

1 May 2023

Andrew Turley
Group Manager, Forecasting
Australian Energy Market Operator (AEMO)

Submitted via email: ISP@aemo.com.au

Dear Mr Turley,

Consultation on updates to the Integrated System Plan (ISP) Methodology

Origin Energy Limited (Origin) welcomes the opportunity to provide feedback on AEMO's Update to the ISP Methodology consultation paper. Our comments are aimed at improving the usefulness and practicability of the ISP to underpin confidence in the plan:

- **Transmission project lead time and uncertainty:** We support incorporating uncertainty in transmission project lead time (such as construction delays) in the modelling and suggest this should also apply to new generation build. This would ensure the ISP reflects the realistic timelines faced by major projects, which will promote coordination of generation and transmission investment, and better support the transition.
- **Dispatch behaviour of storage devices:** AEMO should provide more information on the rationale for its derating approach and undertake further analysis to inform its decision. It should consider a hybrid derating approach (storage capacity and power output) or probabilistically modelling future behaviour. In terms of the limit, short-duration storage can respond flexibly to power system events and should have a lower derating than proposed. Deratings should also be commensurate with the severity of events, e.g., they should be zero (no reduction in capacity) for load shedding but higher for a minor event with low prices.
- **Assumed renewable energy resource quality:** AEMO should provide more information on the methodology used to identify high and medium wind quality tranches (i.e., top 15% of sites for high quality and top 40% for medium).

We expand on these points below.

Transmission project lead time and uncertainty

Origin broadly supports revising transmission project lead times to better reflect practical factors such as probable construction or planning delays. This would improve rigour of the optimal development path and support investor confidence in the plan. A more realistic optimal development path will promote coordination of generation and transmission investment, and better support the transition.

The option to introduce an actionable window could add complexity to the optimal development path modelling. The second option, revising earliest in-service dates, would be preferable so long as the process used to extend or otherwise amend project lead times is transparently communicated. In doing so, AEMO should clarify the meaning of "earliest in service date", specifically, whether this date refers to when construction is finalised, initial energisation or when full capacity is available after testing.

AEMO should also consider revising project lead times for new generation build. Just as with transmission, new generation faces connection and other delays, which should be incorporated in the methodology to ensure the plan reflects observed challenges in the market.

Dispatch behaviour of storage devices

Origin supports, in principle, changes aimed at better reflecting observed dispatch behaviour of storage devices in response to power system events in the methodology. However, it is not clear how the derating limits were chosen, why derating through storage capacity (MWh) is AEMO's preferred metric or why virtual power plants (VPPs) would be derated in the same way as grid-scale storage.

AEMO has provided, separate from the consultation paper, some analysis on the dispatch behaviour of existing grid-scale batteries based on power output (MW). This historical analysis has limitations given that significant power system events are rare, and dispatch behaviour may change in the future as battery penetration increases. Nonetheless, AEMO should extend its analysis of dispatch behaviour to storage capacity (i.e., MWh) of grid-scale batteries, as well as for VPPs where possible, to inform its preferred derating approach. AEMO should clearly communicate the outcomes and limitations of the analysis and set out the rationale for choosing its final derating approach.

AEMO should also consider the following points in choosing a derating approach:

- AEMO should consider a hybrid derating metric (i.e., a combination of storage capacity and power output) particularly if this improves accuracy of the modelling.
- Given the limitations of using historical data, AEMO could consider probabilistically modelling dispatch behaviour using an outage parameter as proxy, instead of a derating metric. The modelling could build on historical data but include adjustments to better reflect likely behaviour during high price events, including to capture instances where storage penetration is more significant.
- Short-duration batteries are flexible enough to respond to power system events by charging and discharging their full storage capacity as required, particularly for significant power system events. Shorter duration storage is likely to have more than 50% of storage capacity available for major power system events (e.g., load shedding) and deratings should reflect this, i.e., a lower derating should apply than the 50% proposed in the paper.
- Availability is likely to vary depending on the size of the power system event. For example, during a lack of reserve 3 (LOR3 or load shedding) event availability would be expected to be close to 100% as prices would be at the market price cap. This means a zero or low derating for a large event would be appropriate. For a minor event, say a small LOR1, derating limits could be higher as prices are likely to be relatively low which means participants may choose to reserve some capacity for future periods.
- Where there are known constraints for existing or committed storage units such as participation in a System Integrity Protection Scheme (SIPS), these should also be incorporated in the methodology when modelling dispatch behaviour.
- We also suggest that VPPs should be treated differently from grid-scale storage. The response from VPPs is unlikely to be as firm as grid-scale storage and this should be incorporated in the methodology when choosing an appropriate derating factor.

Assumed renewable energy resource quality

The consultation paper notes that the choice of percentiles for the high and medium wind quality tranches – top 15% and top 40% respectively – will be based on a calibration process with reference to historical performance. It is not clear how this process works.

Origin would welcome more information on the process for identifying the percentiles for the high and medium wind quality tranches, including what “medium” and “high” are meant to represent. Without a better understanding on how this choice is made, it is not clear whether the proposed changes to the tranches are appropriate.

Should you have any questions or wish to discuss this submission further, please contact me at Sarah-Jane.Derby@originenergy.com.au or on (02) 8345 5101.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'S. Derby'.

Sarah-Jane Derby
Energy Regulation Manager