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Australian Energy Market Operator
Submitted via email to: ISP@aemo.com.au

To whom it may concern,

ClimateWorks Australia submission on the draft 2022 Integrated System Plan consultation

ClimateWorks Australia welcomes the opportunity to respond to the Australian Energy Market Operator's (AEMO) draft Integrated System Plan 2022 (ISP). ClimateWorks develops expert, independent solutions to assist the transition to net zero emissions for Australia, South-east Asia and the Pacific. A non-profit organisation, it was co-founded in 2009 by the Myer Foundation and Monash University and works within the Monash Sustainable Development Institute.

ClimateWorks and CSIRO were engaged by AEMO as part of the ISP process to conduct multi-sectoral modelling to establish least-cost pathways for Australia's economy to achieve emissions targets while meeting the scenario-based demand parameters. We welcomed the opportunity to work with AEMO on this ISP. Many broader issues were addressed through this process and the draft ISP is significant for its ambition. This submission provides recommendations to further strengthen and future-proof this ISP. It is vital to support the transition of the energy sector in a way that will enable Australia to act to keep the Paris Agreement goals within reach and make the most of potential economic opportunities available as the world transitions to a net zero economy. This is especially urgent given the window to keep global warming within 1.5 degrees is still open, but narrowing.

Submission summary

ClimateWorks recommends both the 'step change', and the 'hydrogen superpower' scenarios are given equal weight within the ISP to determine the Optimal Development Path. This would:

- improve the flexibility of the process to take full account of the potential for further disruptive change and allow the NEM to keep pace with a rapidly transforming energy sector.
- enabling well-timed transmission investment and address risks associated with long lead time transmission assets constraining generation - especially should 'step change' under-predict the real rate of system change. Such constraint could limit energy and industry from unlocking emerging economic opportunities such as exports of green hydrogen, green steel and similar products.

Context - Australia's 2030 economy-wide emissions reductions and the role of electricity

ClimateWorks' scenario analysis shows that Australia can still achieve trajectories compatible with the Paris climate goals, however those trajectories involve very strong emissions reductions this decade:

- about 75% reduction below 2005 levels for the 1.5 degree scenario; and
- about 50% reduction below 2005 levels by 2030 for the 2 degree scenarios.

Electricity generation is Australia's largest emissions source, and can also provide emissions reductions for downstream sectors of the economy. As a result, decarbonising electricity plays a significant enabling role in decarbonising other sectors, which utilise electricity for energy supply or have electrification opportunities. ClimateWorks notes the increased ambition of emissions reductions in the scenarios for this ISP and considers this appropriate. This is particularly important given the role that a decarbonised energy system plays in unlocking potential opportunities from electrification and clean energy exports which provide flow-on benefits for the Australian economy as a whole.

Flexible planning that takes full account of further disruptive change is essential to keep pace with a rapidly transforming energy sector

The renewable transformation of the electricity sector has historically out-paced modelled projections. Previous ISP modelling and ClimateWorks' own economy-wide modelling[1] have consistently underestimated the pace and scale of renewable generation deployment. This historical trend demonstrates the need for AEMO to actively plan using multiple scenarios that includes very rapid change and ClimateWorks recommends AEMO works to two central scenarios, 'step change', and the 'hydrogen superpower' scenarios.

[1] ClimateWorks Australia, Decarbonisation Futures (2020). Available here: https://www.climateworksaustralia.org/resource/decarbonisation-futures-solutions-actions-and-benchmomarks-for-a-net-zero-emissions-australia/

ClimateWorks recommends the ISP should anticipate the potential for faster shifts than is currently considered in the 'mostly likely' scenario. This would enable development of an efficient, lowest-cost and reliable electricity system for customers that is robust to uncertainty. The future is uncertain, and the ISP would be improved by responding to this uncertainty to enable planning and investment that is more robust to increases in the pace of transformation.

Enabling well-timed transmission investment is key

At the core of the NEM transformation, is a transmission system that is currently struggling to keep pace with the scale and speed of change taking place. Building smarter, and more efficient transmission infrastructure (that is bi-directional where appropriate) will provide access to more diverse renewable energy sources, allowing best use of the trend to decentralisation and for non-coincident sources to be integrated more effectively in the generation mix. At present existing renewable energy generation, and investment in new generation and storage is being constrained by lack of transmission. This is wasting Australia's superb renewable energy resources and could limit future economic opportunities. ClimateWorks considers that the 'step change' scenario does not go far enough to unlock these emerging opportunities. We strongly support considering a scenario that has very substantial renewable energy capacity that allows surplus electricity to produce renewable hydrogen etc when variable supply is high.

The ISP plays an essential role in directing investment into the electricity system by indicating to the market where it is likely to be needed and setting out an Optimal Development Path (ODP). However, because the lead-time for transmission assets is long, and the transformation of the electricity sector is progressing so rapidly, ClimateWorks considers that the current approach of determining the ODP is no longer adequate to address the risks that the 'most likely' scenario under-predicts the rate of change. An ISP that is sufficiently flexible and keeps options open is vital to ensure Australia can make the most of increasingly rapid transformation, should this continue to occur.

This gives further support to the idea that AEMO uses both the 'step change' and 'hydrogen superpower' scenarios in the planning and evaluation of new transmission. Early market signals and flexibility within the ISP are key to deliver AEMO's mission of helping to ensure Australians have access to affordable, secure and reliable energy and would take better account of the role of the NEM to deliver Australia's emission reduction targets and contribute to the goals of the Paris Agreement.

The role of green energy in maintaining Australia's industrial and export strengths

Australia's natural assets in mineral resources, wind, solar, land, and strong industry capability offer incredible opportunities as the world moves to net zero - provided decarbonisation occurs in a timely and effective way to enable Australian industry to be competitively positioned in a decarbonised global economy. A crucial component of industry decarbonisation is the early uptake and effective integration of renewable electricity, electrification, and green hydrogen as this will help achieve competitive costs for reliable decarbonised energy, and allow Australia to remain an energy and commodity export powerhouse[2].

Energy management and energy performance as key levers to support electrification and integration of renewables in the grid

Research on net zero pathways identifies the need for a broad range of policy approaches and technologies[3]. Improved energy management and energy efficiency enable more cost-effective scale up of Australia's energy system to allow for electrification and exports of renewable energy. ClimateWorks suggests that the ISP highlights this important role for energy management and energy efficiency - and demonstrates the benefits of decentralisation including AEMO's work such as the policy and market changes to support these factors. By leveraging the benefits of energy efficiency and energy management, AEMO can make better use of existing and near-term energy assets.

To fully realise the economic opportunities of Australia's energy market transition, the ISP should enable system transition in line with the Paris Agreement (including striving to keep 1.5 degrees in reach) by accelerating the scaling-up of firmed, zero emissions electricity networks. To date, the scale and pace of the transition in the energy sector has been underestimated, and we recommend AEMO update the draft ISP to address the risks that this trend continues.

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[2] Australian Industry Energy Transitions Initiative – Phase 1 Report https://www.climateworksaustralia.org/resource/australian-industry-energy-transitions-initiative-phase-1-report/

[3] IEA, Net Zero by 2050: A roadmap for the global energy sector, https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf

Thank you for taking the time to consider our submission. We would welcome an opportunity to brief your team if you would like to explore our responses in further detail.

Yours sincerely,

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