2025 Inputs, Assumptions and Scenarios Report Stage 2, 48.

It is not appropriate for AEMO and the ISP Methodology to assign any weight to a scenario that fails to meet the Paris Agreement while Australia is a signatory.

While Australia's NDCs are only to 2030, the use of carbon budgets in the ISP Methodology stretches to 2050. It is not appropriate for the ISP Methodology to consider a carbon budget for the period 2030-2050 which is not Paris-aligned.

We strongly recommend changes to scenarios used in future ISP processes which ensures they are all Paris-aligned and embed the ambition which best promotes the long-term interests of consumers.

Continued engagement

We welcome the opportunity to meet with AEMO and other stakeholders to discuss these issues in more depth. Please contact Michael Lynch at mlynch@jec.org.au regarding any further follow up.