18 July 2024

Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000
Reference: ERC0395

Submitted electronically

Enhancing the Integrated System Plan to support the energy transition, Consultation paper

Snowy Hydro Limited welcomes the opportunity to comment on matters raised in the Enhancing the Integrated System Plan to support the energy transition, Consultation paper by the Australian Energy Market Commission (the Commission).

Snowy Hydro supports consideration of factors aimed at improving the ISP's relevance in an evolving energy landscape so that it remains fit-for-purpose in a rapidly transforming energy sector. Currently the ISP offers a comprehensive roadmap that strengthens investor confidence and highlights the potential of energy investments. It is for this reason that we support:

- explicitly requiring Australian Energy Market Operator (AEMO) to consider broader gas market conditions in the development of the ISP
- expanding AEMO's analysis of demand-side factors in the development of the ISP

While the improvements for the ISP are critical, it is important that developments in gas forecasts for the ISP doesn't lead to AEMO directing investment, assessing investment opportunities or excluding investments across the NEM. The ISP should remain as a key contextual and planning tool and inform market participants. In this regard, AEMO should undertake further assessment on the following:

- Gas improvements
    - developing projections about the future utilisation (and availability) of gas infrastructure.
        - The ISP needs to assess whether there will be adequate gas storage to support projected gas generation volumes, given that gas generation will be concentrated in the late autumn / early winter renewables lull.
            - ISP should include gas storage infrastructure and LNG import terminals; and
            - It should include modeling the gas network with the electricity network to identify the constraints on the gas supply, gas storage operation, gas network and import terminal operation;
    - carrying out additional analysis of future gas demand and gas pricing;
    - collating information about dates of expected gas pipeline or GPG closure or conversion; and
    - updating medium- and long-term projections of gas generator fuel costs to reflect expectations about gas market developments;

- Improving consideration of demand-side factors in the ISP:
    - We support AEMO expanding its analysis of the uptake and availability of orchestrated CER and distributed resources; and
    - Improving weather data modeling by analysing a 30 to 50-year historical profile to address uncertainties in energy demand forecasting and weather prediction. Advancements in weather data modeling will support more informed decision-making.

Detail Response:

AEMO considering broader gas market conditions in the development of the ISP

Snowy Hydro agrees with the consultation that *"gas will be an important energy source as we transition to low-emission energy sources, with GPG a key part of the electricity system. GPG will be a source of electricity system stability and reliability and support electricity supply requirements."* It is for this reason that we consider that the ISP will be enhanced by deeper and more explicit consideration of gas market conditions, including the cost and feasibility of gas projects and supply issues.

The ISP and GSOO can be better aligned to provide a coherent narrative of what needs to be done. It is for this reason the NER should require the ISP to include specific gas analysis. As it stands the NER only directs AEMO to have regard to the most recent gas statement of opportunities (GSOO) under the National Gas Law (NGL) in developing the ISP. AEMO should utilise the GSOO in its analysis and what gas related information should be considered in the ISP.

While the GSOO should remain the key document for gas updates on forecasting, we consider the ISP should seek to improve on:

- analysis of future gas demand and pricing;
- developing projections about the future utilisation of gas infrastructure;
- collating pipeline closures or conversion dates; and
- reflecting updated gas generator fuel costs.

The ISP needs to assess whether there will be adequate gas storage to support projected gas generation volumes, given that gas generation will be concentrated in the late autumn / early winter renewables lull. The ISP should include gas storage infrastructure, LNG import terminals and modeling the gas network with the electricity network to identify the constraints on the gas supply, gas storage operation, gas network and import terminal operation.

Snowy Hydro supports the proponent's approach that the rule change does not propose that AEMO develop an Optimal Development Path (ODP) for the gas market. AEMO's analysis should extend only to planned or likely gas sector developments, rather than a range of possible future investment opportunities in the gas sector. The ISP is an important planning document but it should be left for competitive entities to decide the risk and commercial feasibility of GPG projects.

AEMO's analysis of demand-side factors in the development of the ISP

Snowy Hydro supports the Final 2024 ISP explicitly recognising CER as a significant resource in the transition and its contributions to system security. This includes adding 'distributed networks' where renewable resources are connected and valuing consumer batteries. It is therefore important that AEMO expand its analysis of the uptake and availability of orchestrated CER and distributed resources. We believe this change would improve the robustness of AEMO's forecasts and analysis and better in understanding and supporting the expansion of CER by providing access to this specific data.

Improving weather data modelling by analysing a 30 to 50-year historical profile to address uncertainties in energy demand forecasting and weather prediction will also improve CER forecasts. Currently the work AEMO is undertaking only applies to weather patterns from 2011-12 to 2022-23 and analyses the operability of the power system during future conditions, modelled off the historically observed weather. AEMO conceded in the ESOO that *"it is not guaranteed that this historical period includes the worst possible VRE drought conditions."*[1] It is for this reason Snowy Hydro has always supported that a 10 year data assessment is not long enough to capture the full range wind and solar droughts and that AEMO should seek to assess a historical profile of 30-50 years. While a longer historical profile may not be guaranteed to capture the worst possible VRE drought conditions, it could provide a much improved assessment.

VRE droughts occur during extended periods of low wind and decreased sunshine hours. The most at-risk period is late autumn to early winter, when solar is seasonally low and before the winter winds develop. Therefore, more analysis needs to be undertaken to achieve more detailed data sets or to highlight the risks of extended wind and solar droughts by AEMO.

AEMO projections show renewable droughts can last from days to months but as the amount of VRE in the system increases, the importance of managing this variation increases. A key variable to assess reliability moving forward is the adequacy of energy supply for prolonged periods of low VRE. AEMO models the ISP with data from 2011-2021, however this is unlikely to be representative of VRE risk. The Griffith University Paper *"Quantifying the risk of renewable energy droughts in Australia's National Electricity Market (NEM) using MERRA-2 weather data"*[2] recently developed a 42 year backcast of simulation of VRE output across the entire NEM, something AEMO could emulate. This simulation would give a greater data set, increasing the accuracy of AEMO's modelling.

Another paper which could assist AEMO is the Australian Pipelines and Gas Association Frontier report on the *"Potential for Gas-Powered Generation to support renewables"*[3], which developed a simplified model of the electricity system in South Australia to analyse the role of gas-powered generation in a 100% renewable (or close to) electricity system. It found in the forecast 2035 traces, there is a three-month period where wind output is approximately 25% of capacity overall, and a month-long period where wind output is approximately 13% of capacity. This represents a deficit of

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[1] AEMO ESOO

[2] Gilmore,J, Nelson, T, Nolan, T, 2022, *"Quantifying the risk of renewable energy droughts in Australia's National Electricity Market (NEM) using MERRA-2 weather data"*
<< https://www.griffith.edu.au/__data/assets/pdf_file/0024/1615614/No.2022-04-VRE-droughts-modelling-Griffith.pdf >>

[3] *Frontier Economics, 2021, "Potential for Gas-Powered Generation to support renewables"*

64% compared to the average wind output, which was 36% of capacity for the full year.

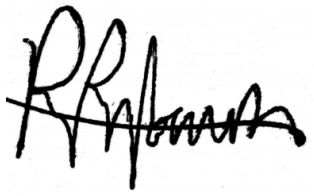
Transmission will help diversify the risk of VRE droughts in one region, particularly around the worst events; however having longer data sets will improve demand forecasting overall. However the market will need long-duration firming to fill the drought gaps.

About Snowy Hydro

Snowy Hydro Limited is a producer, supplier, trader and retailer of energy in the National Electricity Market ('NEM') and a leading provider of risk management financial hedge contracts. We are an integrated energy company with more than 5,500 megawatts (MW) of generating capacity. We are one of Australia's largest renewable generators, the third largest generator by capacity and the fourth largest retailer in the NEM through our award-winning retail energy companies - Red Energy and Lumo Energy.

Snowy Hydro appreciates the opportunity to respond to the Commission on the Enhancing the Integrated System Plan to support the energy transition, Consultation paper. Any questions about this submission should be addressed to panos.priftakis@snowyhydro.com.au.

Yours sincerely,



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