Submission to the AEMO on the Draft 2023 Inputs, Assumptions and Scenarios Report

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About RE-Alliance
RE-Alliance is working to secure an energy transformation that delivers long-term benefits and prosperity for regional Australia. We do this by listening to the needs of communities most impacted by the transition, facilitating collaboration across the renewables industry to deliver social outcomes and advocating for meaningful benefits for regions at a policy level.

We thank the Australian Energy Market Operator (AEMO) for the opportunity to comment on the Draft 2023 Inputs, Assumptions and Scenarios Report (the IASR).

We have three overarching concerns and some follow-on comments.

1. Ambition of scenarios with relation to climate change.

Australia is a party to the Paris Agreement. "The Paris Agreement is a legally binding international treaty on climate change. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.

The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects".[1]

RE-Alliance notes that AEMO has developed four scenarios in the Draft IASR. These are:

[1] Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

- the 1.5°C Green Energy Exports scenario;
- the 1.8°C Orchestrated Step Change scenario;
- the 1.8°C Diverse Step Change; and
- the 2.6°C Progressive Change

Only the first of these scenarios is compatible with a 1.5°C commitment. The second and third scenarios build in up to 1.8°C of warming.

We quote from the Climate Council 2021 report *Aim high, go fast: Why emissions need to plummet this decade*[2].

- *"There is no safe level of global warming. Already, at a global average temperature rise of 1.1°C, we're experiencing more powerful storms, destructive marine and land heatwaves, and a new age of megafires.*
- *Multiple lines of evidence strongly suggest that we can no longer limit warming to 1.5°C without significant overshoot and subsequent drawdown, and that the global average temperature rise will exceed 1.5°C during the 2030s.*
- *Should temperatures spike above 1.5°C for a significant period of time, critical ecosystems on which we depend (such as the Great Barrier Reef) would be even more severely damaged, or destroyed.*
- *Every fraction of a degree of avoided warming matters, and will be measured in lives, species and ecosystems saved. We must do everything possible to deeply and rapidly cut our emissions, while also preparing for climate impacts that can no longer be avoided.*
- *There's little time left to limit global warming below catastrophic temperature rises. Breaching 1.5°C of warming significantly increases the risk of triggering abrupt, dangerous and irreversible changes to the climate system".*

The fourth scenario is totally unacceptable and models a scenario of 2.6°C warming which is essentially a scenario that is planning to fail. Indeed, such a scenario, were it included, would need to factor in the severe and repeated damage inflicted on electricity infrastructure from dramatically increased climate events. Given that every fraction of a degree of avoided warming matters, and will be measured in lives, species and ecosystems saved, RE-Alliance considers that all the scenarios should be aligned with 1.5°C warming as a maximum, and that the scenarios can then model several alternative ways of transforming our energy sector and limiting our emissions to these levels.

"The purpose of the Integrated System Plan is to establish a whole of system plan for the efficient development of the power system that achieves power system needs for a

[2] Climate Council (2021) Aim high, go fast: Why emissions need to plummet this decade p ii available at: https://www.climatecouncil.org.au/wp-content/uploads/2021/04/aim-high-go-fast-why-emissions-must-plummet-climate-council-report-210421.pdf

planning horizon of at least 20 years for the long term interests of the consumers of electricity".[3]

On 12 August 2022, Energy Ministers agreed to fast track the introduction of an emissions reduction objective into the national energy objectives (NEO), as a first action under the National Energy Transformation Partnership.

This will integrate emissions reduction and energy policy in the national energy laws, and provide greater clarity to Australia's three energy market bodies — the Australian Energy Market Commission (AEMC), the AEMO and the Australian Energy Regulator (AER) — to consider emissions reduction in how they undertake their respective powers and functions.

Energy Ministers are currently consulting on reforms to the NEO[4]. RE-Alliance will also submit to that process.

RE-Alliance contends that the long term interests of consumers include living on a habitable planet free from the risk of triggering abrupt, dangerous and irreversible changes to the climate system.

The draft IASR states that "in developing the proposed scenarios, AEMO has focussed on the principles that scenarios should remain broad, distinct and internally consistent, and plausible, and take into consideration the guidance provided in the AER's cost benefit analysis (CBA) guidelines".[5] RE-Alliance considers that, as with the proposed changes to the NEO, the draft IASR should take into account the principle that the scenarios are science-based and in keeping with 1.5°C of warming.

We suggest that the purpose of the Integrated System Plan should be widened so that AEMO provides the Government with a range of plausible scenarios for how we can limit Australia's share of global warming to 1.5°C.

AEMO models a range of differing policy and technological changes in its existing scenarios. E.g significant increase in energy efficiency etc. Another scenario could be for example the 1..5°C Green Energy Exports Scenario with supply constraints and labour shortages modelled.
RE-Alliance suggests that a second stage of what AEMO delivers (perhaps in collaboration with the Department of Climate Change, Energy, the Environment and

[3] National Electricity Rules (NER) 5.22.2 The Purpose of the ISP available at: https://energy-rules.aemc.gov.au/ner/3/6042
[4] Energy Ministers's paper on the NEO reforms - include emissions reduction within the NEO https://www.energy.gov.au/government-priorities/energy-ministers/priorities/national-energy-transformation-partnership/incorporating-emissions-reduction-objective-national-energy-objectives
[5] Draft 2023 Inputs, Assumptions and Scenarios Report p.4 available at: https://aemo.com.au/consultations/current-and-closed-consultations/2023-inputs-assumptions-and-scenarios-consultation

Water (DCCEEW)) should be a list of policy outcomes needed to reach these scenarios that the Government can then consider and implement if supported.

AEMO already builds in various assumptions into their scenarios e.g. certain levels of uptake of energy efficiency or EV uptake or distributed solar PV uptake. AEMO is the best party to know how much of each initiative is required, whilst also keeping the energy system secure. DCCEEW can then advise on the detail of, for example, what energy efficiency practices should be implemented e.g. insulation upgrades, increased star ratings for houses etc.

I.e. Scenario A would meet system security requirements, limit Australia's contributions to global warming consistent with a 1.5°C scenario and would require the following policy adjustments.

RE-Alliance suggests that the ISP should inform policy making, not just respond to it.

2. Unclear rationale for decision-making around policy settings

RE-Alliance agrees with other organisations in the climate movement that the IASR has not provided a strong rationale for excluding a number of legislated and/or funded state policies in its base-case policy assumptions. We consider that:

- The IASR should include NSW's stated target of reducing economy-wide emissions by 70% (from 2005 levels) by 2035.
- The IASR should include the legislated Victorian targets for emissions reductions, including the 75-80% target (from 2005 levels) by 2035 across all scenarios.
- The IASR should include the Capacity Investment Scheme announced in December 2022 ($10B underwriting to procure at least 6GW new renewable resources) in all scenarios. It is likely to be developed and funded by July 2023 (the stated date for a policy to meet the criteria for inclusion).
- 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.

We recognise that it may be difficult for AEMO to model some of these scenarios as there may be very little detail on how some of these targets will be met as the targets have only recently been released. Nonetheless, we consider that State Governments should be taken at their word. If they announce a target, we consider that AEMO should assume that initiatives necessary to deliver that target will be developed.

3. Social Licence Actions in the Draft IASR

New REZs

We note that Figure 44 on page 117 seems to propose new renewable energy zones (REZs). What level of consultation has occurred on these new REZs with State Governments and local communities? This appears to be symptomatic of the process with regard to social licence issues. A new REZ suddenly appears on an AEMO planning document. Has there been any consultation with people who live in the area?

We recommend that consultation with State and local Governments and affected communities occurs before the identification of new REZs.

RE-Alliance notes that strategic land use mapping is not mentioned in the section considering social licence.

In the climate and environment movement's recommendations to the Federal Government in *Achieving Fast, Fair and Sustainable Transmission Development: Rewiring the Nation Report* we recommended pursuing policies and regulations that protect and enable sustainable development, including adoption of key recommendations from the Samuel Review.

RE-Alliance notes the Government's response to the Samuel Review, which includes a Regional Planning Initiative focused on improving environmental outcomes by providing clear information to decision makers, project proponents and communities. The Commonwealth is working with state and territory governments to find locations for regional planning. These locations may include renewable energy zones.

An example that could be followed is the Victorian Government's approach to transmission planning which was outlined in their recent Victorian Transmission Investment Framework (VTIF) Preliminary Design Consultation Paper. The approach included a new strategic land use assessment geospatial mapping exercise to identify the lowest impact corridors for transmission development and new generation.

Opportunities remain for national coordination on a similar process. This may come from the Regional Planning Initiative or other reform processes such as the Australian Energy Market Commission's (AEMC's) *Transmission Planning and Investment Review* process.

We recognise that this discussion relates to process not cost, however sub-optimal process leads to increased costs. It is unclear by what degree, but likely quite high if projects are significantly delayed.

Other social licence related points

Social licence related costs could be included in regional cost factors.

We note that in the 2022 ISP, AEMO used a land use penalty factor of $0.25 million/MW to all new variable renewable energy build costs in a REZ, which applies only if generation is required above the original REZ total resource limits. This is updated in the draft IASR. What is this figure based on? Have there been consultations with State Governments and generators?

RE-Alliance considers that further work on developing this land use penalty factor is required. 'Social licence costs' will not just apply to new generation projects above the original REZ total resource limits.

Some projects will face fierce opposition from local communities if REZs are placed inappropriately e.g. the Far North Queensland REZ which is very near world heritage protected forests.

Has AEMO considered the costs of access fees to generators, such as those that will be levied on generators connecting to REZ infrastructure under the NSW Electricity Infrastructure Investment Act? Has AEMO included transmission social licence related costs in NSW due to the introduction of the Strategic Benefits Payment Scheme? It is likely that similar arrangements will soon be implemented in at least some other jurisdictions.

The AER is developing a Guideline which will provide guidance to the transmission industry on efficient social licence costs. When this is available it should be referenced in the IASR.

RE-Alliance congratulates AEMO on the formation of the Advisory Council on Social LIcence. RE-Alliance is happy to be represented on the Council. Something that would further strengthen the make-up of the Council is the presence on the Council of landholders who are affected by new or existing transmission infrastructure.

Other Issues

Offshore wind

RE-Alliance supports AEMO considering the modelling of an offshore wind sensitivity, subject to further advice from the Victorain Government about offshore wind targets. Given the Victorian Government's ambition in this area, we consider that the 2022 ISP underplayed the potential scale of uptake of offshore wind.

Carbon sequestration technologies

Regarding the carbon sequestration targets we note that this contains significant use of land use sequestration, direct air capture (DAC) and carbon capture and storage

technology. There are significant issues associated with each of these methodologies and therefore we suggest that the emissions abatement forecast from them may not be able to be relied on.

In particular, the IEA's recent tracking report on Direct Air Capture[6] found that "there are currently 18 direct air capture plants operating worldwide, capturing almost 0.01 Mt CO2/year, and a 1 Mt CO2/year capture plant is in advanced development in the United States. Eighteen DAC plants are currently operational in Europe, the United States and Canada. All of these plants are small scale, and the large majority of them capture CO2 for utilisation – for drinks carbonation, for instance – with only two plants storing the captured CO2 in geological formations for removal. Only a few commercial agreements are in place to sell or store the captured CO2, while the remaining plants are operated for testing and demonstration purposes.

The report goes on to say "carbon removal technologies such as DAC are not an alternative to cutting emissions or an excuse for delayed action, but they can be an important part of the suite of technology options used to achieve climate goals. For this reason, DAC needs to be demonstrated at scale, sooner rather than later, to reduce uncertainties regarding future deployment potential and costs, and to ensure that these technologies can be available to support the transition to net zero emissions and beyond.

In the near term, large-scale demonstration of DAC technologies will require targeted government support, including through grants, tax credits and public procurement of CO2 removal".

Carbon capture and storage has many associated problems despite years of government financial backing for trial plants. See the Climate Council webpage on carbon capture and storage for further details.

Takeup of electric vehicles (EVs)

The introduction of fuel standards would likely increase the number of models of EV's available to the Australian market and therefore the number of EV's sold and their impact on the power system. See Climateworks Centre's submission to the Treasury Laws Amendment (Electric Car Discount) Bill 2022 [Provisions][7] for a comprehensive list of recommendations on how to increase EV uptake in Australia.

We consider that the scenarios should include modelling of measures such as this to inform Government of ways in which our energy system can evolve consistent with a 1.5°C target. Given that AEMO is prepared to model scenarios including unproven

[6] IEA (2022) Direct Air Capture tracking report available at: https://www.iea.org/reports/direct-air-capture

[7] Climateworks Centre (2022) Accelerating EV uptake: Policies to realise Australia's electric vehicle potential available at: https://www.climateworkscentre.org/wp-content/uploads/2022/08/Accelerating-EV-uptake-report-Climateworks-Centre-August-2022.pdf

carbon sequestration methods, we consider that AEMO should also model much more easily implementable policy interventions such as the introduction of fuel standards at a range of levels. Other policy initiatives could include bans on new internal combustion engine powered vehicles after a certain date.

With regard to managing peak charging of EVs we also suggest modelling of the effects of the use of financial incentives for off peak charging.

Use of hydrogen for residential/commercial use

It is unclear to RE-Alliance whether the volumes of hydrogen being used in various scenarios by 2030 and 2050 have costed the distribution network upgrades that would be required to support this, as pipelines would have to be upgraded from cast iron to polyethylene throughout the network. This would come at a very substantial cost.

Distributed PV

Regarding AEMO's forecast of approximately 50% of all dwellings having PV systems installed by 2050 we wonder whether this forecast is both too low and too slow. We recognise that there are barriers to all residences installing solar PV such as shading, residential flat dwellers having less roof space, landlord / tenant issues etc. However, we also recognise that there are a range of potential solutions to some of these issues which could be explored and implemented such as solar gardens[8]. The Government has set aside funding of $102.2 million over 4 years in the 2022-23 Budget for the Community Solar Banks initiative.

Household and connections forecasts

RE-Alliance is unsure whether the household and connections forecasts include recent Government initiatives such as the National Housing Accord[9]. Working with all levels of government, institutional investors and the construction sector, the Government plans to build one million new well-located homes over five years from 2024.

Coal and gas prices

We agree with AEMO that it will be necessary to update the draft IASR in light of the Australian and State Government action to cap gas and coal prices. The Australian Government has implemented the Competition and Consumer (Gas Market Emergency Price) Order 2022, an emergency measure that applies a temporary price cap on the supply of regulated gas. States have implemented similar legislation with respect to coal price caps e.g. the NSW Parliament passed the *Energy and Utilities*

[8] See for example this pilot funding for solar gardens funded by ARENA available at: https://arena.gov.au/projects/social-access-solar-gardens/ and this information from the Community Power Agency https://cpagency.org.au/solar-banks-and-community-batteries-a-good-start-for-labor-but-design-and-delivery-critical/

[9] See https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/media-releases/national-housing-accord-working-together-help-tackle

Administration Amendment Act 2022 which provides the Government with the ability to set maximum prices for coal, direct the supply of coal to particular persons and set conditions with respect to the supply of coal in NSW.

We agree with AEMO that it will be important to monitor ongoing high gas prices and flow on electrification effects.

Energy Efficiency

We are encouraged to see that AEMO models high levels of energy efficiency policy ambition in the 1.5°C Green Energy Exports Scenario. This is the sort of approach we would like to see across a range of policy measures. A secondary step would be to advise government of the quantum of energy efficiency abatement required and potential measures to achieve this outcome. AEMO could work with the Department of Climate Change, Energy, the Environment and Water on this task.

Transmission costs - undergrounding

We note that GHD completed the Concept Design and Cost Estimate for the Undergrounding of the HumeLink Project for Transgrid as well as the Transmission Cost Database for AEMO. Two versions of the Humelink Undergrounding report were released with very significantly different costings in each case. We will be interested to see Mott MacDonald's update to the Transmission Cost Database with regard to undergrounding costs.