

23 October 2024

Select Committee on Energy Planning and Regulation

To whom it may concern,

Climateworks Centre submission to the Select Committee on Energy Planning and Regulation

Climateworks Centre welcomes the opportunity to provide a submission to the Select Committee on Energy Planning and Regulation regarding its inquiry into the institutional structures, governance, regulation, functions and operation of the Australian energy market.

Climateworks bridges the gap between research and climate action, operating as an independent not-for-profit within Monash University. We develop specialist knowledge to accelerate emissions reduction, in line with the global 1.5 degrees Celsius temperature goal, across Australia, Southeast Asia and the Pacific.

The rapid decarbonisation of the electricity and energy system is essential for Australia to meet its obligations under the Paris Agreement. Electricity generation is the nation's largest source of greenhouse gas emissions. The adoption of renewables will reduce emissions by approximately one-third and will have powerful flow-on effects for other sectors of the economy.

However, the transformation is complex. It requires governance and planning that considers evolving energy generation, transmission and storage technologies, changing market and regulatory conditions, and emerging opportunities in renewable energy and resource exports.

The recommendations below will enhance the operation of the energy system and ensure it delivers the rapid net zero transformations needed. Each has been put forward to relevant governments and energy system governance bodies (please see attached submissions) and could form key focus areas for the inquiry to be undertaken by the Select Committee on Energy Planning and Regulation. Climateworks will be pleased to provide further analysis in writing or through meetings, where helpful, to the Select Committee.

Recommendations for the Select Committee on Energy Planning and Regulation

Recommendation 1: Call for the roles and functions of institutional structures and energy bodies - including the Energy and Climate Ministerial Council (ECMC) - to ensure Australia plans for a rapid rate of decarbonisation in the electricity and energy sector due to the potential for significant emissions reduction and the enabling role for the rest of the economy.

Electricity generation is Australia's largest source of greenhouse gases, responsible for about a third of all emissions. A renewables-based electricity grid will eliminate those emissions and have powerful flow-on effects across other sectors, which will be able to electrify with a carbon-free energy supply. Decarbonising the electricity grid is the most effective and efficient way to rapidly reduce Australia's emissions across all sectors.

In 2023, Climateworks published [least-cost emissions reduction pathways for Australia](#) (Climateworks Centre 2023). Australia's current 2030 emissions reduction target is inconsistent with the Paris Agreement's objective of limiting global warming to 1.5 degrees. To do its fair share in limiting warming to 1.5°C, Climateworks' modelling shows that Australia would need to achieve a 68 per cent reduction below 2005 emissions levels by 2030 and net zero before 2040. That is more than a decade sooner than the current 2050 commitment.

In our 1.5°C modelled scenario, renewables comprise 83 per cent of total electricity generation by 2030 and close to 100 per cent by 2050. To achieve this, clean electricity generation capacity expands from 55 GW today to around 151 GW by 2030 and 398 GW by 2050. All coal-fired power generation ceases by 2035, and gas-powered generation reduces by 69 per cent by 2030 and 96 per cent by 2050 (Climateworks Centre 2023).

Australia will benefit economically and environmentally from a 1.5°C aligned energy system. However, Climateworks recognises that government and energy system actors may be politically, economically and/or technologically constrained in their ability to pursue that level of ambition in the near term. Where that is the case, Climateworks recommends prioritising particular geographic areas, technologies, supply chains, infrastructure or similar with the expected ability to catalyse 1.5°C aligned action. For example:

- plan for energy supply, demand management and transmission solutions for in 'regional Integrated System Plans for industrial regions with high energy demand and potential in a net zero global economy
- plan for the implications of gas phase out at a regional level to allow for fuel switching in an orderly manner
- and/or having Distribution Network Service Providers prepare regional infrastructure plans for building and transport electrification.

Recommendation 2: Revise AEMO's role in system forecasting and planning, from responding to trends and transformations to providing evidence that enables governments and energy market operators to shape them.

An Australian Energy Market Operator (AEMO) that actively steers the energy transition will result in greater confidence for investors, stronger economic outcomes, reduced emissions and a more robust grid. If AEMO designs its approach to its forecasting and planning functions to outline what 'could and should' happen in the energy system, it will assist governments and energy market agencies in meeting their objectives.

AEMO has a highly complex task in planning an energy system that ensures reliability, security, safety, affordability and quality while helping jurisdictions achieve emissions reduction targets. It also has scope – within the bounds of electricity laws and rules – to modify the balance between responding to energy system trends and transformations and providing the information that shapes them.

In its *Response to the review of the Integrated System Plan* in March 2024, the ECMC noted ‘AEMO’s role is changing as the energy market rapidly evolves’ and ‘governments and energy sector participants now look to the ISP [Integrated System Plan] for guidance on issues across the energy value chain’ (Commonwealth of Australia 2024). The ECMC direction means that AEMO, alongside its statutory power, now has the prerogative to support governments in shaping Australia’s energy transformation.

Recommendation 3: Broaden the scope of AEMO forecasting and planning, particularly for gas and consumer energy resources, to fully align with the ECMC’s directive and intention

Climateworks supports the ECMC directive for AEMO to better integrate consumer energy resources (CER) and gas into the ISP (Commonwealth of Australia 2024). Climateworks’ multi-sector modelling and analysis consistently demonstrate that electrification, energy efficiency and demand flexibility are among the most cost-effective approaches to reduce emissions reduction (Climateworks Centre 2023). While these approaches will impact the most cost-effective pace to deploy CER or phase out gas, details of that interplay are unclear and timings may be uncertain.

CER and larger distributed energy resources, such as community batteries, offer a significant opportunity to transform how electricity is generated, traded, delivered and consumed. By integrating analysis on CER more effectively into AEMO’s planning and forecasting tools, governments and energy system stakeholders will be better equipped to implement policies that support CER deployment and encourage consumer participation in orchestration programs. Climateworks recommends that AEMO’s scenario planning accounts for the expected levels of CER adoption, the complexities of incorporating CER into the grid and the implications for operational demand for all scenarios. Moreover, we recommend that AEMO also details how CER could be enabled to reach optimal adoption levels through electrification, energy efficiency and mechanisms to promote demand flexibility. More comprehensive understanding of the opportunities of demand side management will also lead to a more nuanced approach to gas-fired electricity generation to firm variable renewables.

Similarly, the scale and pace of decarbonisation mechanisms – renewable energy deployment, fuel switching in buildings and industry, energy efficiency and demand flexibility – will influence the proportion of gas in the energy system. Climateworks’ modelling indicates that a significant switch from gas to electrification is essential for least-cost decarbonisation and that this would help jurisdictions meet their emissions reduction targets. AEMO can support an ISP optimal development path aligned with the Green Energy Export scenario and build confidence in an orderly and rapid gas phase-out by providing a detailed analysis of these decarbonisation

mechanisms. More detailed analysis can give governments and energy system stakeholders a more comprehensive understanding of the future of the reticulated gas network. Climateworks recommends undertaking modelling to outline the likely sequence, location and causal factors of gas asset and distribution network closures.

Recommendation 4: ECMC reviews energy system governance so that it evolves to enable better integration of demand-side energy performance, including assessing the need for an additional governance agency.

Climateworks recommends reforms to Australia's electricity and energy governance system to optimise it to integrate demand-side measures, including energy efficiency, electrification, energy management, demand response, demand flexibility and load shifting. Responsibility for integrating and coordinating demand-side measures into energy system planning and forecasting is presently coordinated between government departments and agencies, including those with oversight of buildings, industry, transport and energy markets. The absence of a single body responsible for energy efficiency governance has led to fragmented oversight. Additionally, minimal focus on energy performance in energy system planning and forecasting tools, a lack of energy performance data and low consumer engagement have led to an approach that lacks accountability, prioritisation and coordination.

Energy performance can play an important role in achieving national energy objectives and reducing the need for investment in grid-scale infrastructure. Australia's energy system will benefit from a governance system that enables effective integration of energy performance - and plans for what is best for the whole system rather than for a particular state or territory. That means reconsidering the nature of energy performance oversight in the context of broader energy market governance reforms, including energy performance targets, policies that account for consumer engagement levels and ensuring deployment of demand-side mechanisms is inclusive and equitable. A dedicated energy performance governance body may be an effective solution.

Recommendation 5: Plan for the rapid and orderly phase-out of gas in the electricity and energy sector. Refocus the gas market to prioritise the clean energy transition and undertake spatial modelling of gas networks to understand locations, pace and priority for orderly closures.

Climateworks recommends that gas be phased out of the electricity and energy system consistent with a least-cost pathway for limiting global warming to 1.5°C. Gas is presently used for industrial processes, to generate electricity, in buildings and, to a lesser extent, in agriculture and transport sectors. Renewable electricity, electrification and energy efficiency measures displace gas across the economy in pathways that achieve net zero emissions in a cost-effective manner.

The existing gas market is predicated on serving gas demand and maintaining an ongoing expansion of distribution. Those principles must be replaced with ones that unlock the rapid

transition away from gas use and an energy system that supports achieving net zero emissions. That will require conducting or obtaining comprehensive modelling to inform planning for the orderly closure of the gas distribution network.

Industry is the largest gas consumer in Australia, responsible for 64 per cent of total emissions from gas use (Climateworks Centre 2023). Gas is used for a range of manufacturing, chemical production and mining processes, including the production of gas for export. Under Climateworks' 1.5°C scenario, gas in industrial processes is replaced by electricity, hydrogen and biomethane. Those industrial processes considered hard to abate also see a rapid transition from gas, achieved through technological advances and supportive policy settings (Climateworks Centre 2023).

In Climateworks' scenarios, by 2050, gas-fired power plants are only used to firm the grid on occasions where electricity demand exceeds supply from renewables and cannot be supplied or curtailed in other ways. The grid can be made more flexible through demand-side management, sufficient variable renewable energy capacity and new and existing storage technologies – largely displacing gas use.

Recommendation 6: Call on ECMC and the energy market bodies to design an energy system that will enable Australia to become a 'renewable energy superpower', including analysis to enable forecasting and planning supply, storage and transmission solutions for 'regional ISPs'.

Climateworks supports the establishment of net zero industrial precincts across Australia. Precinct-scale planning for industrial regions will provide long-term guidance for industry and assurance to communities transitioning to net zero emissions. The effectiveness of this strategy will be enhanced if each major industrial region has a 'regional ISP' or equivalent, enabling an improved understanding of the scale of renewable energy that would support ambitious decarbonisation. This would assist with integrating and sharing resources, workforces and clean energy alternatives. Through a place-based approach, policy-makers can leverage a region's comparative advantages and unique characteristics and establish Australia as a 'renewable energy superpower'.

The transition away from fossil fuels will significantly increase industry's reliance on electricity, green hydrogen, bioenergy and – to a much lesser extent and only in some subsectors – gas with carbon capture and storage. For this shift to be successful, industry and investors need confidence that there will be sufficient renewable energy supply that is affordable and reliable.

That confidence does not currently exist. The ISP 'Step change' scenario plans for moderate levels of industrial electrification and new renewable energy and resource exports, with generation capacity (excluding rooftop solar PV) reaching 85 GW by 2030 and 150 GW by 2050 (AEMO 2024). To fully capitalise on the economic opportunities presented by low-emissions exports and to electrify industry consistent with a 1.5°C pathway, the Australian

Industry Energy Transitions Initiative report indicates a NEM generation capacity of 141 GW by 2030 and 341 GW by 2050 (Climateworks Centre and Climate-KIC 2023). Similarly, the ISP ‘Green energy exports’ scenario projects grid generation capacities of 124 GW by 2030 and 396 GW by 2050 (AEMO 2024).

Climateworks recommends that AEMO develop forecasting materials in tandem with precinct-scale energy system planning to better guide the deployment of energy generation, storage and transmission technologies. Localised planning that provides detailed insights into the specific electricity and energy needs of different regions and sectors is essential for directing investment, allocating resources and securing social license. Integrating regional planning into forecasting and planning materials, such as regional ISPs, or utilising government-conducted analyses (such as the regional modelling commissioned by the Department of Climate Change, Energy, the Environment and Water under the National Energy Transformation Partnership) will help ensure that regional industry actors, investors and communities have the confidence to transition away from fossil fuels.

Recommendation 7: ECMC and other energy bodies regularly review the alignment of government and private sector funding and investment for the Electricity and Energy Sector Plan with the Sustainable Finance Strategy overseen by the Treasury. And call for an obligation that recipients of government support credibly pursue net zero emissions beyond current mandatory requirements.

Australia’s commitment to achieving its climate targets is best enabled by support for energy system infrastructure that includes conditions that projects – and the investors and companies behind them – credibly pursue net zero emissions. To that end, Climateworks recommends that companies and investors receiving government investment, such as that allocated through the Capacity Investment Scheme or Future Made in Australia, demonstrate how they adhere to the Sustainable Finance Roadmap, including climate-related financial disclosure, use of the sustainable finance taxonomy and credible transition plans, beyond the mandatory requirements.

Mandatory climate-related financial disclosure will give investors more complete and comparable information about entities’ exposures to climate-related financial risks and opportunities and their climate-related plans and strategies. From January 2025, climate-related financial disclosure will be mandatory for all large businesses. Climateworks recommends climate-related financial disclosure be made mandatory for all organisations that benefit from government support for energy infrastructure, irrespective of the company size.

The sustainable finance taxonomy will be a source of guidance and consistency that will inform investors in their capital allocation. It will provide a framework to classify and verify major projects as environmentally sustainable. In many instances, it will be an appropriate instrument for setting emissions intensity standards and similar benchmarks. The sustainable finance taxonomy is expected to be available for use on a voluntary basis from mid-2025. Climateworks recommends its use be mandatory for all organisations that benefit from government energy

infrastructure investment support.

A credible transition plan is a strategic, forward-looking document that details how an entity will prepare for and contribute to the transition to net zero. Global best practice is that credible transition plans are Paris-aligned (using comparisons with national sectoral pathways where available), comprehensive, feasible and integrated throughout a company. Credible transition plans will provide Australians and investors with greater transparency and accountability about companies' financial risks and opportunities, reinforce the reliability and rigour of climate-related financial disclosures and significantly lower a company's risk of greenwashing.

Under current obligations for mandatory climate-related financial disclosure, entities do not have to disclose a credible transition plan except in certain situations. However, international investors increasingly expect such plans. Climateworks recommends that companies that benefit from government support be required to have a credible transition plan in place.

In combination, mandated climate-related financial disclosures, credible transition plans and the use of the sustainable finance taxonomy will commit companies to reducing emissions, minimise the risk of greenwashing and provide greater transparency for investors. Adopting these tools will allow investors and companies that receive government support to meet appropriate standards and decarbonise their operations.

Thank you for taking the time to consider our submission. We would welcome an opportunity to brief your team to provide further insights from our work.

Yours Sincerely,

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