WWF
AUSTRALIA

SUBMISSION
16 FEBRUARY 2023

2023 AEMO Inputs Assumptions and Scenarios Consultation

forecasting.planning@aemo.com.au

WWF-Australia welcomes the opportunity to provide a submission to AEMO's Draft Inputs, Assumptions and Scenarios Report (IASR) consultation.

WWF-Australia is part of the WWF International Network, the world's largest independent conservation organisation. WWF's global mission is to 'stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature'. WWF-Australia has approximately 2.4 million financial and non-financial supporters.

It has been pleasing to see the progress made in AEMO's past Integrated System Plans (ISP) that reflect the shift and acceleration to renewables in Australia's energy market. The ISP continues to be a critical roadmap for our energy system transformation, and as the global transformation accelerates will be an even more important process and report to give confidence to international capital markets to unlock the necessary capital required to capture the opportunities for Australia. At the same time, it is critical to ensure that investments are made in a timely and cost effective manner and in ways that are positive for nature and communities. The IASR is one of the fundamental building blocks to delivering a credible and investable 2024 ISP.

Further the 2024 ISP will be a significant signal for Australia's role as a credible regional leader for climate action, and in the global context this is especially important as the timing will be just prior to the updating of its Nationally Determined Contribution (NDC) under the Paris Agreement.

We are pleased to see the evolution of the "hydrogen superpower" scenario to "green energy exports" however believe that there is still much to do especially in considering deeper domestic decarbonisation, and are concerned that it is the only 1.5 degree aligned scenario being considered.

It is WWF's position that Australia is uniquely positioned to prosper in a world that is now addressing climate change on many fronts. In order to do so, however, requires wide-ranging leadership as Australia must not only decarbonise its own total energy needs (electricity, transport, buildings and industry including feedstocks) through renewables and storage, but must use our world-class renewable resources to also grow clean manufacturing and replace our fossil fuel exports with renewable powered and value-added products.

To make this possible, and to unlock new jobs and industry, WWF-Australia's[1] analysis and the analysis of Accenture[2] and Transgrid[3] suggests that Australia needs to move to an electricity system powered by renewables that is five to seven times the scale of our current electricity system.

IASR's consideration of Australia's "fair share" of emissions

As a party to the Paris Agreement, Australia has committed to holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit the global temperature increase to 1.5 degrees Celsius. (Paris Agreement Article 2, 1. (a).).

Further, as per Article 2.2 of the Paris Agreement, the commitment must be implemented by Australia to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances often summarised as doing our "fair share".

While there are a range of methods of allocating the remaining global emissions budget amongst countries, WWF-Australia has commissioned an independent expert report which provides the most up to date findings on Australia's remaining emissions budget currently available. This analysis applies IPCCAR6 findings and the expert report states that "for Australia to meet its obligations to pursue efforts to limit warming to 1.5°C, a 2030 reduction of 74% relative to 2005 emissions, and net zero by 2035 is consistent with a 50% chance of staying below 1.5°C".[4]

The allocation is consistent with the allocation used by Climate Change Authority, and as noted on page 4 of that independent expert analysis, the required emissions reductions given above are calculated based on Australia's "fair share" of global emissions being 0.97% (from 2013 to 2050). Recent analysis shows that such a share is high given Australia's high GDP. A 0.97% share also means that Australia receives a higher per capita share than other nations and Australia's share would be 0.33% if all countries received the same emissions per capita.

Given that finding, 74% relative to 2005 emissions and net zero by 2035 is the absolute minimum emissions trajectory and emissions budget that should be applied in the IASR for the 1.5 degrees Celsius aligned scenarios to ensure that accurate emissions budgets are being applied that align with both Australia's obligations under the Paris Agreement and the latest IPCC science on the remaining global emissions budget.

This emissions budget constraint which gives a 1.5 degrees Celsius aligned outcome must be applied to multiple scenarios. To do otherwise would be inconsistent with our international climate obligations and would expose Australia to unnecessary risk to proceed with only one scenario in the current suite which is aligned with Australia fulfilling its obligations under the Paris Agreement.

The known physical risks and severe disruption to the Australian climate, environment and economy from delayed action on climate and a failure to meet the global goal of limiting warming to 1.5 degrees

---

[1] WWF-Australia (2022) Behind the Scorecard Technical Report, Second Edition See Part 2 – 700% renewables trajectory

[2] Accenture (2021) Sunshot: Australia's $89B clean energy export opportunity – a report commissioned by ACF, BCA, WWF and the ACTU.

[3] Transgrid (2021) Energy Vision: a clean energy future for Australia

[4] Climate Resource, March 2022, "Comparison between Australia's 2030 and 2050 emissions reduction targets and 1.5 degree Celcius pathways." https://www.wwf.org.au/ArticleDocuments/353/Climate-Resource_Comparison-between-Australias-2030-and-2050-emissions-reduction-targets-and-1-5C-pathways_March-2022.pdf.aspx?OverrideExpiry=Y

Celsius are well documented and well known across all levels of government in Australia, and as noted below, well known by AEMO. It is imperative that Australia follow a science-based decarbonisation pathway aligned with avoiding the very significant risks of higher temperatures on the Green Energy Exports scenario.

AEMO's function of preparing the ISP, provided for in section 49(2)(a) of the National Electricity Law must be performed in accordance with the National Electricity Rules and having regard to the national electricity objective (s49(2)(a)(3). The "reliability" and "safety" aspects of the NEO have a clear connection with the extent to which Australia and other countries comply with our obligations under the Paris Agreement to hold warming to the safer and less disruptive level of 1.5 degrees Celsius. That direct connection is clearly evident in the findings of the "Electricity Sector Climate Information Project" commissioned by AEMO and others[5].

Given the factual scenario within AEMO's knowledge, exercising the functions of preparing the ISP carries a requirement that the increased physical risks of greater emissions and higher climate risks are considered, and that a greater selection of lower emissions pathways are modelled to give the best chance of achieving reliability and safety in the system. It is our view that in order to properly perform its statutory functions, as required by law, AEMO must model more than one 1.5 degree aligned scenario in the ISP, to improve the probability of a low emissions scenario being delivered.

State and Territory commitments

Australia has seen significant acceleration in state and federal policies over the past 12 months. This is evidenced in WWF's 2022 Renewable Energy Superpower Scorecard[6]. However, while progress has been significant, the Scorecard also shows that there is still much to do for Australia to capture the opportunity presented by the clean energy transformation, or it risks being left behind. The ISP needs to play a key role in coordinating policy for the energy transformation that will underpin this opportunity.

We note that the IASR has acknowledged many of the legislated and or funded state and federal policies. However it is important to reinforce that these are included across all scenarios in base-case policy assumptions:

- NSW announcement (made after the release of the Draft IASR) for a target of reducing economy-wide emissions by 70% (from 2005 levels) by 2035, needs to be included across all scenarios.
- the legislated Victorian targets for emissions reductions, including the 75-80% target (from 2005 levels) by 2035 across all scenarios.
- the Capacity Investment Scheme announced in December 2022 ($10B underwriting to procure at least 6GW new renewable resources) in all scenarios; and
- the "82% renewables by 2030 government target" underpins and guides significant federal government funding decisions, and therefore should be assumed as a policy setting in all scenarios.

All scenarios seem to be predicated on the current national 43% emissions reduction target. Again, given the IASR's stated goal of "covering the breadth of potential and plausible futures impacting the energy sector," at least some of these scenarios should be testing a higher target.

---

[5] https://www.climatechangeinaustralia.gov.au/media/ccia/2.2/cms_page_media/799/ESCI%20Project%20final%20report_210721.pdf

[6] https://www.wwf.org.au/what-we-do/climate/renewables/resources/renewable-superpower-scorecard-dec-2022#gs.p87clt

Scenario development comments

Given the pace of change and geo-political impacts (IRA, CBAMs, global energy markets), as per above, we believe that 1.5 degree Celsius compatible pathways applying the latest and most robust emissions budget for Australia needs to be modelled more strongly across a wider range of scenarios.

Electrify and decarbonisation scenario:

In particular there should be the inclusion of a scenario or sensitivity (as per 2021 IASR) that examines "Strong Electrification". There needs to be significant focus on the planning implications of a future that is a high ambition, high electrification and high energy efficiency option. There is already significant consumer shift to more efficient and electrification options – such as heat pumps, EVs, appliances etc. Further with customer and policy focus on manufacturing and production supply chains there will be increased adoption of new technology and electrification.

This scenario will have a significant impact on the transmission and network capability needed to support this increase in demand and the generation that must be connected at scale. If this is not considered in depth it risks poor outcomes for the speed and scale of necessary transformation, coupled with poor outcomes for reliability and affordability for customers.

Transmission:

In addition, there remains significant concern about the delays on transmission build. This needs to be considered as a key sensitivity. Most of the major actionable projects in the 2022 ISP have been recommended and in the "pipeline" since 2018, but continue to be at risk of delays, creating significant implications both from an investment perspective and its impacts on generation mix and other fundamental aspects of energy planning.

Hydrogen:

Renewable hydrogen and related products will be critical to assist with the decarbonisation of industries that are otherwise difficult to abate through electrification. This may include areas of steel decarbonisation, fertiliser manufacturing, and also possible use in heavy transport – where alternative technologies may not yet be commercialised. This may also drive export demand, particularly for regional trading partners. However, as large-scale hydrogen production emerges in a number of jurisdictions, opportunities for export growth may become narrower.

Any consideration of "blue" or "grey" hydrogen would be contrary to emissions ambitions, global trends, and the drive to develop a certification scheme. These sources of hydrogen should not be included in any credible 1.5 degree aligned scenario.

We would also question the "unlimited" blending of hydrogen in gas networks under the "green energy exports" scenario. Blending is inefficient, and the network requirements to achieve this may be very high cost and potentially require significantly higher ongoing operational costs and compliance.

Recommendations/Conclusion

Key recommendations to be considered are:

- Specific consideration of Australia's "fair share" under Paris targets across scenarios, and development of new scenario that specifically focusses on domestic decarbonisation to complement exports scenario;
- Inclusion of state-based emissions targets and relevant policies such as NSW and Victoria; and
- Highlighting the sensitivity on delay to transmission build, and the risk it poses to achieving relevant scenarios, including consideration of availability of capital and impact on supply chains by global competition for resources (eg due to US IRA.)

For more information

Cam Crawford
Energy Transition Manager
ccrawford@wwf.org.au

Working to sustain the natural world for the benefit of people and wildlife.

together possible. wwf.org.au

WWF-Australia National Office
Level 1/1 Smail Street, Ultimo NSW 2007
GPO Box 528, Sydney NSW 2001
Tel:+1800 032 551 | enquiries@wwf.org.au | wwf.org.au