

February 2023



To Australian Energy Market Operator,

Thank you for the opportunity to make a submission for the 2023 Inputs, Assumptions, Scenario Report (ISAR). [Beyond Zero Emissions](#) (BZE) is an independent think tank creating solutions for a prosperous zero-emissions Australia. We support AEMO's Integrated System Plan work as a key step to enabling electricity system planning to be delivered across the energy system. Indeed, we are highly supportive of a national approach to electricity system planning and modernisation as outlined in our recent research [National Supergrid](#) - *connecting all Australians to a zero-emissions future*.

Our key recommendations for AEMO's IASR work at this time include:

- Raise ambition for domestic emission reductions inline with the IPCC 1.5 degrees of global warming, in addition to a green energy export scenario.
- Retain the Strong Electrification scenario to support electrification.
- Review and improve *Green Energy Export* scenario hydrogen and biogas assumptions and expand modeling to support Australia's export opportunities and onshore manufacturing.
- Expand modeling to include distribution modeling to support electrification planning and implementation.

We have expanded these recommendations in the following two pages, we would welcome the opportunity to discuss any of this information further.

Yours Sincerely,

Dr Jane Sewell

Head of Research (Interim), Beyond Zero Emissions.

jane.sewell@bze.org.au

Raise the domestic ambition on 1.5°C

Australia has committed to the Paris Climate Accord to limit global emissions to 1.5°C above pre-industrial levels, we must raise our domestic ambition on achieving this. Beyond Zero Emissions [Deploy](#) report found Australia can achieve 81% emissions reduction by 2030 through ready to deploy proven technologies. AEMO should adopt a 1.5°C scenario detailing an accelerated domestic energy transition, enabled by proven technologies including renewables, storage, rapid adoption of electrification and improved energy efficiency to meet this target.

The role of hydrogen in *Green Energy Exports*

Green Energy Exports is the one scenario that currently aligns to limiting global emissions to 1.5°C above pre-industrial levels. However, this scenario includes assumptions about the role of non-renewable hydrogen and biogas. We believe that this scenario should be focused on enabling Australia to achieve rapid decarbonisation of exports by onshoring manufacturing and processing through electrification and *renewable* hydrogen to reduce Australia's scope 3 embodied emissions of exports as detailed in Beyond Zero Emissions' [Renewable Energy Industrial Precincts](#).

Renewable hydrogen holds a critical role in decarbonising hard to abate industries such as coking coal in steel-making and ammonia producing for fertilisers. However, the *Green Energy Exports* scenario includes blending of hydrogen in gas networks and biogas. This is counterproductive to decarbonisation efforts, where alternatives such as electrification and renewable hydrogen to gas-fired end-uses is economic.

Electrification

The 2023 IASR has removed the *Strong Electrification* sensitivity from the 2021 IASR. Beyond Zero Emissions recommends that AEMO retain this *Strong Electrification* scenario (or as a minimum, the *Strong Electrification* sensitivity) - we have produced several reports, specifically [Electrifying Industry](#), [Buildings Plan](#) and [Deploy](#), that show electrification is both possible and the most economically viable solution to rapid decarbonisation. These reports detail how electrification of buildings and industries through commercially available technologies can meet decarbonisation goals. We believe AEMO is ideally positioned to model the opportunities and challenges Australia's electricity system faces to electrification.

Government policies

In order for AEMO to achieve the goal of covering “the breadth of potential and plausible futures impacting the energy sector” we believe it is important to include the following state and federal policies in addition to the current national goal to deliver 43% emissions reduction by 2030:

- Federal government target of 82% renewables by 2030. AEMO should assume this is a fundamental policy setting which underpins and guides significant federal government decision making.
- NSW’s stated target of 70% emission reduction by 2035 on 2005 levels.
- Victoria’s legislated target of 75-80% emissions reductions by 2035.
- Capacity Investment Scheme to procure at least 6GW of new renewable resources.

Carbon sequestration

AEMO’s modeling of carbon offsetting is unclear around levels of sequestration achieved by land-based sequestration versus process-based sequestration. We understand that land based sequestration requires very large land areas and uncertainty surrounding the integrity and longevity of assumed sequestration in a changing climate. As sequestration represents key carbon offset for the industrial and energy sectors, we recommend a more conservative approach to modeled sequestration due to the risk associated with not achieving in modeled forecasts. Beyond Zero Emissions recommends at a minimum separating modeled sequestration of land-based and process-based sequestration to provide transparency around which process is more heavily leaned on.

National Distribution modeling

Beyond Zero Emissions recommends AEMO expand its remit of the Integrated System Plan to include distribution level modeling. BZE’s *National Supergrid* report calls for a holistic approach to upgrading the electricity system to include funding for both transmission and distribution to deliver broader benefits to Australia. Distribution upgrades will be critical to enabling electrification and better orchestration of DER technologies which can be called on by AEMO to provide generation, system security and demand management for optimal management of the electricity system and market.