GOVERNMENT OF WESTERN AUSTRALIA

Department of
Jobs, Tourism, Science and Innovation

Australia’s Transition to a Green Energy Superpower

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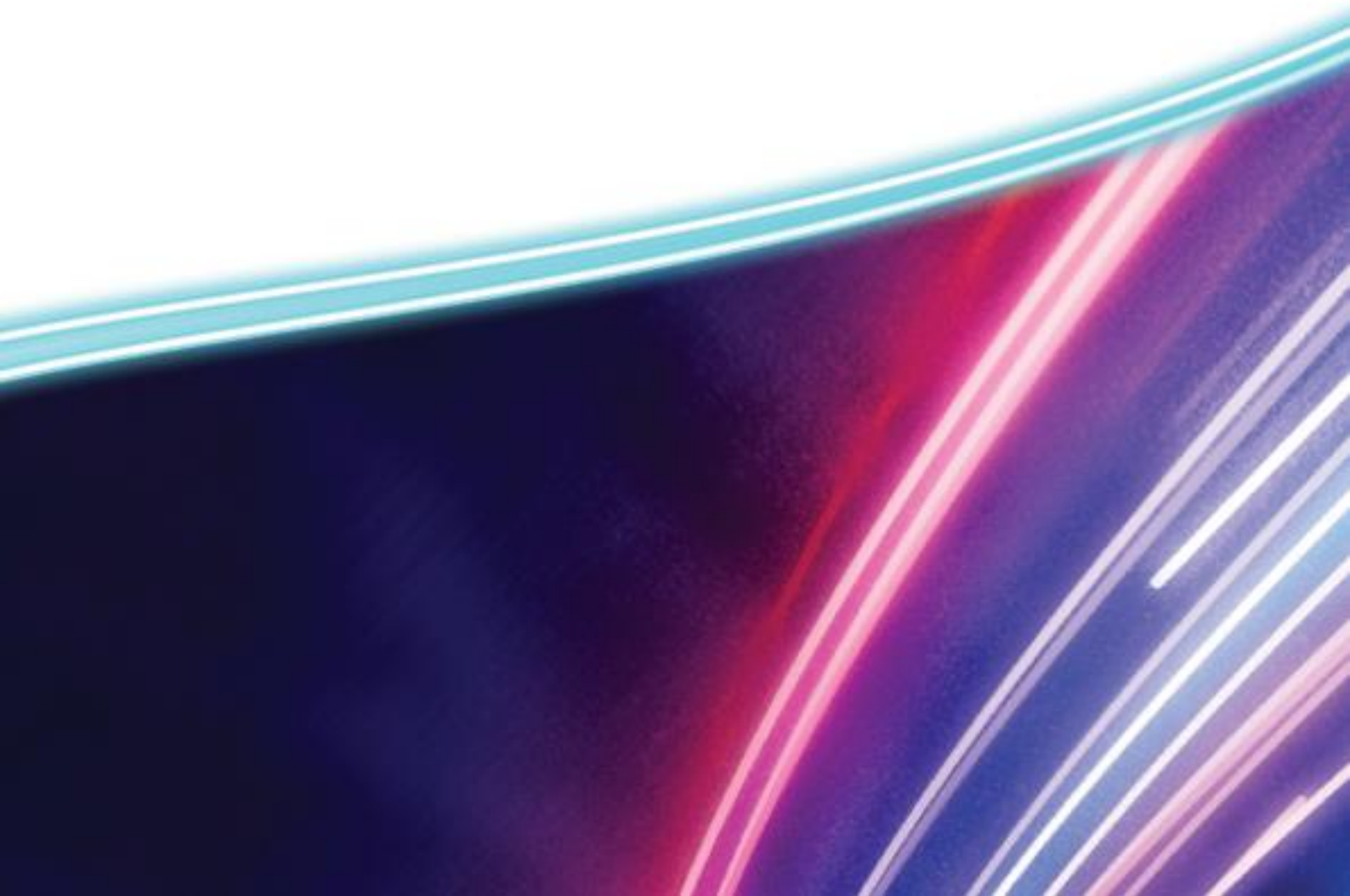

Government of **Western Australia**
Department of **Jobs, Tourism, Science and Innovation**

Introduction

The Western Australian Government welcomes the opportunity to submit its views to the Joint Standing Committee Trade and Investment Growth on Australia's Transition to a Green Energy Superpower.

Western Australia's energy sector is in the midst of a transition towards cleaner energy sources. The global trend of decarbonisation has gained significant momentum over the past few years, which has presented a major opportunity for Western Australia to secure new investment into its emerging clean energy industries.

Positioned at the gateway to the Indian Ocean, international trade and investment has long been the lifeblood of the Western Australian economy. Western Australia's traditional strengths in mining, agriculture and energy have played a formative role in the State's economic growth and have seen us flourish to become a trusted trade partner and a secure destination for investment.

The growth of the liquefied natural gas (LNG) industry in Western Australia provides an opportunity for complementary industries to locate in the State to both develop and diversify. With the right investment, Western Australia is well placed to help Australia become a global clean energy producer and export leader, drawing on the State's abundant resources, a track record in building large scale energy industries, excellent infrastructure and technical prowess in commodity development. Our highly skilled workforce and long-term relationships with overseas energy companies are being leveraged to grow our renewable energy sector, contributing significantly to Australia now being recognised as a world leader in deploying renewable energy.

Diversify WA, the State's economic development framework, sets out initiatives, actions and strategies that will contribute to achieving our vision for a strong, resilient and more diversified economy. The State's clean energy transition is a key pillar to our diversification journey, both through the decarbonisation of the Western Australian economy and establishment of new clean energy industries, such as the battery and critical minerals sector.

WA's clean energy advantages are critical to enabling Australia's transition to 21st century global green energy superpower. Rapid reductions in the cost of wind and solar power over the past decade have turned Western Australia's large, sunny, and windy land mass into a globally significant resource. In addition, significant advantages for Western Australia include:

- abundant battery and critical minerals
- leading industrial and export infrastructure
- substantial reserves of natural gas to support the energy transition
- availability of land.

Capitalising on the opportunities available requires a clear and coordinated message to attract investment. However, to leverage WA's potential to be at the forefront of Australia's transition to a 21st century global green energy superpower, collaborative effort is required between the Commonwealth and Western Australia to effectively invest in and sequence responses to our collective challenges. These challenges include:

- security of power systems through the transition to renewable energy, particularly due to WA's small population spread out over a very large geographical area
- access to a sufficiently prepared renewable energy workforce

- financing and construction of infrastructure for electricity transmission and carbon capture and storage
- hydrogen export infrastructure.

This submission highlights work being undertaken to attract further investment in Western Australia, the activity in the energy sector in Western Australia, and becoming a green energy superpower.

We trust this submission will make a valuable contribution to the Inquiry.

Investment and Trade in Western Australia

Western Australia is one of the world's fastest growing developed economies, with annual average growth in gross state product (GSP) over the 20 years to 2021-22 of 4 per cent, well above the 2.7 per cent annual average growth for Australia as a whole.

Western Australia's economy is export-oriented, with net exports of goods and services accounting for around half of the State's GSP. Western Australia is also the leading exporting State in Australia, accounting for 45 per cent of the value of Australia's exports of goods in 2021-22.

As an export-focused economy deeply integrated into global supply chains, Western Australia needs to be responsive to shifts in global industry trends. As such, the Western Australia Government continues to strengthen its approach to attracting investment and growing trade. In 2019, Invest and Trade Western Australia (ITWA) was established in the Department of Jobs, Tourism, Science and Innovation as the State's 'front door' for investors and exporters, facilitating investment into Western Australia and assisting local industry to access new export markets. Invest and Trade Western Australia also provides a range of information and support services to Western Australian small and medium enterprises (SMEs) that seek to reach their full export potential.

The State Government has a number of international investment and trade offices that work in partnership with ITWA's Perth Hub to attract investment into Western Australia and assist exporters to expand their offerings offshore. The international network operates in a hub-and-spoke model with the State's international offices grouped into five regional hubs: ASEAN, China, India-Gulf, North East Asia and United Kingdom/Europe. This enables the Western Australian Government to be responsive to emerging market and industry priorities.

Western Australia works closely with Australian Government agencies in the investment and trade space, including the Department of Foreign Affairs and Trade (DFAT) and Austrade, especially in the delivery of investment and trade policy, client servicing and events.

Western Australia's Energy Sector

The world's growing demand for energy, especially clean energy, means Western Australia is at the forefront of the next wave of global energy production. Western Australia has substantial reserves of natural gas – an important energy source in the transition to a low carbon economy – and unmatched opportunities to generate renewable energy. Western Australia is the world's largest lithium producer and has among the largest reserves in the world for all battery minerals.

Western Australian companies are at the leading edge of innovation in the sector, not only in mining, processing, petroleum engineering and technical services, but also in technologies directly relevant to the battery industry.

Western Australia is home to:

- the world's largest single lithium reserve, with five lithium mines in operation and two processing plants under construction
- world-class industrial and export infrastructure, with some of the world's largest ports
- access to land, infrastructure, water, power, suppliers, research centres and skilled workers
- world-leading innovation in microgrid technologies, with over 30 isolated microgrids
- globally recognised expertise and research capacity in mining and mineral processing
- a transparent project approval system that guarantees strong environmental and social standards for the ethnical and sustainable production of critical raw materials
- well-established trade relationships and export networks, with proximity to the world's most significant global battery industry participants, including Japan, China, India, and South Korea.

Western Australia's transition to clean energy spans many industries and is supported by a strong foundation of strategic frameworks to enable growth and improve access to reliable energy. Foremost is the Western Australian Climate Change Policy, which underscores the Western Australian Government's commitment to adapting to climate change and working with all sectors of the economy to achieve net zero greenhouse gas emissions by 2050.

Significant progress has been made in Western Australia's domestic energy sector. The State Government's Energy Transformation Strategy, launched in 2019, is leading the way in enabling the integration of more renewables and new technologies into the power supply chain. Key components of this strategy have also been launched, including the Whole of System Plan, which ensures a structured, coordinated approach to investing in the power system. The Distributed Energy Resources Roadmap has also been developed to guide the integration of onsite generation, battery storage and future technologies such as electric vehicles.

Modelling of future renewable energy demand is occurring alongside the development of Sectoral Emissions Reduction Strategies, which will consider how best to transition the State's economy more broadly to net zero emissions.

A key component of the State's energy generation system will be a sensible, managed transition toward greater use of renewables, with a commitment to retiring remaining State-owned coal fire generation assets by 2030. An estimated $3.8 billion will be invested in new green power infrastructure that is expected to result in a 40% reduction in emissions on the State's main grid, the South West Interconnected System.

The Western Australian Government has also established a number of mechanisms to attract investment and build research capability in new energy, including through the Clean Energy Future Fund, New Industries Fund, Investment Attraction Fund and support for the Future Energy Exports Cooperative Research Centre.

This State-level investment is complemented by support from the Australian Government through initiatives such as the Technology Investment Roadmap, which supports national development and commercialisation of low emissions technologies, including energy storage. This roadmap is expected to drive over $84 billion of total investment in low emissions technologies by 2030.

According to the Clean Energy Council's 2022 Clean Energy Australia Report, between 2017 and 2021, there was over $1.3 billion invested in large-scale renewable energy projects in Western Australia and in 2021, 31.5% of our State's electricity generation came from renewables.

These enabling frameworks are leveraged by Western Australia's energy sector to deliver a range of environmental outcomes, from conservation to fast-tracking the achievement of net zero. Across the sector, businesses of all sizes are establishing ambitious emission reduction targets, delivering innovative renewable energy projects, scaling-up critical minerals and battery storage capability, implementing low-carbon technologies, and exploring opportunities to capture, sequester and utilise carbon.

Sitting behind the sector's environmental outcomes are robust and transparent regulatory frameworks with legislation, policies and processes in place for consumer protection, market operations, environmental protection, industrial relations, cultural heritage and Native Title.

Through these measures, Western Australia's energy sector is continually striving to ensure the delivery of innovative and sustainable solutions that meet the needs of both local and global energy users.

Becoming a Green Energy Super Power

Western Australia has a strong competitive advantage in the transition to renewable energy, with vast solar, wind, and land natural resources available. The hydrogen and batteries and critical minerals industries present opportunities for Western Australia to use its competitive advantage in natural resources to advance the national clean energy transition and to develop Australia as a green energy superpower.

Western Australia is strategically aligned to the Australian Government's strong commitment to drive investment in renewable energy to deliver economic and environmental outcomes.

The Australian Government has announced an ambitious decarbonisation agenda, evident in the passing of the Climate Change Bill 2022, which sets out targets to reduce Australia's greenhouse gas emissions by 43 per cent on 2005 by 2030, and to net zero by 2050. As part of its commitment to reduce emissions, the Commonwealth Government has committed to its 'Powering Australia Plan', which focuses on reducing emissions by boosting renewable energy, including for transport, industry and agriculture. Western Australia is well-placed to support Australia's transition to low-emissions technologies, and is already collaborating with the Australian Government in the battery and critical minerals and hydrogen industries.

Batteries and critical minerals

Critical minerals are fundamental to the world's clean energy transition. The componentry of electric vehicles, wind turbines, solar panels, electrolysers, fuel cells and rechargeable batteries all require critical minerals.

Western Australia is primed to play a central role in decarbonising the world's economies, as a reliable, ethical and sustainable supplier of battery and critical minerals and clean energy. With an abundance of battery and critical minerals, including significant mineral deposits, Western Australia has established itself as a leading supplier of lithium, nickel, cobalt, manganese and rare earths. These minerals are essential to a range of clean energy technologies, including rechargeable batteries, electric vehicles (EV) and wind turbines.

Since the middle of the last decade, Western Australia has welcomed over $9 billion of investment across the sector, including the establishment of globally significant mineral processing facilities.

To support industry development, the Western Australian Government has established a Future Battery and Critical Minerals Industries Strategy, and is delivering a range of investment activities,

such as a big battery feasibility study for the State's Collie region and support to develop a Western Australian-based global pre-cursor cathode manufacturing facility.

There are also strong partnerships between government, industry and the research community to support the energy transition and grow the battery industry. The Western Australian Government welcomes the commitment of the Australian Government to increasing value-adding of battery and critical minerals, with significant Australian Government funding committed to critical mineral processing projects in Western Australia. This investment includes:

- Joint funding for the Future Battery Industries Cooperative Research Centre, located in Western Australia. The Centre is a $127 million research collaboration between industry, government and Australia's leading universities and research institutions. It provides industry-led research capability to grow Australia's competitiveness and contribution in the next wave of global battery industries.
- $119.6 million investment for a battery precursor material hub in Kalgoorlie.
- $49 million under the Modern Manufacturing Initiative for the Western Australia-based company Australian Vanadium to process high-grade vanadium.
- $125 million for electric bus manufacturing and infrastructure.

Renewable hydrogen

Western Australia has an extraordinary opportunity to become a global renewable hydrogen leader and assist international partners to meet their future energy and emissions reduction goals. To support the development of the State's renewable hydrogen industry, the Western Australian Government has released the Renewable Hydrogen Strategy and Roadmap, which identifies the strategic focus areas and key initiatives to enable our State to become a major producer and exporter of renewable hydrogen.

The Western Australian Government and industry are partnering to identify ways to produce, export and use renewable hydrogen, including through the establishment of hydrogen hubs in the State's Pilbara and Mid-West regions. For example, the Western Green Energy Hub (WGEH) is one of the world's largest green energy projects. Very large-scale hybrid wind and solar will produce around 50 gigawatts (GW) of renewable energy, with development phased across 15,000 square kilometres. The anticipated investment is approximately $70 billion, with the aim to produce at least 3.5 million tonnes of green hydrogen per year.

The project is led by a consortium comprising InterContinental Energy, CWP Global and the Mirning People, traditional custodians of the land on which the project will take place. The Mirning have direct carried equity and a permanent board seat. WGEH is a nation building project, providing transformational economic, social and environmental outcomes for many decades.

The Australian Government has made several important policy and funding commitments to Australia's hydrogen industry. This includes the National Hydrogen Strategy that sets a vision for commercial renewable hydrogen by 2030. The $15 billion National Reconstruction Fund also includes up to $3 billion to invest in hydrogen electrolysers, along with green metals and other clean energy development. Recognising Western Australia's renewable hydrogen potential, the Australian Government has announced funding or investment commitments for several projects in the State. These include an investment of $565 million for Pilbara port infrastructure to boost the regions readiness for new green hydrogen markets. This support from the Australian Government is an important part of ensuring the growth of the hydrogen sector.

Solar and wind power

Electrification and renewable energy through solar and wind power is critical to helping Western Australian industries reach decarbonisation goals. Western Australia boasts world-class solar and wind resources, allowing the state to harness its significant clean energy advantages and continue to transform the energy landscape. Western Australia has among the best combined wind and solar resources in the world. For example, average wind speeds of 7.50 to 8.75 m/s and annual Global Horizontal Irradiation of 2,100 kWh/m2 are observed at Oakajee in the Mid-West of the State. There are 11 large-scale renewable solar and wind energy projects connected to Western Australia's main electricity network, the South West Interconnected System.

The Western Australian Government has established a Local Industry Participation in Wind Farm Supply Action Group that includes representatives from industry and government. The Group provides advice and recommendations on the establishment and development of a wind turbine manufacturing industry in Western Australia. This initiative is underpinned by cross-sector collaboration and is a showcase of partnership to achieve a wind turbine manufacturing industry in Western Australia that will contribute to more affordable clean energy and future-proofed jobs.

Western Australia is well positioned to leverage interest in offshore wind. In 2021, the Australian Government released the Offshore Electricity Infrastructure Framework (OEI Framework), centred on the Offshore Electricity Infrastructure Act 2021, to enable the construction and operation of offshore renewable energy and electricity infrastructure projects in Commonwealth waters.

In August 2022, the Minister for Climate Change and Energy, the Hon Chris Bowen MP, announced six proposed regions in Australia that have world-class offshore wind energy potential. The Indian Ocean region off Perth/Bunbury was announced as one of the six key regions to unlock the power of offshore wind in Australia to help power the nation. The Western Australian Government will continue to work closely with the Australian Government, communities and industry to maximise the potential of this region to support Australia to start the journey to firmly establish this reliable and significant form of renewable energy.

Skilled and adaptable workforce

Western Australia has a highly-skilled and experienced workforce with capabilities developed through our world-leading resource sector. Our workers and businesses have been successfully servicing local export projects for decades across highly competitive global supply chains including renewable energy, gas and mineral processing.

A key focus for the Western Australian Government is ensuring our local workforce is ready to meet the skills and capabilities required by the industries of the future. The Western Australian Government is focused on upskilling its workforce to ensure it is well-placed to support fast-track industries. Western Australia has invested more than $280 million to upskill and reskill in preparation for future demand. To complement this, the 2019 Western Australian STEM Strategy, *Future Jobs, Future Skills – Driving STEM skills in Western Australia*, provides a framework for developing a globally competitive and innovative workforce with the skills to drive the State's technological futures and create new job opportunities.

The Australian Government is also committed to building a bigger, better trained, and more productive workforce. This is articulated through the $1.2 billion Future Made in Australia Skills Plan, which focuses on delivering secure, well-paid jobs by closing the gap on key areas of skills shortages with new places at university and TAFE. Signalling its commitment to investing in green energy skills, the Australian Government has also announced:

- The New Energy Apprenticeships, comprising a $100 million investment to train 10,000 apprentices in the jobs for the future over 4 years.

- The New Energy Skills Program, a $10 million investment to tailor TAFE training to the specific needs of new energy industries, including green hydrogen.

Recognising the value of Western Australia's skilled workforce, the Australian and Western Australian Governments have signed a landmark 12-month Skills Agreement that will inject more than $112 million into the Western Australian skills and training sector. This will provide immediate support through approximately 18,800 Fee Free TAFE and vocational education and training (VET) places in 2023.

Recommendations

The Australian Government's legislation recently passed committing to a 43 per cent emissions reduction by 2030 target present a renewed opportunity to further develop energy and climate policy. To accelerate action to becoming a green energy super power the Australian Government could consider:

- **Clear national strategy** – promoting a clear national roadmap to becoming a green energy super power.
- **Attracting investment** – promoting the significant investible opportunities available to investors to accelerate growth in green energy.
- **Supporting workforce capability** – enhancing workforce capability and skills in emerging green energy industries.
- **Standards and regulations** – ensuring appropriate standards and regulations are in place to support new and emerging industries, such as the renewable hydrogen industry.

Conclusion

The Western Australia Government welcomes ongoing engagement with the Australian Government into Australia's Transition to a Green Energy Superpower. This inquiry provides an opportunity to gauge the competitive advantages Australia has in becoming a green energy superpower. Attracting investment into the opportunities available will help accelerate this ambition.