To: Australian Energy Market Operator

13 August 2024

Draft 2025 Inputs, Assumptions and Scenarios Report

Environment Victoria welcomes this opportunity to provide feedback on the scenarios proposed for the Australian Energy Market Operator's (AEMO) 2025 Inputs, Assumptions and Scenarios Report (IASR).

About Environment Victoria

Environment Victoria is the leading not-for-profit environmental advocacy organisation in Victoria. With 40 grassroots member groups and over 200,000 individual supporters, we've been representing Victorian communities on environmental matters for over 50 years. Through advocacy, education and empowerment, Environment Victoria seeks significant and enduring solutions that will safeguard the environment and future wellbeing of all Victorians.

An additional scenario limiting global warming to 1.5 degrees based on the Intergovernmental Panel of Climate Change (IPCC) Sustainability pathway

In previous IASR, the "Green energy exports" scenario assumed an extremely rapid scale-up of hydrogen exports. In Environment Victoria's submission to AEMO regarding updates to the Integrated System Plan (ISP) methodology (sent 1/5/2023), we noted the uncertainty regarding hydrogen production and use, arguing that there should be a second 1.5-degree scenario that is based on domestic decarbonisation rather than being tied to exports.

The consultation paper notes the difficulties with the Green energy exports scenario and adjusts it accordingly, which we welcome. However, we remain in favour of a second 1.5 degree scenario that, in reference to Figure 1 of the consultation paper, is high on "Australia's decarbonisation" and moderate on "energy sector contribution to decarbonisation." This is analogous to Shared Socioeconomic Pathway 1 (SSP1) from the IPCC Sixth Assessment Report representing the lowest challenges to mitigation and adaptation.

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Alignment with Future Made in Australia

The announced and budgeted Future Made in Australia (FMA) package includes $22.7 billion of public investment in both domestic decarbonisation and export industries. However, the consultation paper does not mention FMA. While the effects of FMA remain to be seen, there is a clear shift in the baseline level of economic restructuring towards net zero which affects all scenarios. AEMO needs to ensure and explain how each scenarios has been adjusted in response to FMA.

Renewable gas and hydrogen blending assumptions lack credibility

For all scenarios, AEMO proposes modelling renewable gas in distribution networks in the form of up to 10% hydrogen blending, and unlimited opportunity for biomethane and other biofuels. These assumptions lack credibility and require adjustment in line with accepted understanding of the potential of renewable fuels.

Hydrogen blending has been thoroughly debunked as a credible decarbonisation strategy. It is highly inefficient, expensive, and does little to reduce emissions, while delaying or replacing viable decarbonisation strategies such as electrification, and diverting hydrogen from hard-to-abate industries where it is most needed.[1] Hydrogen blending trials and hydrogen research conducted in Australia to date have lacked transparency or publication of results – we don't know how much hydrogen has been blended in trials nor the true costs and risks of hydrogen blending.

Biomethane substitution in the networks is limited by the availability of waste feedstocks and the logistics of connecting supply and demand. We encourage AEMO to refer to credible estimates of biomethane supply such as those published by ARENA, Infrastructure Victoria and Bioenergy Australia. In addition, AEMO must consider that biomethane transport will be made more difficult by the declining viability of the gas networks.

Biomethane use in hard-to-abate industries should be included in the scenarios, particularly those assuming greater decarbonisation. However, biomethane must be able to meet 100% of demand in order to meet climate targets – if it does not, it is perpetuating the burning of fossil gas.

The viability of other renewable gases such as landfill gas need to consider standards and rules which currently prevent them being used in applications other than behind the meter. AEMO needs to account for the time taken to put appropriate regulatory and standards frameworks in place as well as uncertainty in these gases becoming commercially viable to run in the distribution networks.

Provide more detail on energy efficiency

Progress in energy efficiency is given as "lower", "moderate" and "higher" without additional explanation, although we note that the IASR takes into account energy efficiency programs such as the various state-based white certificate schemes and Victoria's Gas Substitution Roadmap. In reality, energy efficiency uptake will be affected by energy prices, pressures on energy-intensive businesses to remain competitive, and growth in the ecosystem of services such as energy management and energy performance contracting.

[1] Sara Baldwin and Dan Esposito, 'ASSESSING THE VIABILITY OF HYDROGEN PROPOSALS: CONSIDERATIONS FOR STATE UTILITY REGULATORS AND POLICYMAKERS', n.d.

We believe that the potential of energy efficiency warrants greater consideration and suggest that AEMO provide detail on how energy efficiency is included in scenarios. This will allow all stakeholders to engage with and provide feedback on the dynamics that will push forward or hold back energy efficiency. Furthermore, lower-emissions scenarios should assume greater innovation within the ecosystem of energy services.

Clarify role and assumed credibility of carbon dioxide removals

AEMO should clarify whether the cost of carbon dioxide removal (CDR) is included in scenarios as the IPCC has noted that limiting global warming to 2 degrees or less requires CDR. This applies to bioenergy with carbon capture and storage (CCS). Scenarios should account for costs and uncertainty in successfully developing CCS from its currently unproven state. We note that the IPCC does not include fossil fuel burning with CCS as a valid form of CDR because it does not result in a net reduction in greenhouse emissions.[2]

Cost trajectories for key technologies

In the 2024 ISP AEMO assumes that utility-scale shallow storage batteries installed in the 2020s are not replaced in full when they retire in the 2040s. Instead, AEMO assumes a greater need for deeper storage and greater use of "flexible gas" generation. However, this is questionable given the downward cost trajectory of batteries in relation to alternatives and it being a handful of years before 2050 when fossil fuels should no longer be acceptable for all but the hardest to abate sectors.

There is obviously great uncertainty in predicting investment trends 20 years from now. However, batteries are attracting investment today whereas new gas supply is not, and gas networks are already contemplating asset write-downs. Renewable gases are an uncertain future technology, as are pumped hydro and newer battery technologies which might fulfil deeper storage needs. We suggest that AEMO provide greater clarity of the assumed development trajectories of key emerging technologies.

If you would like further information on any of the points raised in this submission, you are more than welcome to contact me on the details below.

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[2] IPCC.