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Integrated System Plan
Australian Energy Market Operator
GPO Box 2008
Melbourne VIC 3001

Submitted via email: ISP@aemo.com.au

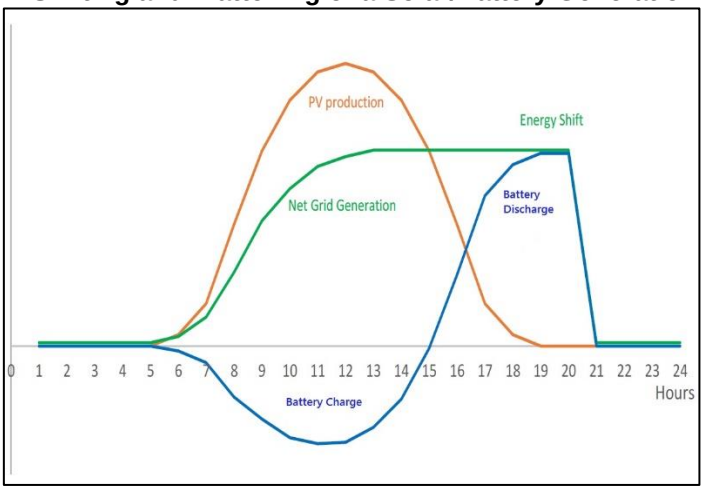
INTEGRATED SYSTEM PLAN (ISP) CONSULTATION – MODELLING INPUTS

Origin Energy Limited (Origin) welcomes the opportunity to comment on the proposed modelling inputs of AEMO's Integrated System Plan. The proposed scenarios outlined in Table 1 of the consultation paper provide an appropriate, high level coverage of the key inputs that will help inform and rank transmission developments.

At a more granular level, Origin believes the modelling should examine the correlation between forecast wind generation and how it would satisfy demand profiles. It is important that AEMO outline its assumptions for forecast wind profiles, how they might match forecast demand and vary these assumptions across half hourly intervals and in multiple 'runs' or simulations. By undertaking this analysis, it would provide an understanding of how wind generation can satisfy demand from either within a region or be supplied via interconnectors. Renewable energy generation profiles will be key in understanding how demand could be met and help to identify potential transmission investment options. AEMO should therefore outline its half hourly assumptions for wind.

It is also important to understand the impact of solar and battery profiles on demand. Whilst solar output is relatively predictable compared to wind, demand levels will be heavily dependent on the charge and discharge profiles that are modelled. Origin believes it is important for AEMO to model several charge and discharge outcomes. Two scenarios are front of mind, firstly if batteries are used to offset the reduction in solar output after 3pm to reduce peak demand around 6pm. Graph 1 shows a hypothetical shift of grid generation using a combination of solar and batteries. In this example a standalone solar system would provide its peak discharge in the afternoon. By coupling the system with a battery it essentially reduces peak afternoon output by charging the battery in the middle of the day and discharging it later in the evening. Modelling this solar/battery profile, while including assumptions on uptake rates, will influence demand outcomes.

Graph 1: Shifting and Flattening of a Solar/Battery Generation Profile



Origin Energy Limited ABN 30 000 051 696 • Level 45, Australia Square, 264-278 George Street, Sydney NSW 2000
GPO Box 5376, Sydney NSW 2001 • Telephone (02) 8345 5000 • Facsimile (02) 9252 9244 • www.originenergy.com.au

A second profile could examine a more coordinated response by battery systems to price spikes in the wholesale market. Over time aggregators of DER may play a key role in supplying coordinated responses to wholesale pricing events. As such this large input of generation from aggregated batteries will affect generation and demand levels. AEMO could use forecast assumptions on pricing events in the NEM and model how price responsive aggregated battery systems could affect generation and demand levels. Understanding this impact across half hourly intervals will influence the levels of transmission investment required to satisfy demand centres.

Finally, electric vehicle uptake is one of the key inputs into the modelling scenarios, and whilst uptake is important, the usage of those vehicles should also be taken into consideration. Similar to the battery scenarios, it is important for AEMO to understand and model how electric vehicles would be utilised and its subsequent impact on demand.

Should you have any questions or wish to discuss this information further, please contact James Googan in the first instance via email james.googan@originenergy.com.au or phone, on (02) 9503 5061.

Yours sincerely,

Steve Reid
Group Manager Regulatory Policy
Origin Energy