Institute for Energy Economics and Financial Analysis
ieefa.org

Unit 3, 15 Clarence Ave
Dee Why, NSW 2099

aus_@ieefa.org

3 September 2026

To: Australian Energy Market Commission
Re: Review of the Integrated System Plan Framework

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to provide input to the Australian Energy Market Commission (AEMC)'s Review of the Integrated System Plan (ISP) Framework.

IEEFA is an independent energy finance think tank that examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

IEEFA commends the Commission for considering the co-optimisation of both demand- and supply-side resources in the Australian Energy Market Operator (AEMO)'s ISP. In our view, this is a critical update that would significantly improve the utility of the ISP as a planning tool, and would increase confidence in its ability to provide a least-cost pathway for Australia's energy transition.

Since the ISP was initiated, demand-side resources have emerged as a critical technology in increasing Australia's renewable energy uptake. IEEFA does not consider it tenable for the ISP to continue to be a supply-side focused exercise.

The ISP's actionability mechanism could be expanded to include demand-side resources. However, we believe an approach that focuses on broad, actionable recommendations for jurisdictional governments is more useful than the approach suggested by the Commission, which focuses only on actionable distribution network projects.

While there may be merits to co-optimising for gas alongside electricity in the ISP, IEEFA also note this carries risks, and may have limited value outside gas generation. For this reason, we consider this a lower priority than optimising for the demand- and supply-sides of the electricity sector.

Further details on our views are outlined below in response to selected consultation questions. Please do not hesitate to contact us to discuss these matters further.

Kind regards,

Jay Gordon – Energy Finance Analyst, Australian Electricity

Unit 3, 15 Clarence Ave
Dee Why, NSW 2099

aus_@ieefa.org

Why the review is necessary

2.1 Have changes in the sector, such as the increasing role of distributed energy resources and consumer energy resources, affected the value of the ISP in its current form?

Rooftop solar has expanded far more rapidly in Australia than was foreseen, with systems installed on 40% of homes. Australia appears to be at the start of a similar acceleration in uptake of small-scale batteries, which exceeded half a million installations in August 2026.

The ISP was not designed with the foresight that distributed energy resources (DER) would play such a central role in Australia's energy transition. The ISP considers DER uptake only as an input, meaning that the ISP cannot provide useful insights on the role of DER in lowering the cost of the transition. This is compounded by the fact DER forecasts in the ISP tend to become outdated rapidly.

Significant cost increases in actionable ISP projects have coincided with a cost-of-living crisis that has led to a focus on reducing energy costs. Expert advice supporting a least-cost energy transition in Australia is more important than ever.

2.3 What features of the future energy system should the Commission consider when assessing whether and how the ISP framework should be changed to remain effective and resilient across a range of potential futures?

It is no longer valid to assume Australia's future energy system will be predominantly reliant on centralised generation. Rooftop solar and household batteries are already reshaping dynamics in the National Electricity Market (NEM). Other technologies may emerge that are poorly exploited today, but have the potential for similar or greater impacts — including energy efficiency, demand flexibility or the range of services provided by electric vehicles (EVs). New technologies may emerge that are currently unknown.

And while it is consumers who have primarily invested in demand-side resources, those investment decisions have been heavily influenced by government policies. Governments, alongside other energy system planners, require robust information on the full range of technologies and policies that could support a least-cost energy transition.

The ISP's future role in electricity planning

4.2 Which of the strawpeople (SPI, SP2, SP3 or SP4) best supports the future energy system and why? / 4.3 Are there elements of more than one strawperson, or an alternative combination of choices on the plan and actionability mechanism, that you would support? Please explain.

IEEFA strongly supports extending the ISP's co-optimisation to demand-side resources, as identified in SP3 and SP4. We have previously recommended this as a critical step to ensure the ISP presents a robust least-cost transition pathway. An ISP focused only on supply-side optimisation is no longer fit for future purpose, and we therefore cannot support SP1 or SP2.

For the ISP to usefully inform both demand- and supply-side aspects of a least-cost energy pathway, IEEFA considers that the ISP's actionability framework should be extended to include

Unit 3, 15 Clarence Ave
Dee Why, NSW 2099

aus_@ieefa.org

demand-side opportunities. However, we feel this would be best done in an alternative manner to that proposed in any of the Commission's strawpeople. Focusing only on actionable distribution network investments would offer only limited value given the breadth of useful outputs a well-implemented co-optimisation could provide.

IEEFA recommends the Commission consider an approach suggested by the Justice and Equity Centre (JEC) in its rule change request *Co-optimisation of energy resources in the Integrated System Plan*:

> *"with respect to other ISP development opportunities, meaning generation, storage, and demand side developments, we propose AEMO make recommendations to jurisdictional governments. Ultimate decision-making power in respect of outcomes relating to generation, storage and demand side development within each NEM jurisdiction would remain with jurisdictional governments. But jurisdictions would be required to make meaningful commitments to progress the outputs developed by the planner within their jurisdiction, or meaningfully respond to them."*

For many demand-side technologies, investment decisions are highly disaggregated, and government policy is one of the few practical measures that has been proven to adjust their rate of uptake. AEMO cannot determine policy, and so it is inevitable that actionability framework for demand-side investments should look different to the mechanism for transmission investments. However, IEEFA feels the above solution would provide a useful balance whereby jurisdictions could choose to report against recommended demand-side actions in the ISP.

We also note this could provide a flexible framework for recommending other actions beyond conventional transmission projects. For example, this could include transmission-connected batteries, if they were represented in the ISP modelling and found to feature in the Optimal Development Path (ODP).

5.2 Do you agree with the four factors and the two judgements on their relative weight that underpin our initial preference for SP3? Where you disagree, what evidence supports a different direction?

A strong evidence base, timeliness of delivery and flexibility to manage change are critical factors for the ISP. However, there may be an inherent tension between flexibility to manage change, and stability/resilience of the OPD.

Increasing the number of decision variables can make the ODP more sensitive to change. However, this is arguably a more accurate reflection of reality. Technological, social and economic factors will change throughout the energy transition, which will affect the next steps on the least-cost pathway. IEEFA considers it is more useful for the ODP to be robust than to be stable, particularly between ISP iterations — in fact, this is arguably unrealistic.

Evidence to support a broader role for the ISP

5.3 To test the Commission's hypothesis that a broader plan would materially improve the ODP, we are seeking evidence on:

a. Where the current treatment of small distribution, CER and demand-side resources as inputs risks distorting the ODP.

Unit 3, 15 Clarence Ave
Dee Why, NSW 2099

aus_@ieefa.org

Some of the most rapid changes in Australia's energy transition have occurred directly due to demand-side resources. For instance, as of 2025, rooftop solar comprised 13% of overall generation in the NEM. Its growth has displaced a considerable amount of coal generation, and contributed to drastically lower wholesale electricity prices in the middle of the day. The current ISP approach was not set up to anticipate this growth; in fact, AEMO has had to significantly increase rooftop solar forecasts in between ISP iterations to account for it.

Similarly, since the introduction of federal rebates, small-scale battery capacity has expanded far more rapidly than most experts could have forecast, and now exceeds large-scale battery capacity in the NEM. AEMO CEO Daniel Westerman has noted that, "home batteries are starting to have a real impact on the way those homes are interacting with the grid". He cited a recent example where batteries predominantly "operating in a passive mode" played a key role in addressing a record peak demand event in Victoria.

AEMO enacted a late change to its 2026 ISP inputs and assumptions to address the fact that its proposed forecasts had rapidly become outdated (IEEFA estimated that actual battery uptake would likely have exceeded AEMO's 2030 forecast by the time the ISP was released).

b. Which resources would be most material to co-optimise, and which would risk adding complexity without commensurate benefit?

Rooftop solar and small-scale batteries are proven to be material resources. They could be introduced into the ISP's optimisation in a similar manner to utility-scale solar and storage.

IEEFA's analysis also shows that that energy efficiency and demand flexibility (for instance, shifting hot water consumption, or pre-heating and cooling) offer significant peak demand reduction benefits. These could affect generation outcomes, and could be modelled as costed measures that lower or reshape the underlying demand profiles in the ISP. the underlying demand profiles in the ISP.

Electric vehicles (EVs) comprised nearly a third of all new car sales in Q2 2026 (including battery and plug-in models). IEEFA expects the potential of EV smart charging and vehicle-to-grid applications to grow in materiality.

AEMO should also engage closely with CSIRO on the development of its FlexCost resource, which will likely be a key input for this modelling.

c. What modelling capability, data and governance arrangements would be needed to support broader co-optimisation?

Co-optimising for demand- and supply-side resource in the ISP will require substantial changes to AEMO's modelling framework. IEEFA suggests the Commission, engaging with AEMO, consider whether this could best be achieved by expanding the ISP's existing models, or by commissioning/building a new modelling approach better suited to the co-optimisation.

d. The risks a broader plan may create for ODP stability, transparency and accountability, and how these risks could be managed.

As noted above, a stable ODP does not necessarily equate to a robust ODP.

IEEFA does not consider that broadening the scope of the ISP's optimisation would inherently threaten the transparency and accountability of the ODP. This can be preserved by ensuring

Unit 3, 15 Clarence Ave
Dee Why, NSW 2099

aus_@ieefa.org

AEMO conducts transparent consultation around demand-side assumptions and methodologies, and by reporting on the influence these assumptions have on the ODP.

The ISP's future role in gas planning

6.1 What benefits would extending the ISP's purpose to co-optimise across both electricity and gas infrastructure bring? What risks would it introduce?

There are merits to introducing gas into the ISP's co-optimisation, as discussed in IEEFA's submission to *Enhancing the Integrated System Plan to support the energy transition*. In particular, it would be advantageous to include the infrastructure costs associated with gas power generation (GPG) outcomes in the ISP.

The 2026 ISP highlights that, "Gas-powered generation is changing to a more strategic, back-up role". This could imply different infrastructure requirements to today — with gas required less often, but in larger volumes. If those associated infrastructure costs are not optimised for, it is difficult to assert that the GPG outcomes in the ISP are truly least-cost.

However, co-optimising gas and electricity could involve risk. Future GPG requirements are highly dependent on the nature and frequency of events with low wind and solar output, which are uncertain. This could limit confidence in the ISP's gas infrastructure outputs Furthermore, the co-optimisation may not yield useful new information unless alternatives to GPG for low-renewables periods are included in the ISP model.. This could limit confidence in the ISP's gas infrastructure outputs Furthermore, the co-optimisation may not yield useful new information unless alternatives to GPG for low-renewables periods are included in the ISP model.

Outside gas generation, the co-optimisation may offer less value. In the residential sector, for example, there is a clear trend towards consumers switching from gas to electricity in response to both economic and policy drivers. It may be useful for the ISP to model the infrastructure implications of this trend, but there is limited value in forecasting an "optimal" level of gas demand in sectors where this is already declining..

IEEFA has previously recommended that AEMO could include more granular gas factors to improve the quality of its cost optimisation. However, at this stage, IEEFA considers that co-optimising for the demand- and supply-sides of the electricity sector is a higher priority than a full co-optimisation of gas and electricity.

Other improvements to the ISP

7.1 Does the ISP's existing modelling approach reduce the credibility of the ODP? If so, how?

AEMO's existing modelling approach is detailed and highly robust in many respects. However, the credibility of the ODP may be reduced due to a number of issues:

- While the ISP model is published online, it is practically inaccessible to most stakeholders, as using it requires access to expensive modelling software.

Unit 3, 15 Clarence Ave
Dee Why, NSW 2099
aus_@ieefa.org

- While AEMO's consultation process is detailed, it is sometimes unclear how AEMO synthesises conflicting stakeholder feedback to arrive at a final position. For example, the assumption that hydrogen can be blended in reticulated gas networks often resurfaces, despite evidence suggesting it is not economically nor logistically viable.
- While AEMO undertakes sensitivity analysis to inform the ODP's development, this is not a well-structured process, and sensitivity analysis is not well reported.
- AEMO's reporting of the ISP does not clearly explain the materiality of key assumptions influencing the ODP.
- The ODP is heavily influenced by the decision of which ISP scenario is "most likely". This is determined via a stakeholder survey process open to a wide range of biases.

7.2 How would more comprehensive modelling change the outcomes of the ODP?

By shifting the ISP's modelling focus to include a more balanced range of options on both the demand- and supply-side, it is possible this may reveal a lower-cost ODP that features a more innovative mix of technologies.

Timing cycles of the ISP

9.4 Does the inflexibility of the ISP cycle or ISP update framework to capture new information in a timely way, materially impact the ODP and investment decisions? What are examples of this and how can the framework be more flexible?

This review outlines a number of changes that could significantly improve the ISP and Australia's ability to address the challenges of the energy transition. However, IEEFA is concerned that any changes resulting from this review would be unlikely to have any influence on a final ISP until 2030, or possibly later. This will be too late to support the achievement of Australia's 82% renewable energy target.

In general, the energy transition is moving faster than the ISP's two-year time cycle. For example, AEMO had to incorporate a late update to inputs for the 2026 ISP to address the increase in residential battery capacity, which reached nearly 12GWh in the NEM in FY2026 (AEMO's initial assumptions assumed it would be only 1.5GWh).

The Commission should consider options to make the ISP's time cycle more flexible. This could include a more "live" version of the ISP where the modelling is rerun far more frequently to incorporate updated inputs and assumptions. The development of a more efficient modelling approach would support this.