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Eli Pack
Group Manager, System Planning
AEMO

Submitted via email: ISP@aemo.com.au

Dear Mr Pack,

Integrated System Plan (ISP) Methodology Issues Paper

Origin Energy Limited (Origin) welcomes the opportunity to provide feedback on AEMO's Integrated System Plan (ISP) Methodology Issues Paper.

Origin supports the proposed changes to the ISP Methodology which aim to strengthen forecasting outcomes. The following comments are provided to support this intention and improve the transparency and accuracy of the modelling process.

Integrating gas in the ISP

Origin supports the inclusion of gas system expansion capabilities in the ISP to enable greater consideration of how gas investment may affect electricity infrastructure requirements for meeting power system needs. To maximise the benefits of further gas integration and produce reliable gas system forecasts, we recommend that AEMO aligns weather variability modelling with the methodology used for preparing the Electricity Statement of Opportunities (ESOO), as set out in more detail below. As variable renewable energy (VRE) penetration increases in the NEM, weather forecasting and modelling becomes increasingly influential in planning power system needs.

Currently, the ISP methodology's use of "rolling reference years" limits weather considerations to a single historical year, potentially overlooking the impacts of multiyear weather patterns and variability on VRE output. Accurate VRE forecasts are essential for reliable gas development projections, as VRE output directly informs consumption forecasts for gas-powered generation (GPG), a key input for the gas supply expansion model. To ensure a robust optimal development path (ODP), we recommend simulating VRE output using at least eight historical reference years, as in the ESOO methodology, to account for the effects of varying weather conditions on power system requirements. Additionally, to assist in planning for the delivery of NEM reliability and security at minimal cost within the ISP, a 'worst-case' VRE output forecast should be considered to provide further insight into investment trade-offs that might exist between the gas and electricity sectors.

Origin also supports aligning gas usage levels in the capacity outlook model with actual outcomes observed in the East Coast Gas System (ECGS). This should be reflected in the adaptation of both mid-merit and flexible gas generator operation where AEMO deems suitable to enhance the reliability and usefulness of the ISP.

The issues paper notes that AEMO is considering developing an additional gas development projection for the counterfactual of each scenario. These projections would reflect a future where increased gas investment offsets the absence of major new transmission projects beyond those currently committed or anticipated. Origin supports this additional analysis, as it would enable a more thorough evaluation of the costs and benefits of new electricity transmission infrastructure. It would also provide additional insight into the potential demands on the electricity and gas systems if these projects do not proceed and whether the ECGS is equipped to manage such challenges effectively.

Future collaboration with AEMO is welcomed to shape realistic and likely gas development pathways, recognising that a data-driven, consultative approach is essential for market confidence in the ISP as a valuable planning tool for the NEM's future and the broader energy transition.

Improving demand-side modelling

Origin supports incorporating distribution network capabilities into consumer energy resource (CER) forecasts, understanding that the intent of this analysis is to facilitate more accurate and comprehensive information regarding the development of CER in the NEM. We would therefore recommend that AEMO also consider the likely impacts of consumer behaviour on the uptake of CER beyond economic assumptions made in the scenarios. For example, distribution network congestion in an area may limit the uptake of CER and therefore impact the need for system augmentation.

Similarly, minimum system load requirements should be considered in CER forecasts, as periods of low demand may necessitate curtailment of rooftop solar or other actions by AEMO to manage system security. This curtailment could influence consumer behaviour, potentially limiting CER uptake. Accurately reflecting these impacts in forecasts is critical to providing comprehensive and reliable planning information.

Enhancing other selected ISP modelling approaches

Addressing perfect foresight for storage devices in the time-sequential model

Introducing headroom and footroom energy reserve constraints to storage devices may help to provide insight into the impact of imperfect foresight. However, on forecast peak demand days or periods of high prices, the model should allow storage devices to breach these constraints and fully discharge to support the grid. This would better align with observed storage device behaviour in the NEM.

Additionally, AEMO is proposing to introduce energy planning with error and apply imperfect assumptions of generator outages, renewable energy availability and demand conditions to the short-term energy plan that influences storage operation. Origin does not support incorporating energy planning with error in the ISP methodology and suggests that this approach would be better considered in sensitivity analysis. The application of imperfect assumptions introduces significant uncertainty and variability into the modelling process. This, in turn, could lead to unintended consequences, such as unreliable storage device forecasts.

Improving representation of wind resource diversity in large renewable energy zones

Origin supports incorporating more than two wind resource tranches in large REZs but emphasises the need for transparency and clarity in developing renewable resource traces, like wind forecasts, to improve the ISP's value to stakeholders. As VRE penetration increases, these traces play an increasingly critical role in shaping ISP outcomes, especially with the greater integration of gas considerations.

If you wish to discuss any aspect of this submission further, please contact me at Megan.Findlay@originenergy.com.au or by phone, on +61 434 934 793.



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