

Integrated System Plan (ISP) Workshop 10/10/19: Synopsis of comments



Overall Themes:

Theme	Description
ISP document content	More detail was requested for inclusion in the ISP in a number of areas, particularly around financial information, Marginal Loss Factors (MLFs) and system strength assessments. Traceability of the data to the relevant assumptions was also highlighted.
ISP document format	It was noted that a high level summary for policy makers would be useful, and some requested a simple front-end focus to the document.
Methodology	More explanation was requested on the modelling methodology, including criteria for project commitment and least regrets approach. Inclusion of social license aspects such as competing land uses was suggested.
Results commentary	The representation of the projected changing energy mix was well received, and considered reflective of future thinking. Expansion of this approach was requested, along with more detail on future storage requirements. Consideration of the potential impact of hydrogen was recommended. Further suggestions were provided for assessment of the quality of Renewable Energy Zones (REZs), including the need to consider how these criteria may change over time. The grid outcomes were noted to be broadly aligned with TNSP positions, and a need for more emphasis on non-network alternatives was noted. Further risk factors were identified for consideration, including stranded assets, timing of project commitment, and inter-play with regulatory processes.
Engagement	The use of interactive sessions such as this workshop was encouraged, and further workshops would be useful after the Draft ISP. More focused meetings such as with TNSPs, generators and consumer groups were also suggested, with incorporation of discussions on risk and least cost approach. Clearer communication of the registration process and the overall consultation process was requested.
Review/Critiques	The preliminary outcomes were noted to be broadly consistent with the 2018 ISP and the increased transparency of the early workshop approach was welcomed. The need for the ISP to remain independent was stated and clarity was requested on what is driven by policy vs economics.

Session 1: Changing energy resources

Workshop Option 1A - Resource mix

1. What did you think of the changes made between the 2018 ISP and 2020 ISP?

- There was a level of comfort taken from participants in the fact that there is broad consistency between the 2018 ISP and the preliminary outcomes for the 2020 ISP.
- It was viewed that the preliminary outcomes for the 2020 ISP are more reflective of future thinking compared to the 2018 ISP.
- Participants felt more consideration is required of the sharing of the cost of transmission constraints.
- Participants made it clear that increased transparency of scenarios, inputs, assumptions is regarded as a good thing.
- The definition of the central scenario was deemed to be sensible by participants.
- It was noted there appears to be an increase in the number of committed projects in the first few years compared to the 2018 ISP.
- Participants tended to agree with the outcome that more generators will retire earlier than what was previously anticipated (in line with information provided by participants).
- Some comments indicated more explanation and detail is required within the outcomes relating to storage requirements and operation within the modelling.
- There was a view that more explanation and detail is required relating to the step change in minimum demand and rising peak demand.
- Participants remarked on the relative reduction in the proportion of rooftop PV and requested further detail on why this is the case.
- Some participants requested more detail on the forecasted impact of Electric Vehicles (EVs) within the outcomes.
- It was also viewed that more detail on the impact of Emergency Management Systems (EMS) on the modelling outcomes is required.
- Some participants also noted more clarity is required on the impacts on consumers of the modelling outcomes.

2. What did you think of the initial projections of the future portfolio of resources for the NEM? Have we captured the key trends and changes that need to be considered?

- With regards to the role of battery technology, it was viewed that more detail on how the ISP has considered the uncertainty surrounding reliable lifespans is required
- Participants requested more information on how the potential for batteries to provide ancillary services is factored into the modelling.
- A variety of opinions were shared regarding the proportional trend away from solar to wind power over the forecasted period. Whilst some participants considered this an expected outcome, others were surprised.
- More detail was requested relating to assumptions at a distribution level for Distributed Energy Resources (DER).
- It was noted that investment in generation was driven by government policy in Victoria and Queensland, and a consequence of this is slower REZ development in NSW.
- It was noted that the interaction of policies across States and Federal Government(s) is key to understanding outcomes.
- Some participants noted they would like more detail on how system strength as a service was impacting on the modelling outcomes.
- Participants queried how the role of hydrogen was considered in the preliminary modelling outcomes
- It was noted by some contributors that slow growth in EVs growth is a conservative assumption.
- Participants noted the good representation of the forecasted changing energy mix across a 24 hour period, and suggested this be extended to show how it changes by season, for extreme events (such as a drought, heavy rainfall, across States, and other outlying scenarios).
- Clarity was requested on the reasons for the projected peak demand increase in all States except for Victoria.
- Others requested more detail relating to future storage requirements, such as timing, location, size and functionality.
- Participants agreed with the outcome relating to the increase in future large scale, and proportional reduction in small scale solar.
- It was highlighted that the potential for significant industrial load closures, and associated impact on demand, must be considered.
- There was a view that changes required to continue to control and operate the power system securely should be included in the ISP.

3. What do you think is the best way to address the risks and uncertainty, and how should AEMO approach these large uncertainties when developing the ISP?

- Participants agreed an important way to address risks and uncertainty is to ensure there is a high degree of transparency provided.
- Some contributors articulated the need for more engagement with consumers around risks considered, as well as how a least cost plan has been developed.
- Participants noted that given the large uncertainty relating to outcomes, a wide range of scenarios and sensitivities should be considered.
- It was stressed that the process of developing the ISP needs to remain independent.
- The importance of ensuring the long term view of outcomes was divorced from ideology was also highlighted.
- More explanation of how the 'least regret' approach is implemented was viewed as helping to address uncertainty.
- A sensitivity on Transmission build timing would be helpful.
- Participants commented on the need to consider the potential for economic retirements and mothballing across the network, and the impact this would have on consumers.

4. What other things should AEMO be looking at in detail when considering the resource mix?

- Participants requested more detail be provided on who bears the costs and benefits of the investments forecasted (who are the 'winners' and 'losers').
- More information on required storage depth would be helpful.
- It was stressed that system security must be factored into decisions on the optimal resource mix.
- It was noted that the ISP produces an optimal systems plan, which is different to how the competitive market may develop in practice.
- The volatility of generation types, and how this will be managed, was also stressed as a key consideration.
- It was noted that the increased likelihood of extreme weather events should be factored into decision making.
- Some participants suggested the potential closure of large industrial consumers, and the impact this would have on demand, must be considered.
- The impacts/benefits of demand side response should be considered.

Workshop Option 1B - Addressing information asymmetry

1. What would help further your understanding of the process AEMO has adopted to develop the ISP and undertake the modelling?

- Some participants requested more clarification on the consultation process for the whole ISP development.
- The discussion of the three stage modelling process was viewed as providing participants with a good overview of the process by some, whilst others requested further explanation on the modelling methodology.
- The need to reference the Scenarios, Inputs and Assumptions report in the ISP, as well as the requirement to clarify the source of the assumptions and inputs, were both stressed by contributors.
- There was a view that more explanation of why outputs have changed (such as the change in the mix of wind, solar and storage) was required.
- Some individuals requested a more detailed explanation of how key parameters, such as storage and gas costs, are impacting on modelling outcomes.
- Some participants stressed the requirement to understand the keys drivers of the modelling outcomes (particularly the role of policy and how this intersects with the role of economics).
- More detail and clarity on how security and system strength are both considered, and how transmission upgrades impact on outcomes, was requested.

2. What format, structure and content enhancements would you like to see in the 2020 ISP?

- Some participants requested more clarity on the definitions of each scenario, and the key distinctions between them, in order to better understand the implications of this on the modelling outcomes.
- More information on how the timing and number of solar and wind generator closures has been determined was requested.
- Clarity on development timelines was sought, to ensure investment decisions can be made in a timely manner, given long development lead times for projects.
- Some contributors requested further clarification on the definition of when a project is classed as 'committed'.
- It was suggested a summary for policy makers could be developed, within which current policy developments that could impact ISP roadmap (such as the potential extension of coal generator life) should be highlighted.
- Participants requested a simple front end focus for the report, which clearly explained the rationale for the ISP, as well as identifying key outcomes such as the benefits to customers, and the timing of projects.
- In contrast, others contributors requested AEMO provide as much detail as possible on the overall end to end process to allow stakeholders to undertake their own analysis.
- Some individuals requested further expansion on the analysis undertaken of Marginal Loss Factors (MLFs) and system strength requirements.

3. What supporting information would you like to have access to in the Draft and Final 2020 ISP?

- More detail on the basis for assumptions used, and traceability to their source was requested.
- Participants requested more detail on the financial modelling undertaken for new generation, particularly the inputs used to inform the timing of generator closures.
- More insights and explanation were sought of the economic comparison of large scale generation and storage compared to small scale generation.
- A further workshop detailing the approach to the ISP modelling was suggested, in order to walk stakeholders through the modelling process undertaken.

Session 2: Preliminary Grid Outlook

Workshop Option 2A – Power system outlook

1. Is AEMO considering the right options for interconnector, transmission, storage and Renewable Energy Zone (REZ) investment?

- Some agreed that the right options are being considered, and that the outcomes show broad alignment with TNSPs.
- Clarity was sought on the reasons for the change in REZ's since the 2018 ISP, and whether these drivers of change will continue to impact on the REZ development in the future.
- One participant was of the view that there was not enough consideration of storage in the modelling.
- A comment was made that greater consideration of transmission infrastructure is required to incorporate REZs, not just on transmission flow paths. Some participants requested comment within the ISP relating to how the balance between investment in interconnection across States and intra-regional generation, has been reached and what the key drivers are that have led to this balance.
- A view was espoused that greater consideration of high voltage direct current (HVDC) options for augmentation should be given within the ISP.
- One comment was made that an earlier workshop with a broader range of stakeholders should have been undertaken.
- One participant suggested the criteria for defining a generator as committed needs to be expanded to DER sources and demand side participation (DSP).
- Clarity was sought on if/how the interaction between REZs across States has been taken into account?
- Some participants felt that too much emphasis has been placed on large transmission investment, and further consideration of alternative options is required.
- Some participants took the view that the least cost approach was a good method to determine the investment required, as long as there is a reliability requirement to complement this.
- More information was sought on the costs and benefits of different scenarios, as well as how costs and benefits are split across stakeholders.
- Some contributors took the view that a perspective on hydrogen is required in order to finalise a least cost plan.
- It was noted that pumped hydro allows better integration of renewables.

2. How should the ISP identify and assess the relative quality of the identified REZ candidates?

- It was noted that the costs and benefits of different candidates should be assessed as a means of ensuring the long term interests of consumers are adequately assessed.
- Other suggestions included ensuring proper consideration of the diversity across REZs (such as routes, resources, and geographical differences).
- Consideration of proximity to load and existing transmission access was noted as a key method of assessing the relative quality of REZs.
- One participant highlighted the importance of the economic viability of projects within REZs (e.g. whether PPA's have been confirmed) as a means to measure their relative quality.
- Other contributors cited issues such as consumer sentiment, land use, and land rights as key considerations.
- An alternative method cited would be to optimise REZ development based on overall decarbonization of the system.

3. What factors and risks are important, particularly in respect of projected need for renewables, and how should AEMO consider these when developing the ISP?

- Firming ability was cited as a key factor to be considered in respect of the projected need for renewables when developing the ISP.
- In addition, the risk of government policy changes in the future was also mentioned as an important consideration.
- Contributors noted that the potential direction of any future hydrogen strategy would also need to be factored in, along with a view of likely domestic integration of hydrogen.
- Uncertainty related to the reduction in forecast demand was highlighted as being a key factor when developing the ISP.
- It was noted that developers require confidence in a given REZ in order to commit to building generation there.
- Consideration of how the NEM will deal with extreme weather events and other emergencies must be given when determining the ISP.
- Participants highlighted a variety of risks to consider, such as the lumpy nature of transmission investment, the risk of stranded assets, as well as conversely the risk of something not being built that may be required in the future.
- A related point to the direct question was made that the transparency of risks is needed in order to build trust amongst stakeholders.

4. How should the 2020 ISP design the network and system services infrastructure to best: 1) mitigate the risks of over or under-sizing assets; 2) optimise the timing of build; 3) minimise lost benefits to customers; 4) address any other key risks?

- It was suggested that consideration of the interplay between the ISP process and regulatory reviews such as the market design review (2025) should be undertaken, in order to ensure costs are shared efficiently and risk is managed appropriately.
- One participant took the view that the design of the ISP should be undertaken as if it was a centrally planned system.
- There was a view that the ISP should articulate what changes should be made to the transmission regulatory framework and market rules to guide work by the Energy Security Board (ESB) and the Australian Energy Market Commission (AEMC) on future directions for the NEM.
- It was noted that the ISP should be aligned with the Actionable ISP regulatory framework, to minimise lost benefits to consumers.
- Ensuring an adequate understanding of the technical capabilities of existing thermal assets to cope with system challenges was cited as essential in minimizing lost benefits to consumers.
- Participants also highlighted the need to ensure the projected energy mix within each region is capable of black start functions.
- One participant suggested a more formal engagement process with consumers is required, such as a consumer reference group, to ensure an appropriate design of the ISP.
- Another view taken was engagement with other stakeholders, particularly generators, should be increased.
- Other participants discussed ensuring flexibility relating to the modelling, such as varying build years, as well as keeping a variety of options alive.
- The least regrets approach was considered appropriate to mitigate the risks.
- A wider degree of sensitivity analysis on assumptions was suggested, and an example given that costs related to investments in solar technology in the modelling are higher than in US.
- It was suggested that designing the network to incentivise generation to locate closer to existing network infrastructure would mitigate the risks of over-sizing assets, as well as minimising lost benefits to consumers.

Workshop Option 2B – Future engagement

1. How would you like to engage with AEMO on the 2020 ISP between the Draft and Final versions of the report (i.e. between December 2019 to mid 2020)?

- The main methods discussed were:
 - A meeting/workshop after the publication of the draft ISP;
 - A meeting/workshop for specifically for TNSP's in February 2020;
 - A meeting/workshop specifically to discuss REZs; and
 - Further interactive/breakout sessions like this workshop

2. What information would help you most constructively participate in this engagement process (i.e. December 2019 to mid 2020)?

- Key views discussed included:
 - Gaining access to a full dataset underpinning AEMO assumptions used within the ISP; and
 - Providing an explanation of unusual outcomes of the modelling, in order to adequately communicate to participants the underlying drivers for these outcomes.

3. Are there other suggestions that you would like AEMO to consider in the development of the 2020 ISP?

- One participant wished AEMO to consider the possibility of dual land use and strategic acquisition of land as an input into the ISP.
- Developments in engineering design in the future was also cited as an important consideration.
- It was suggested that AEMO should consider what is needed to maintain a social license to support system development.
- It was suggested that future market design must be considered to ensure a wide range of potential options are taken into account within scenarios and sensitivities (examples include markets for inertia and capacity).
- The marginal value of constraints is also something which should be well understood to ensure high quality outcomes within the ISP.
- The reliability of Interconnectors and other transmission infrastructure was cited as an important consideration.
- It was noted that providing a snapshot of issues related to system strength would help to illustrate the scale and nature of challenges faced by the system.