

How to reform the Integrated System Plan to guide the energy transition

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1 Introduction and scope

This submission is by Alison Reeve and Tony Wood, of Grattan Institute, an independent think tank focused on Australian domestic public policy. Grattan aims to improve policy by engaging with decision makers and the broader community. Grattan has advocated for energy market reform since 2010.

The Australian Energy Market Commission (AEMC) is reviewing the rules that make up the Integrated System Plan (ISP) framework. This submission responds to the consultation paper released in December 2025, but we have deliberately gone beyond the apparent scope of the review. We argue that the broader issues around the purpose of the ISP, how the optimal pathway is developed, and the use of scenario planning are too important to be ignored or postponed.

We have focused our submission on three key questions:

- What roles is the ISP currently playing?
- What roles should it play, and not have?
- How should the AEMC structure the review to answer these questions?

We would welcome the opportunity to engage further with the AEMC on any of the matters raised in this submission. And will continue to engage with the review process as it progresses.

1.1 The history and background of the ISP

The ISP was commissioned by the Energy and Climate Change Ministerial Council (ECMC)¹ to implement a recommendation made

1. The ECMC is the latest iteration of the body responsible for governing the National Electricity Market (NEM). Its former names include the Standing Council on

by the Independent Review into the Future Security of the National Electricity Market (aka the Finkel Review).² The Finkel Review recommended:

- By mid-2018, the Australian Energy Market Operator, supported by transmission network service providers and relevant stakeholders, should develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market. (recommendation 5.1)
- By mid-2019, the Australian Energy Market Operator, in consultation with transmission network service providers and consistent with the integrated grid plan, should develop a list of potential priority projects in each region that governments could support if the market is unable to deliver the investment required to enable the development of renewable energy zones. The Australian Energy Market Commission should develop a rigorous framework to evaluate the priority projects, including guidance for governments on the combination of circumstances that would warrant a government intervention to facilitate specific transmission investments (recommendation 5.2).
- The COAG Energy Council, in consultation with the Energy Security Board, should review ways in which the Australian Energy Market Operator's role in national transmission planning can be enhanced (recommendation 5.3).³

Energy and Resources, the COAG Energy Council, and the Ministerial Council on Energy. For ease, throughout this submission, we refer to it as ECMC, unless quoting directly from a source where one of the former names is used.

2. The Finkel Review was conducted after the 2016 statewide blackout in South Australia.
3. Finkel et al (2017).

The Finkel Review found that:

*Incremental planning and investment decision-making based on the next marginal investment required is unlikely to produce the best outcomes for consumers or for the system as a whole over the long-term, or support a smooth transition. Proactively planning key elements of the network now in order to create the flexibility to respond to changing technologies and preferences has the potential to reduce the cost of the system over the long-term.*⁴

In other words, getting transmission built in the right places requires much more than a needs assessment. Finkel recommended that the Australian Energy Market Operator (AEMO) develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market, along with a list of potential priority projects in each region that governments could support if the market is unable to deliver the investment required to enable the development of renewable energy zones.⁵

This became the Integrated System Plan (ISP). AEMO published the inaugural Integrated System Plan on 17 July 2018, marking the first comprehensive, whole-of-system blueprint for the NEM's future beyond the earlier National Transmission Network Development Plan. The 2018 ISP established scenarios and modelling for expected demand, generation trends, and transmission needs out to 2050.

Since 2018, AEMO has updated the ISP every two years, reflecting latest forecasts, technology trends, government policy settings, and stakeholder engagement. Each iteration involves extensive stakeholder consultation, formal Inputs, Assumptions, and Scenarios Reports (IASRs), and public draft reviews.

4. Ibid (p. 124).

5. Ibid (p. 24).

AEMO⁶ and energy ministers⁷ now describe the ISP as setting out the lowest-cost mix of generation, transmission, and storage to reliably meet consumers' energy needs and Australia's emissions-reduction targets. It takes into account federal, state, and territory policy frameworks but does not assess the practicalities of such policies.

To strengthen the governance of the energy market, the Finkel Review also recommended that energy ministers should strike a new Australian Energy Market Agreement that recommits all parties to:

- Taking a nationally consistent approach to energy policy that recognises Australia's commitment to reduce emissions and governments' commitment to align efforts to meet this target with energy market frameworks.
- Notifying the COAG Energy Council if they propose to take a unilateral action that falls within the scope of the Australian Energy Market Agreement, prior to taking the action.
- Agreeing that, within 28 days of notification, the Energy Security Board will provide advice to the COAG Energy Council on the impacts of the proposed action, taking into account the objectives of the Australian Energy Market Agreement.

This recommendation was never adopted, and its absence exposes weaknesses in the current agreement.

The ISP has evolved with each iteration

The first ISP (2018) was produced by Australian Energy Market Operator largely as a strategic planning document, replacing the earlier National Transmission Network Development Plan. At that time there was no explicit requirement prescribing how AEMO must

6. AEMO (2023).

7. ECMC (2024).

incorporate government policy. And there was no mechanism via which identified projects would be implemented – that step was left to the market participants. In practice, AEMO modelled scenarios reflecting existing Commonwealth and state renewable energy targets, emissions trajectories consistent with stated policies, and announced generator retirements.

In 2020, the Australian Energy Market Commission changed the National Electricity Rules to create the ISP Framework. AEMO became legally required to develop the ISP in accordance with the ISP Methodology and the Inputs, Assumptions, and Scenarios Reports (IASRs). The National Electricity Rules required AEMO to have regard to relevant federal and state government policies, and publish emissions-reduction targets.

The Framework also required the ISP to identify the Optimal Development Path (ODP) consistent with reliability standards, security requirements, and applicable government policy settings. It also allowed for transmission projects to be designated as ‘actionable’, meaning they were eligible for a streamlined regulatory investment test.

By the time of the 2022 ISP, relevant state and federal energy and climate-change policies and targets had proliferated.

In 2023, energy ministers commissioned a review of the ISP to clarify how government policy should be treated. The outcome was that AEMO was instructed to include current government policies, but not model speculative or aspirational policies that had no clear commitments.

Subsequent rule changes reinforced that AEMO must use available policy and market information when developing projections.

While the evolution has generally improved the ISP, one consequence is that its role and even its purpose have become increasingly unclear and its results misunderstood or misused.

2 The ISP is playing multiple roles, many unintended

The ISP has evolved from its original purpose as a cost-based engineering optimisation plan to forecast the overall transmission system requirements for the NEM over the next 20 years. It is now integrated into system security frameworks, in particular the economic assessment process for transmission. It has been floated as a possible guide for the Energy Services Entry Mechanism (ESEM), which is currently being designed to support entry of new generation. The ISP's results are applied and used as a reference point for policy makers, investors, and independent analysts, not always accurately.

But it has also come to play other roles.

An important source of public data

The inputs and assumptions workbook from the ISP and the GenCost report⁸ have become important input to other energy market analysis. The publication of this material filled a gap for energy analysts, by creating a source of rigorously-developed and defensible assumptions about technology costs and energy demand.

A market signal in a policy vacuum

In times when governments are dragging their feet on policy for energy market development and reform, the ISP has become a substitute signal for likely future directions. In these times, industry uses such signals as key inputs to their investment plans and decisions.

8. GenCost is a report produced by CSIRO that provides regularly updated data on the cost of all sources of electricity generation.

The ISP as thought experiment

The ISP process uses scenarios in a particular way to consider various plausible future events. In 2022, one scenario was introduced that explored the likely size of an electricity system that could support an Australian 'hydrogen superpower' objective.

These scenarios are useful thought experiments to assist policy makers develop policies fit for the long-term, most notably in addressing climate change. But it would be more appropriate for government to be doing this speculative thinking. Outsourcing it to a supposedly independent market operator calls the operator's independence into question, and reduces trust in the ISP.

2.1 The ISP is failing on a few fronts

The ISP is now playing multiple roles and provides valued information and analysis for governments and industry. But major issues should be addressed ahead of further process-focused reviews:

- The defined purpose of the ISP is to establish a 'whole-of-system plan', but the practical task has been focused on developing and connecting the transmission system, within and between NEM regions. That may have been effective in a simpler world, but the nature of the energy transition requires that transmission cannot be considered in isolation of generation and storage infrastructure.
- The role of gas power generation (GPG) has emerged as critical to a successful transition to a high renewables system, yet the electricity and gas markets are managed under separate regimes, leading to simplistic assumptions on both sides.

- The transmission planning role is hamstrung and partly compromised by state commitments on transmission that aren't in the ISP (e.g., Copper String) and by changes to timing of transmission to achieve climate goals (e.g., Rewiring the Nation). It leads to a need to rerun the analysis every time such decisions are made.
- The ISP is still inclined to revert to the paradigm that providing advice on future gaps is all that is needed to spur the private sector to build infrastructure.
- There is confusing communications about what Optimal Development Path (ODP) and 'least cost' mean, especially when state governments choose high-cost options such as offshore wind and keeping coal.

3 What the ISP should be doing

The Australian energy system is in an era of unprecedented change. Because of energy's role as an essential service and underpinning of productivity and competitiveness, governments are unwilling to leave this change to the market to sort out, even as the market has been developed and overseen by governments. Time has become an enemy because difficult emissions-reduction goals and rapidly ageing assets mean that governments are taking a more planned and interventionist approach.

The ISP should be the central plan for the energy system, providing confidence for governments, security and affordability for consumers, and direction for investors. This means it needs to cover the whole *energy* system, not just the electricity system. The central plan should be based on a clear set of physical, financial, and political assumptions and constraints. It should be supported by a robust scenario analysis focused on identifying plausible risks and the consequences to the energy transition, and managing those consequences if those risks manifest.

But the ISP can only do so much. For it to be really useful, ministers should take ownership of it and they should use it to calibrate policy. They also need to take more responsibility for determining the costs and benefits of policies, especially when those costs are born by consumers. It should not be the role of the ISP to independently cost policies.⁹

9. Some stakeholders have suggested that the ISP should test policies against a baseline scenario where there are no emissions targets or jurisdictional policies. See for example <https://www.aemc.gov.au/sites/default/files/2024-11/New>.

3.1 Cover the energy system, not just the electricity system

The net-zero energy system that has to emerge in the next 25 years will be one where most energy demand is for electricity.

The cost of the system to deliver this, and therefore the prices paid by consumers, will depend on the pace of this change and the relative mix of electricity, gas, and petroleum products in final energy consumption.

As a result, any exercise that tries to forecast costs must take into account the cost of all fuels in final energy consumption, as well as the mix of generation, storage, and transmission. And it needs to optimise between all types of energy infrastructure to find the least-cost solution – not just better different combinations of electricity infrastructure.

Following the 2024 review, the 2026 ISP will now include a deeper consideration of the role of gas.¹⁰ But the draft ISP released in December 2025 hasn't gone far enough in this assessment. It has forecast a need for extra gas pipeline capacity if the additional gas generation capacity forecast in the ODP is installed. But it hasn't assessed whether these pipelines could be avoided by optimising the location of gas generators with existing or upgraded electricity transmission.

This issue will become increasingly important as gas demand shifts from being steady and predictable to more volatile and unpredictable, and simultaneously more important. To prevent the real risk of stranded gas assets (which can cost consumers money) or unnecessarily prolonging gas use (and thereby missing emissions-reduction targets), the ISP needs to take a whole-of-system perspective on final electricity demand.

10. ECMC (2024).

In a similar vein, as a high-renewables grid emerges and gas moves to being an intermittent generator, the location of generation and storage assets will matter more. The ISP currently only optimises the location of these (and the subsequent trade-off with transmission) by state. It doesn't relate these locations to fuel sources and fuel availability.

3.2 Use scenarios to assess and mitigate risk

The ISP would be more useful if it used scenarios more strategically.

The current version presents several potential future pathways, and then asks energy market experts to deliberate on which they think is most likely.¹¹ The one that is chosen through this process, and its associated ODP, becomes the one that informs energy policy. But this is not because of any deliberate and vetted decision; rather, it is unofficial consensus among decision-makers and investors that some sort of guidance is needed. The need is real but the methodology is flawed.

The range of possible futures is wide, and it is appropriate to test several different views of the future. A better approach would be to develop a central outlook based on the most likely assumptions for demand, supply, and costs, constrained by agreed/legislated national emissions-reduction targets and reliability and security standards. The ODP could then be modelled to deliver this outlook at lowest cost. Scenario planning should then be applied to assess the impact of risks to this pathway. For example, what happens if interest rates rise? What happens if technology costs fall faster or slower? What happens if there is a labour shortage, or planning delays?

Using scenarios in this way would mean the ISP becomes a much more useful tool to inform policy (both future policy and implementation

11. This is done using the Delphi process, a widely-used business forecasting process based on the principle that forecasts from a structured group of individuals are more accurate than those from unstructured groups or individuals.

of current policy). Ministers and governments would have a better understanding of which risks to their preferred pathway were more material, and could design policy to mitigate those risks.

There is a wide range of significant, potential future risks that could be included in scenarios, including those that will arise from climate change, and those that arise if (as is happening) projects run behind schedule.

The scenario planning stage could follow an approach used by the International Energy Authority and consider a scenario that follows current federal and state policies, alongside a policy suite linked to net zero by 2050. As a legislated target, the latter would be an element in the ISP's central plan.

3.2.1 Communicate the outcomes of the ISP for consumers and communities

While under our proposal the ISP would meet its stated purpose, AEMO cannot take responsibility for prices or infrastructure planning, even though it would inform both. Governments must provide the narrative that informs consumers, communities, and investors about what the plan is, why it's important, and what it means for them. This means, for example, consulting communities who are under planned transmission lines, and providing some guidance on consequences for electricity and total energy bills.

3.3 Problems the ISP can't solve

3.3.1 The ISP can't substitute for good policy process

The ISP takes government commitments as inputs, rather than assessing whether they are needed. The ODP therefore doesn't represent an unconstrained, least-cost pathway: it is optimised within the constraints of commitments that are already made.

For example, the current ODP would reflect the least-cost pathway to achieve an electricity system that delivers the Capacity Investment Scheme, the NSW Energy Roadmap, the Victorian Offshore Wind Targets, and the Queensland government's extension of coal-powered generation.

Some stakeholders say this makes the ISP misleading, because it isn't showing the 'true cost' of achieving those policies.¹²

But it is not AEMO's role to assess the price impact of the ISP or the system impact of individual policies. This should be done by the relevant government at the time they develop the policy.

AEMO should not be required to analyse the political objectives behind policies, assume policies that are not yet adopted, or depart from least-cost modelling principles.

3.3.2 The ISP can't compensate for flaws in the Federation

The ISP is currently required to include policy commitments by all governments. As these commitments increase (and in some cases contradict each other), it will become impossible for the ISP and its ODP to comply with all the policies and meet all the targets simultaneously.

The ISP can't override the constitutional situation where the Commonwealth has a strong interest in energy policy because of the impact on climate change policy and the impact of energy prices on macro-economic settings, but the states control the policy.

One solution would be for the ISP's central plan to be based on a national emissions scenario (where the only policy driver is the federal emissions target, and the model solves for the most efficient way to achieve that target). Scenario planning could assess a scenario that

includes individual state and federal policies. This approach would reveal the gap between policies announced, and where the market needs to go; and provide information on the nature of the gap. It could also address the issue that the Finkel Review tried to resolve in its recommendation on revising the Australian Energy Market Agreement.

12. See for example Centre for Independent Studies (2024).

4 How the AEMC should approach the review

The AEMC proposes to use a six-part framework in its review:

1. Purpose and role: Rules governing the purpose of the ISP and how this reflects the role or usages of the ISP.
2. Development and process: The contents of the ISP and how it is developed, including AER guidelines that support this process.
3. Stakeholder engagement and transparency: The role and function of the ISP consumer panel; dispute resolution; and consumer engagement.
4. Transmission planning: Whether joint planning arrangements remain fit for purpose in the context of jurisdictional network planning.
5. Actionability: How the economic assessment framework applies to actionable ISP projects.
6. Adaptability: The resilience of the ISP to changing circumstances and the ISP update mechanism.

Our view is that part 1 (Purpose and rule) needs to be clarified, including with ministers, before the rest of the review can proceed. This also means looking at the energy system (not just the electricity system) and asking: where are we trying to go? What guidance, planning, and information is needed to get there? Who should provide that information, how often, and in what form?

Without clear guidance from those at the top of the governance structure as to what role they want the ISP to play, the questions about the process of developing it, and how it interacts with the rest of the market rules, cannot be meaningfully answered. To proceed without

clarity on the purpose of the ISP risks a review that designs a more efficient way of producing a document that isn't fit for purpose.

With respect to part 3, we urge the AEMC to take a broad view of 'consumers' and not just engage with peak bodies representing energy users. In undertaking the ISP review, the AEMC should engage with communities where transmission lines and renewable energy zones are planned, and provide recommendations on how the next iteration of the ISP can better reflect concerns in these communities. An economic model can choose theoretical least-cost transmission projects, but if these projects can't be built because of community barriers, they cannot deliver benefits for consumers.

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