Energy Efficiency Council submission to the Integrated System Plan Review Stakeholder Consultation Paper

13 October 2023

Overview

The Energy Efficiency Council (EEC) welcomes the opportunity to comment on the Department of Climate Change, Energy, the Environment and Water's stakeholder consultation paper on the review of the Integrated System Plan (ISP). The EEC is Australia's peak body for energy efficiency, energy management and decarbonisation, with members drawn from business, academia, NGOs and government. The EEC welcomes the Government's initiative in undertaking a review of the Integrated System Plan and its role in planning national energy systems.

However, the EEC is concerned that the review of the ISP remains almost exclusively focussed on the supply side of the energy system. The Review is a significant opportunity to bring the demand side of the energy system more firmly into the system planning process, so as to develop a holistic, optimised system plan that delivers secure and reliable energy services to Australian consumers and businesses at the least possible overall cost, and the fastest possible transition to a zero emissions energy system.

A rapid energy transition requires creating effective links between sources of low-emissions energy supply and energy demand. Linking between these elements of the energy system requires *visibility* of both the supply-side and demand-side of the energy system. A supercharged ISP is the ideal vehicle for this.

In an energy system characterised by high levels of variable renewable energy resources, management of energy supply and demand becomes a critical tool to reduce system cost and improve energy security. Aligning energy demand with times of high renewable output (especially – but not exclusively – solar PV) has the potential to reduce investment needed in energy storage or supplementary peak generation infrastructure, reducing the amount of new infrastructure required to serve energy demand. Similarly, aligning the *place* of supply with the *place* of demand also reduces the amount of transmission and storage infrastructure that must be built.

The EEC sees a future energy system characterised by long periods of low-cost, low-emissions energy supply, punctuated by shorter periods of *critical demand* – that is, periods when there is a significant mismatch between energy demand and available supply. These periods can occur during summer where heatwave conditions create high peak demand from space cooling needs, although these periods tend to be relatively short-lived. Other periods of critical demand are expected during winter evenings in southern states, when demand for space heating is high, but overall renewable energy yield is lower.

There are two approaches to dealing with *critical demand*. One approach uses supply-side measures almost exclusively, with demand-side measures used only as emergency interventions (such as load-shedding or activation of demand-response enabled devices). In this approach, new infrastructure needs are high, as energy storage and reserve generation are the primary methods to bridge the periods of critical demand. This approach necessitates building infrastructure that will lie idle for almost the entire year – it will be needed only to cover critical demand events that occur over a handful of hours each year.

The second approach deals more holistically with energy supply and demand. In this approach, a more active approach is taken to manage energy demand, and to align it with periods of high renewable generation. This necessitates significant interventions on the demand-side of the energy system, with both incentives and regulatory measures complementing energy system investment to drive well-managed, effective and efficient use of energy that makes the best use of low-cost renewable energy resources. This second pathway reduces the amount of new energy supply infrastructure that is required, reducing overall energy system costs and potentially accelerating the achievement of a zero emissions energy system by reducing the decarbonisation task.

These concepts are more extensively explored in the EEC's recent report *Clean Energy, Clean Demand*.

At present, the ISP is not well-equipped to drive the second pathway. The ISP's role to date has been in informing coordination of new energy supply and distribution needs, drawing heavily on the Electricity (and Gas) Statement(s) of Opportunity (ESOO/GSOO). To do this, estimates of demand have been used and modelled, with scenarios based on expected market developments and/or policy measures. However, these demand scenarios are exogenous to the plan itself, with energy demand treated as an input, rather than a parameter to be optimised. This means that there is no possibility for the ISP to provide a demand-side led path to optimal energy system investment, which in turn provides no avenue for policy makers and regulators to consider whether demand-side interventions may be preferable to supply-side augmentation.

The EEC strongly recommends that the Government consider the present review as an opportune moment to integrate the demand side of the energy system more holistically into the ISP and its processes. The intention of the current process in integrating gas more comprehensively into the plan is a long-overdue reform, but still leaves the ISP in the position of guiding investment in the energy system while only considering half of the available opportunities for activity and development of the energy system.

Specific initiatives to integrate energy demand more fulsomely into the ISP could include:

- Creation of an annual Demand-Side Statement of Opportunities (see below).
- Two-way, holistic co-optimisation of supply-side and demand-side measures in the ISP to ensure that Australia's needs for energy services are met at least cost
    - This will require a significant re-tooling of ISP modelling capability; however we believe this could be a reasonable ambition for the 2026 ISP.
- Identification in the ISP of high-value, actionable demand-side projects that can deliver security and reliability to the energy system at low cost.
- Identification in the ISP of network and/or policy constraints acting as barriers to holistic system development.
- A guiding principle in the ISP and associated process of delivering energy services at least cost – implemented as 'integrated resource planning' in other jurisdictions.

The EEC suggests that by turning the ISP into a plan that integrates the entire energy system – not just energy supply – the transition to a decarbonised energy system can be effected at the lowest possible cost, in the shortest possible timeframe, and giving rise to the least possible amount of cumulative emissions, making achievement of Paris Agreement targets possible.

A Demand-Side Statement of Opportunities

Key to implementing an ISP that drives investment and development in the demand-side of the energy system is the development of a system-wide evaluation of opportunities and gaps that demand-side energy resources and interventions could solve.

Creation of a DSOO is the critical, foundational enabler for holistic inclusion of energy demand in the ISP.

A DSOO should cover a range of demand-side resources, including:

- Large-scale demand response and demand management resources
- Electrification, energy efficiency and fuel-switching resources
- Consumer generation resources
- Forecasts and trends in energy use in residential, commercial and industrial energy use

It is likely that a DSOO would need to begin as a high-level document based on data already held by AEMO, with further iterations becoming more granular over time. Some information is already included in the ESOO and GSOO but does not currently serve the purpose of informing the market and policy makers about the opportunity for demand-side energy resource development.

The DSOO should seek to Inform:

- **Market participants**, who should be guided towards investments in demand-side energy resources that will support system security and reliability at low cost
- **Policy makers,** who should receive information on the current state of demand-side resources (including distributed energy resources, demand management, demand response and energy efficiency) and opportunities for policy measures that would better align energy demand with supply
- **Regulators,** who should be able to use the DSOO (and ISP) to guide decisions made in economic regulation of energy markets (e.g. RIT-T and RIT-D processes).

For example, an initial DSOO could include:

4. **Information and improved forecasting of energy use and demand-side resources**

Current energy demand modelling and forecasting is relatively limited. A more comprehensive model of predicted energy demand (and the energy-demand supply balance) across different jurisdictions is necessary, as well as a better understanding of the current level of demand-side resources that are, or could be, brought to market.

2. Assessment of interactions between policy measures (both energy and non-energy) and energy demand

Energy demand is contingent on a wide range of factors, and policy measures have an even more significant impact on energy demand than energy supply. For example, evolution in buildings, transport or industry policy can substantially affect energy demand, and there is currently no clear, comprehensive and integrated assessment of the effects (positive or negative) that these policy changes might have.

3. Identification of network problem spots or constraints where demand response or management could be highly valuable.

AEMO already holds significant data about network constraints, congestion and sub-optimal infrastructure use. An initial parse of this data to identify places where there could be potential to introduce a demand-response facility or other demand-side measures to alleviate pressure on local infrastructure. Initially, this identification would be high-level, but could be iterated over

time to identify more granular locations and time that could benefit from bringing demand-side energy resources to market.

Over time, the granularity of this assessment could improve. A later assessment could focus on regions of increasingly smaller size – identifying a suburb or town that had particularly high penetration of solar resources that were not matched effectively with demand – providing an opportunity for investment in aligning demand to take better advantage of that demand. Equally, a region with a particularly 'peaky' demand profile could be a prime location for investment in demand-side management, such as aggregated demand response resources or virtual power plants.

4. Identification of actionable demand-side measures

In the same way that large-scale energy supply projects in regulated markets are guided by coordination through the ISP, demand-side projects in regulated markets could also be guided by a revamped ISP. In particular, guidance on how demand-side measures could help bridge risks of unserved energy higher than the reliability standard, or provide alternative insurance pathways to hedge against non-delivery of other energy system projects.

Timeline:

The ESOO and GSOO are annual exercises and the DSOO should be as well. The EEC suggests that the ISP review process suggests an initial DSOO to be delivered by the end of 2024, with a revised and improved version to be published in 2025, to help inform the 2026 ISP.

Responses to specific questions

Supporting emissions reduction

What should be the role for the ISP in supporting emissions reduction?

The Integrated System Plan forms a crucial part of the transition to a zero emissions energy system. Unlike business-as-usual energy market operation, an orderly transition requires facilitation and coordination to ensure that investment targets the right energy resources in the right place at the right time. This means that the ISP has a clear role in coordinate that, but also to drive better visibility and linking of energy demand and energy supply.

Are the changes to the National Energy Objectives to include an emissions reduction component (and the associated proposed changes to the National Electricity Rules and National Gas Rules) sufficient to enable the ISP to appropriately consider emissions reduction?

The addition of the emission reduction variable to the NEO is critical, however we feel there is still a need for changes to legislative frameworks to drive attention of system planners and regulators toward demand-side resources, such as demand management, demand response and energy efficiency resources.

Renewable generation, distribution and energy storage
Should the ISP be more explicit about where generation and storage developments are needed, and the technology types required, to optimise transmission investments and maximise system benefits? What impact might this have on market participants?

The ISP has a clear role in linking demand and supply. As described earlier, the importance of the **time and place of energy use** is somewhat understated in current processes, but needs to assume greater primacy in system planning. The ISP also need to consider demand-side resources such as demand response, demand management and energy efficiency to moderate and align energy demand alongside the provision of costly new supply-side infrastructure.

Integrating gas and electricity planning
Do you think there would be benefits if the ISP is expanded to consider gas and electricity together? What do you consider to be the key benefits or problems with this approach?
How could a 'supercharged ISP' best support energy investment decisions across gas and electricity? What information should it include?
What role would you like to see AEMO have in gas infrastructure planning?

The ISP should integrate as much of the energy system as possible. As the transition progresses, considering electricity or gas in isolation is at best sub-optimal, and most likely counter-productive. For reasons described earlier, the ISP should shift its focus to integrated resource planning, including both supply-side energy planning as well as demand-side coordination and facilitation.

Energy demand

Could the demand-side analysis that is currently undertaken for the ISP development process be improved? What should be the focus areas for enhanced assessment in this regard?

See earlier discussion on a DSOO.

Distribution

How can distribution be more effectively considered in the ISP? What might be the impact on the market if the ISP gave greater consideration to distribution?

Distribution networks are an incredibly important part of the energy transition. Distribution networks are key to facilitating strong linkage between sources of energy supply and demand, and are currently under-utilised as agents to energy efficiency, energy management and demand management.

As implementation of a DSOO progresses, increased involvement and attention to distribution networks will be key to identify **time and place** of energy supply and demand that could be amenable to demand-side measures.

In particular, the DSOO/ISP could be a strong source of information to guide the RIT-D process, to ensure that investment and capital in energy networks are directed in the best way to facilitate a rapid transition at least cost. Unnecessary network augmentation that could be avoided through energy efficiency, demand response and other demand-side measures wastes capital and opportunity that could be directed towards rapid development of zero emissions energy infrastructure, and the ISP should have a greater role in ensuring that capital most effectively supports a rapid transition.

Jurisdictional policy interactions

How should the ISP consider energy and climate policies and projects that have been announced, but for which limited detail is available regarding implementation? Is it appropriate to maintain a degree of caution about such inclusions?

The ISP should play a key role in assessing the impact of policy measures on energy demand and supply. While it is right to maintain caution in the absence of firm detail, there is a clear need for the ISP to more deeply interrogate the effects of policy measures on the energy system, and the potential for prospective policy measures to support energy security, reliability and affordability.

Barriers to the planning and construction of ISP projects

How might the ISP be improved to enhance the likelihood that actionable projects proceed in accordance with the timing identified in the Optimal Development Path?

Are there improvements that could be made to the ISP to better support building community acceptance for actionable ISP projects?

An improved, holistic ISP should be able to help the energy system make better use of non-network options to minimise the need for actionable network projects. Reducing the number of new infrastructure projects that must be completed not only reduces system cost, but also reduces the amount of social licence that must be gained to execute the transition.

General questions

What are the things that the ISP does well? Are there other matters that the review should consider?

See the overview section regarding the need for a holistic ISP and the need to consider development of a demand-side plan for the ISP.

For further information on matters raised in this submission, please contact Alex St John, EEC Senior Advisor, Policy and Research, at alex.stjohn@eec.org.au.