



**EnergyAustralia**

LIGHT THE WAY

8 May 2019

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Dear Ms Falcon,

### **AEMO 2019, Planning and Forecasting Consultation Paper**

EnergyAustralia is one of Australia's largest energy companies with around 2.6 million electricity and gas accounts in NSW, Victoria, Queensland, South Australia, and the Australian Capital Territory. We also own, operate and contract an energy generation portfolio across Australia, including coal, gas, battery storage, demand response, solar and wind assets with control of over 4,500MW of generation in the National Electricity Market (NEM).

We appreciate AEMO's efforts to conduct open and detailed consultation on assumptions and inputs to be used in their Integrated System Plan (ISP) and Electricity Statement of Opportunity (ESOO). AEMO's forecasting and assumption work is now becoming a more critical input for the transformation of the NEM through the ISP<sup>1</sup>, and as a future trigger for the Retailer Reliability Obligation (RRO) which will place a significant regulatory compliance burden on all retailers and large customers. The elevated status and implications of the ESOO justifies a higher level of scrutiny.

EnergyAustralia recommends that AEMO revisit the objectives of the ESOO and the ISP to clarify the purpose of each. EnergyAustralia does not have clarity on the aims of AEMO's forecasts and scenarios; is it AEMO's intention to produce a set of credible scenarios, or to produce a set of stand-alone forecasts.

Without clarity on this we see that it is challenging to understand and gain value from AEMO's modelling. Irreducible uncertainty about the future dictates that long-term forecasting is challenging at best; if levels of certainty are not provided they could be grossly misleading. Given this, it is our view that AEMO should be looking to build credible scenarios that allow both AEMO and the industry to make informed decisions in a highly uncertain world. In this way the uncertainty can be explored and quantified, facilitating a more robust approach to decision making across the scenarios. The real value is in being able to use a set of scenarios to explore future outcomes.

Therefore, EnergyAustralia considers it will be key for AEMO to:

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<sup>1</sup> We note that ISP assumptions and results may be used as a starting point for future RIT-T's and/or replace the Project Specification Consultation Report (PSCR).

- Clearly define scenarios used in both the ESOO and ISP;
- Model generator revenue adequacy and retirement decisions as well as timing;
- Ensure the modelling sufficiently deals with fuel supply adequacy, i.e. ensuring there is enough energy to meet demand even with long periods of low wind, low solar and low water inflows for hydro.

**Q2: Do you agree that the proposed scenarios outlined in this section provide plausible and internally consistent future worlds for use in planning and forecasting? Do they provide sufficient stretch for forecasting and planning purposes? How could they be improved**

In outlining the scenarios, AEMO has not provided sufficient information on the macro variables that underpin them. More discussion is required on the impact of exchange rates, oil and LNG pricing etc. on the framing of the forecast scenarios.

EnergyAustralia seeks clarification on the purpose and construction of the scenarios. Scenarios should be used to test the impact of different assumptions, not to suggest a likely future outcome. The inherent danger in presenting a middle, BAU or 'neutral' scenario is that it is likely to be interpreted as having a high level of certainty. EnergyAustralia believes that decision making should be tested across scenarios for robustness and is unclear why a single case is required. If there is justification for a single 'best estimate' then one possible approach could be a weighted average of credible outcomes, rather than a single best guess of the future path. Care should be taken in applying this approach to ensure it is sensible. For example, where the exit of a generator varies across scenarios it is not sensible to plan for a percentage closure.

Further, developing internally consistent 'book-end' scenarios means that it is more difficult to mix and match different components of the scenarios to develop a hybrid scenario. The high and low scenarios should represent book-ends of all the underlying consumptions in aggregation, with multiple sensitivities used to test particular assumptions and internally consistent paths. For example, the current Neutral scenario for Rooftop PV is higher in the early years than the Strong scenario which makes it difficult to select different combinations of elements of scenarios.

Load closures

EnergyAustralia understands that AEMO intends to smooth the closure of Aluminium smelters over several years in the low scenario. This approach does not reflect a realistic closure profile and will mute the impact on subsequent demand forecasts and supply requirements. It is important to preserve the bulk step change, reciprocating the step changes that are captured for changes in generation capacity.

We understand that there may be some sensitivity around publishing the exact load size of the smelters, however, it appears that this information is already available in the

public domain<sup>23</sup>. This information could be used to indicate the approximate size of the load subject to a step change which adds to the credibility of the scenarios.

If AEMO needs to withhold the exact values of the load size, this could be done by creating a very small tail. The exact values will also be obscured by other changes in the demand profile of the remaining industrial consumers under the low scenario. EnergyAustralia strongly encourages AEMO to take a 'materially correct' approach rather than a 'precisely wrong' one.

Further, AEMO do not need to predict a closure date, rather reflect the impact of closure at the end of known subsidy arrangements in a scenario. In doing this, AEMO is not making a statement about expected closure, rather it is providing useful information to the market about how the system would respond if the plants were to close at that time.

### Policy scenarios

While we recognise that AEMO does not wish to make political statements about future energy policy, industry places a high value on AEMO providing information to the market about possible future outcomes under different conditions. To this end, it would be prudent for AEMO to test the outcome of proposed federal and state targets for renewable generation. For example, the current Federal Labour policy of a 50% renewables and 45% emissions reduction, Victorian government 40% renewable energy target for the state.<sup>456</sup> EnergyAustralia believes that these reflect more likely approaches to emissions reduction in the current political climate than defining an emissions trajectory up front.

## **Q3: What additional sensitivities should be explored that could materially impact power system planning**

### Energy adequacy/extreme weather sensitivity

EnergyAustralia recommends that AEMO consider a sensitivity to model the impact of extreme drought conditions, through coincident load traces for low levels of hydro and wind generation, on the supply-demand balance. Higher penetration of renewable generation means that weather is a much more important factor for supply, where historically it has been limited to material impacts on demand only.

A minor issue, but worthy of consideration will be the impacts of solar eclipses, for example there will be one in 2028. While there is plenty of time to plan, there is also plenty of certainty around this event and it would be prudent to plan as far in advance as possible.

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<sup>2</sup> AFR reported 510MW energy requirement for Portland (20 Jan 2017, <https://www.afr.com/business/energy/electricity/agl-energy-seals-power-deal-for-alcoas-portland-smelter-20170120-qtv2ug>)

<sup>3</sup> Tomago is approximately 960MW. Tomago Aluminium Co. Pty. Ltd., *Submission to Independent Review into the Future Security of the National Electricity Market*, available at <https://www.energy.gov.au/publications/independent-review-future-security-national-electricity-market-submissions> [accessed 31 March 2019]

<sup>4</sup> Labor's Plan to invest in cheaper cleaner renewable energy, available at <https://www.alp.org.au/policies/cheaper-cleaner-renewable-energy/> [accessed 8 May 2019]

<sup>5</sup> A Shorten Labour Government will take real action on climate change, available at <https://www.alp.org.au/policies/real-action-on-climate-change/> [accessed 8 May 2019]

<sup>6</sup> Victoria's renewable energy targets, available at <https://www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-targets> [accessed 8 May 2019]

### Virtual Power Plants (VPP)

VPP operations are highly speculative at present. It is assumed that they will operate with perfect foresight, but this may not be the case. The impact of different operating profiles should be tested as a sensitivity.

### **Q4: Proposed inputs and assumptions provide reasonable basis for assessing future energy market. Suggestions for improvement, particularly for embedded investments, large scale generation and network and non-network options**

EnergyAustralia has provided feedback, comments, questions and clarifications on a number of the inputs and assumptions outlined in the consultation paper.

### Rooftop PV

- Are end-of-life plans for existing solar installations considered, for example where existing panels are retrofitted with larger, or more efficient, units.
- EnergyAustralia considers that the starting point for installations for 2018-19 may be too low given state government announcements for subsidised rooftop PV and battery installations<sup>7</sup> that were made following completion of CSIRO's work.
- Can AEMO provide more information about the solar zone profiles? The data available on AEMO's website contains minimal commentary on the shape and the data used to derive the profiles and whether there are any correlations in these traces between regions and with wind output. For example, can AEMO define what they mean by high wind traces, versus low wind traces? This is also an issue for solar as well.

### New generation

- In EnergyAustralia's experience, even with a permitted site, OCGT build times are at least 2 years. Given the timeline of other associated activities such as development, permitting and approval times we do not agree with a total lead time of 1 year as proposed by AEMO. For permitted sites, two years seems reasonable but for unpermitted sites three years seems more realistic.

### Forced outage rate

- EnergyAustralia supports AEMO's intention to use site-based forced outage rates, rather than regional averages. While this approach will reduce transparency for participants in replicating AEMO's results, it will improve the rigour of the forecasts. AEMO should engage with participants to verify that assumptions on current and expected future outage rate as are appropriate.
- We encourage AEMO to review partial de-rating to ensure they realistically capture the frequency and volume (MW levels) of these. EnergyAustralia

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<sup>7</sup> Victoria's Solar Homes Package <https://www.solar.vic.gov.au/>  
South Australia's Home Solar Scheme <https://www.sa.gov.au/topics/energy-and-environment/energy-efficient-home-design/solar-photovoltaic-systems>

understands that Plexos allows for bands of partial derating with associated times and believes this is a more accurate approach.

### Fuel adequacy

- There has been a strong focus on capacity investment but AEMO should undertake work to strengthen their energy assumptions contingent on fuel adequacy. In particular:
  - Ensure coincident low water and low wind conditions due to drought are captured in the traces
  - Ensure that coal supply is not assumed to be infinitely flexible as coal generation plants and mine sites are often constrained by contracted delivery schedules and corresponding mine plans. For significant volumes this is determined by long term contractual arrangements which can take years to negotiate. While additional temporary coal can be acquired in theory, AEMO is encouraged to assess if power stations are capable of physically receiving and/or utilising these theoretical coal purchases.

### Battery storage

- Does the analysis include cycle restrictions and degradation rates where battery capacity reduces over time?
- Can AEMO provide more detail on the basis for the starting point for the battery storage forecasts. Is this based on Demand Side Participation data, or another source?
- Does AEMO assume that VPPs operate with foresight as this may not reflect reality? AEMO should consider different VPP operations as a sensitivity.

### Electric Vehicles

- Can AEMO provide more clarity on how EV charging impacts Maximum Demand forecasts as erroneous intra-day charging patterns could artificially inflate Maximum Demand forecast?
- Broad EV adoption is likely to be accompanied by smart chargers and retail tariffs to encourage charging away from the evening peak. On this basis it is unrealistic to assume evening/convenience charging would be the predominant charging profile and doing so will create significant additional network investment requirements.

### Weighted Average Cost of Capital (WACC)

- It is our observed view that historically renewable projects generally have a lower WACC for generation contracted under a PPA, rather than merchant projects. We consider that in the future these WACC's are likely to be higher due to the increased risk resulting from MLF, congestion and connection risk

(for example, do no harm). We would encourage AEMO to review these assumptions with appropriate parties to confirm this.

**Q6: AEMO seek specific feedback on:**

**a) List of candidate generation technologies**

AEMO needs to provide further clarity on whether battery and pumped storage are included in the list of candidate technology. In our view this is not clear.

**b) Current and future generation technology costs**

Pumped hydro costs – We agree these are more credible cost numbers, noting they still appear to be at the low end of the spectrum.

**c) Generator fixed O&M costs, noting the inclusion of fixed costs associated with mines**

Gas prices

- It is our view that AEMO's range of gas prices across their scenarios is not broad enough to capture future uncertainties in gas prices, for example the potential that LNG import terminals may be build in Australia. Given this, it would be beneficial if AEMO could provide more clarity on what their neutral gas scenario (for example) is intended to capture? What developments does this include?
- Has AEMO considered the TUOS charges appropriately? For example, Jeeralang has lower prices than Newport. As a peaking gas plant, Jeeralang's costs should be higher to smear the transport costs over fewer MWh.

Coal costs

- Can AEMO use more recent cost data than 2016 numbers as these will be out of date when the final reports are published in 2020.
- Can AEMO report the costs in Mt not MJ/\$ as using a more conventional metric will assist in assessment of the data.

**d) Appropriateness of AEMO's assumptions around various storage technologies**

No specific comments

**e) Approach on generator retirements, including appropriate costs to convert existing CCGTs to OCGTs providing a peaking role**

EnergyAustralia believes that generator retirements should be assessed through economic assessment within each scenario and not through assuming arbitrary 'end of life' dates. As such, AEMO need to carefully consider how to capture all revenue streams for generation including contract market revenue streams.

AEMO should verify closure dates against data that has been provided by all participants on *expected closure year* as required in February 2019 under the new Generator Closure Notice rules, rather than using fixed technical end-of-life assumptions

**Q7: what material issues should be prioritised**

This is addressed in the opening comments.

AEMO's proposed approach to reliability (section 5.2.3) is supported as an improvement on the current approach.

If you would like to discuss this submission, please contact Georgina Snelling on 03 9976 8482 or [Georgina.Snelling@energyaustralia.com.au](mailto:Georgina.Snelling@energyaustralia.com.au).

Regards

**Sarah Ogilvie**

Industry Regulation Leader