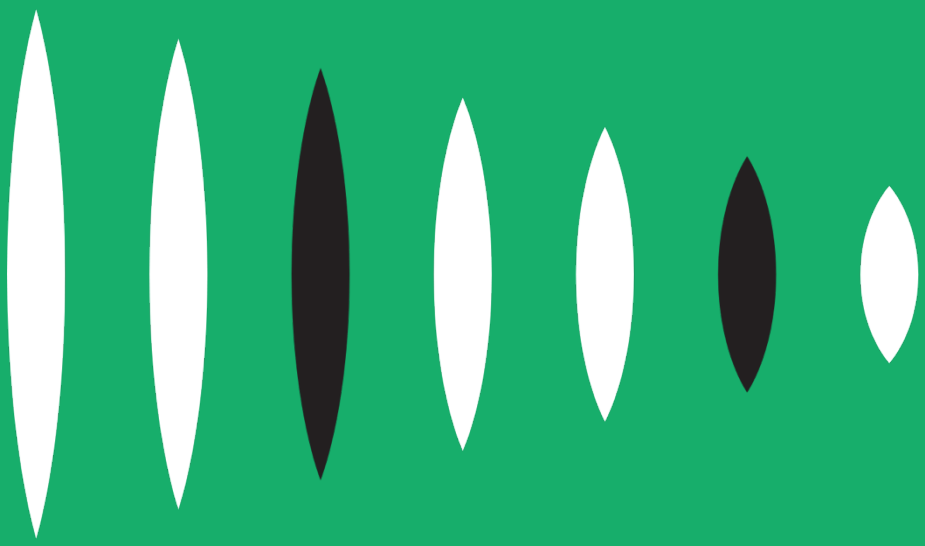
AEMO Integrated System Plan

Response to Consultation Paper

March 2018



ENERGY CONSUMERS AUSTRALIA

Contents

The Integrated System Plan can guide the future of the power system providing it is robust to change and factors-in all relevant policy – not just the development of Renewable Energy Zones.

Introduction

Energy Consumers Australia is the national voice for residential and small business energy consumers. Established by the Council of Australian Governments (COAG) in 2015, our objective is to promote the long-term interests of consumers with respect to price, quality, reliability, safety and security of supply.

The nature of the national electricity system is changing as large fossil fuel generators are replaced by more, smaller renewable energy generation and storage – including those owned and operated by household and small business energy consumers. This emerging, more decentralised energy system has implications for the role of transmission infrastructure and where it will need to be built. This transitioning energy system is changing the nature of the risks in the system that needs to be managed.

The Independent Review into the Future Security of the National Electricity Market (Finkel Review) recommended Australian Energy Market Operator (AEMO) develop a new planning framework for this very different environment and guide the placement and (transmission) connection of new 'Renewable Energy Zones' (REZ).[1]

This submission comments on AEMO's response to this recommendation – its proposal for an Integrated System Plan (ISP) as outlined in the Integrated System Plan Consultation (the Paper) in December 2017.

The specific comments we make about the ISP are part of our broader contribution to the debate about the future of the energy system as part of the Independent Review into the Future Security of the National Electricity Market (Finkel Review) in 2017,[2] and more recently, the design of the National Energy Guarantee.[3]

Through these debates we continue to make the point that households and small businesses want their appliances to work (quality) and power to flow when they turn it on (reliability). In this sense the long-term interests of consumers – the test that guides decisions about network infrastructure –

[1] *Independent Review into the future security of the National Electricity Market,* Finkel et al, (9 June 2017), page 124.
[2] http://energyconsumersaustralia.com.au/publication/finkel-review-submission/
[3] http://energyconsumersaustralia.com.au/news/public-forum-national-energy-guarantee-speech-notes/

can be framed as paying no more than necessary for the quality and reliability they prefer.

Summary of this submission

Energy Consumers Australia (ECA) is pleased to respond to the Paper. In summary:

- ECA considers the ISP to be an important mechanism to promote optimised, whole of system planning, investment and operation. We welcome the emphasis on 'system' rather than 'grid' in the name of the plan to consider a wide spectrum of interconnected infrastructure and energy developments including transmission, generation, gas pipelines, and distributed energy resources.
- The modelling underpinning the ISP must be open and transparent – it is important to understand what modelling does, and what the results can and cannot tell us. The current version of the Paper treats the underlying modelling as something of a 'black box'. We recommend that more emphasis be placed on explaining the inner workings of the model, and what this means for the results.
- The ISP needs to consider how Renewable Energy Zones (REZ) interact with other policy decisions – the use and selection of REZs is only one of the policy levers available to influence transmission and power system investment. As part of its analysis, AEMO needs to consider how REZs might interact with other policies, such as the design and application of the Regulatory Investment Test for Transmission (RIT-T).
- The ISP should make extensive use of sensitivity analysis – the principal purpose of sensitivity analysis is to identify which variables are of greatest significance to the results. ECA considers that there is greater scope for AEMO to undertake sensitivity analysis as part of its modelling to shed light on the factors that are likely to drive costs and around which there are greater risks.

ECA understands that the ISP is currently an indicative study and welcomes future development of the ISP and the analysis that underpins it.

The value of the ISP

In its ISP consultation paper, AEMO states that:

> *There is a pressing need for a nationally integrated strategic plan, which considers how … [energy market] transformations affect the need for infrastructure development and how the essential technical requirements of the power grid will continue to be efficiently met, taking a perspective across the whole National Electricity Market.*[4]

ECA agrees – there is a need for a nationally integrated strategic plan to guide investment in new transmission infrastructure and AEMO is the body with the knowledge, expertise and authority to develop it. The plan should identify:

- a path for future development of the power system;
- opportunities to support the future development of the power system through the creation of REZs;
- opportunities to support the power system through the use of Distributed Energy Resources (DER); and
- weaknesses and inconsistencies in other policy settings.

ECA supports AEMO's work to develop the plan to date, as embodied by the Paper. We are however particularly interested in the role of modelling within the ISP and how it can be enhanced.

Inherent in the operation of the energy system is the concept of risk. On one hand, there are the risks that the system might not operate as required (from a reliability or security standpoint) while, on the other hand, there is the risk of overinvestment in assets (especially regulated network assets). Modelling is not simply a task of describing expected or possible futures, it is the process of estimating these risk trade-offs.

Recommendations

Modelling can be better explained

The Paper suggests that the purpose of the modelling for the ISP is to "Identify the most prospective Renewable Energy Zones to be prioritised for development".[5] Put another way, the output of the modelling will be a list of REZs, ordered according to their total system cost to develop.

ECA does not disagree with the outputs, or objectives, of the modelling. Moreover, we recognise that the modelling also yields other insights, such as an understanding of the evolution of the power system over time.

However, we recommend that there is benefit in AEMO placing more emphasis on explaining *how the modelling works*. The current version of the consultation document treats the modelling as something of a 'black box' –

[4] *Integrated System Plan Consultation*, AEMO (December 2017) at page 3.
[5] *Integrated System Plan Consultation*, AEMO (December 2017), Figure 3 at page 15.

the focus is on the inputs and outputs, with little discussion of the mechanics underpinning the model.

The community has lost its confidence in the ability of its policy makers and market bodies to manage the energy system for the long-term interest of consumers. An open and transparent process to develop the ISP, including the modelling, where the broadest possible range of stakeholders can understand and make a contribution, is therefore critical.

Some examples of the type of questions that it would be helpful to examine are as follows:

- Where the modelling performs an optimisation, what is being optimised?
- What variables are endogenous to the optimisation, and what variables are exogenous?
- What are the limitations/weaknesses of the modelling?
- How do these limitations affect the results?
- Are there trade-offs inherent in the modelling approach? What choices have been made in relation to these trade-offs, and why?

One notable exception to the 'black box' approach is found in the discussion on improvements to modelling methodology included in section 1.2.3 of the Paper. This information is extremely helpful, because it provides insights into how we should view the results of the modelling, and what conclusions can or cannot be drawn from those results. We encourage AEMO to provide more information to stakeholders in the vein of section 1.2.3.

Consideration of how REZs interact with other policy decisions

The purpose of the ISP is to "facilitate the efficient development and connection of renewable energy zones across the National Electricity Market".[6] REZs are therefore central to the ISP and so to the modelling that underpins it.

However, it is critical that the modelling also factors in other policies and drivers.

As it stands, the ISP is heavily focused on one policy (i.e., REZs) and overlooks other policies that have significant consequences for investment in transmission to support the uptake of renewable energy. For example:

- There is little or no discussion about the design and application of the RIT-T, and how changes to the rules for major transmission upgrades might alter future costs and benefits to the system. Are the current rules for the RIT-T conducive to efficient development of the transmission system?
- Similarly, there is little or no discussion about the effect of transmission pricing on future investment. Is transmission pricing helping to support efficient and timely development of the transmission system? Would requiring generators to pay for transmission (including in calculation of merit order) rather than distribution networks improve the coordination of investment?

[6] *Independent Review into the future security of the National Electricity Market,* Finkel et al, (9 June 2017), page 124.

We suggest that the ISP should also:

- identify how existing policy settings may support, or hinder efficient investment in transmission infrastructure;
- identify whether there are opportunities to change existing policies, or introduce new policies to support efficient outcomes for the transmission sector; and
- model the costs and benefits of some of these different policy settings.

Addressing these matters within the ISP may mean developing different models, or scenarios, that consider how these policy levers affect investment, decision-making, and so the evolution of the power system.

ISP should make extensive use of sensitivity analysis

In relation to sensitivities, AEMO's consultation paper states that:

> *Proposed sensitivities include, but are not limited to:*
>
> - *How could the proposed Snowy 2.0 project impact generation and transmission development across the NEM?*
> - *How could a greater uptake and orchestration of DER (behind the meter generation and storage, demand response, energy efficiency, and load shifting) impact large-scale transmission development?*
> - *How could proposed additional Bass Strait interconnection, for instance, driven by the Battery of the Nation project, impact generation and transmission development across the NEM if it was built sooner than currently projected?*[7]

The importance of considering the ISP as part of a package of reforms is difficult to overstate. For example, new transmission infrastructure to connect REZs (or other objectives) could become another unnecessary investment if the planning under-estimates the development of DER and the Distribution Market Model.

Over-investment translates into fifty-year assets that sit in regulatory asset bases being recovered from consumers whether they are justified and efficient or not.

The principal purpose of sensitivity analysis is to identify variables that are of greatest significance to the results. Sensitivity analysis is therefore a powerful tool – it can reveal that some variables are important determinants of modelling results, and that others are less important.

We therefore encourage AEMO to conduct far more extensive sensitivity analysis than is outlined in the Paper. Some variables that AEMO may wish to include in its sensitivity analysis include:

- costs for new-entrant generation, such as large-scale solar and wind plants;
- battery operational parameters and costs;

[7] *Integrated System Plan Consultation*, AEMO (December 2017) at page 16.

- timing of retirements of existing coal-fired generation (e.g., Liddell, Yallourn); and
- the outcomes of the policy considerations referred to above.

We recognise that changes in these variables may partially be captured by the three different scenarios (i.e., Neutral, Slow Change, Fast Change). However, each of these scenarios considers the effect of *multiple* changes in inputs, and so does not allow us to identify the effect of *individual* variables on the results – sensitivity analysis is required to pinpoint which variables matter.

Future development of the ISP

ECA's view is that the Finkel Review's 'mid-2018' deadline does not provide AEMO with enough time to develop a complete ISPl. Rather, we expect that by mid-2018, AEMO will be in a position to have completed an indicative study that can be built upon further in the future.

We strongly encourage AEMO to approach the ISP process in this way, rather than trying to prepare a complete, finalised version of the ISP in the coming months. It would be counter-productive to prepare a hurried version of the ISP.

ECA understands that this is AEMO's current intention. In support of that proposition, ECA will welcome further consultation on development of the ISP over the coming year.

A Suite 2, Level 14, 1 Castlereagh Street, Sydney NSW 2000
T 02 9220 5500
W energyconsumersaustralia.com.au

@energyvoiceau
/energyconsumersaustralia
/energyconsumersaustralia

ABN 96 603 931 326

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