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6 December 2019

Climate Change Consultation
Department of Water and Environmental Regulation
Locked Bag 10
Joondalup DC, WA, 6919

Submitted via email: climate@dwer.wa.gov.au

To Whom It May Concern,

RE: ClimateWorks Australia submission on Climate change in Western Australia

ClimateWorks Australia congratulates the Government of Western Australia on its commitment to working with all sectors of the economy to achieve net zero emissions by 2050. We welcome the opportunity to respond to the Government of Western Australia's *Climate change in Western Australia Issues paper - September 2019* (Issues paper)[1].

ClimateWorks is a leading independent non-profit advisor to governments and industry on pathways to net zero emissions. Our submission includes a recommendation for Western Australia to introduce a Climate Change Act and then focuses on six specific areas outlined in the Issues paper: Transforming energy generation; Industry innovation; Future mobility; Regional prosperity; Liveable towns and cities; and Resilient infrastructure and businesses.

Summary of key points

[1] https://consult.dwer.wa.gov.au/climatechange/issues-paper/user_uploads/climate-change-in-wa_2019.pdf

MONASH University | MONASH SUSTAINABLE DEVELOPMENT INSTITUTE
THE MYER FOUNDATION

Since ClimateWorks' launch in 2009 through a partnership between The Myer Foundation and Monash University, philanthropic support has been key to achieving our mission of catalysing Australia's transition to a prosperous, net zero emissions future. This support continues to allow us to remain truly independent, evidence-based and non-partisan.

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- **We recommend that Western Australia introduces a Climate Change Act**. Examples of these are provided by Victoria and the United Kingdom. Following the Victorian example would result in 'a legislative framework that embeds climate change consideration into all material decisions of government - rather than prescribing the solutions, this approach prescribes the reporting and end-goal, allowing freedom for government to determine the most appropriate actions for the context over time'.[2]
- **Industry innovation** - Western Australia has the potential to become a centre for zero emissions industry, making the most out of its natural resources especially in renewable energy. It could become a global leader exporting renewable energy, mineral supplies for battery production (for example, lithium and cobalt) renewable hydrogen and/or green products that are currently high emissions (for example, green steel and aluminium).
- **Resilient infrastructure and businesses** - Infrastructure built today in Western Australia will likely still be in use in 2050 when the state aims to reach net zero emissions. Western Australia has a timely opportunity to embed the state's net zero goal into infrastructure processes currently underway. Examples include the state's first 20-year State Infrastructure Strategy (being led by InfrastructureWA), the strategy for the long-term development of Perth's freight network (being led by the Independent Westport Taskforce) and the development of the Perth Greater CBD Transport Plan. ClimateWorks is supporting the Infrastructure Sustainability Council of Australia (ISCA) in partnership with the Australian Sustainable Built Environment Council (ASBEC) to provide guidance on how infrastructure advisors and decision-makers can consider net zero emissions in planning, designing, building and operating infrastructure, with plans to release an issues paper in early 2020.
- **Transforming energy generation** - Rapidly transitioning to an electricity sector fully supplied by renewable energy and storage is crucial for Western Australia to meet its economy wide net zero emissions goal, both by reducing the state's electricity sector emissions and by enabling emissions reductions in other sectors including stationary energy, mining, industry, transport and buildings.
- **Future mobility -** Many climate solutions in the transport sector (for example, policies and targets, investment in public and rail freight transport infrastructure, and electric vehicle fleet procurement processes) require short-term action in order to unlock transport emissions reductions in the longer term. ClimateWorks is currently mapping out potential pathways for the Australian transport sector to achieve net zero emissions, with plans to release an issues paper in early 2020.
- **Liveable towns and cities** - In June this year, national, state and territory building ministers agreed to strengthen the National Construction Code in 2022 to provide stronger minimum energy provisions and a trajectory to zero energy and carbon buildings. ClimateWorks supports the proposed strengthening of the National

[2] *The Victorian Climate Change Act: A Model*, Calabro A, Niall S and Skarbek A Australian Law Journal, Vol 92, Pt 10 814-821 2018

[redacted]

Construction Code and recommends the trajectory be improved to cover all energy use influenced by buildings (rather than being limited to 'regulated energy' as proposed by Australian Building Codes Board in the *Scoping study: Energy efficiency NCC 2022 and beyond*). ClimateWorks also recommends developing a process for ongoing improvements to the energy provisions beyond 2025.

- **Regional prosperity -** Sustainable food and land use practices - to reduce emissions; sequester carbon in soils, trees and other vegetation; and to protect, restore and build the resilience of natural systems - will be a key consideration for Western Australia's transition to net zero emissions.
- There are economic opportunities for Western Australia as major countries and economies transition to net zero emissions. The state is one of the few places in the world where vast renewable energy potential and extensive land area occurs in the same place as major mineral resources and an established minerals and energy export sector.

Introduction

ClimateWorks congratulates the Government of Western Australia on its commitment to working with all sectors of the economy to achieve net zero emissions by 2050. All Australian states and territories are now committed to, or have stated aspirations to achieve net zero emissions by 2050 or sooner (2045 in the case of the Australian Capital Territory).

As noted by the Issues paper, Western Australia is responsible for 17 per cent of Australia's annual greenhouse gas emissions. Compared to other Australian states, Western Australia's emissions are the fourth largest (after Queensland, New South Wales, and Victoria) and it is the state which has seen the largest growth in emissions in the last decade.[3]

Countries around the world, including Australia, are committed to the Paris Agreement which aims to limit global average temperature rise to 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit temperature rise to 1.5 degrees. Achieving the objectives of the Paris Agreement requires international ambition to reach net zero emissions by mid-century, or earlier for developed economies like Australia.

The world is now moving rapidly with countries and major economies (including the United Kingdom, California and New Zealand) and global corporations increasingly making commitments and taking action towards net zero emissions. ClimateWorks' Net Zero

3 http://climatechangeauthority.gov.au/sites/prod.climatechangeauthority.gov.au/files/Australian%20climate%20change%20policies%20-%20stocktake.pdf

[redacted]

Momentum Tracker initiative is collating net zero emissions commitments by major Australian businesses and subnational governments.

With support and action from government, industry and the community, Western Australia is well placed to benefit from the economic opportunities presented by the global transition to net zero emissions.

About ClimateWorks Australia

ClimateWorks Australia 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 Monash Sustainable Development Institute.

Over ten years, ClimateWorks has built a reputation as Australia's leading independent advisor to government, business, industry and peak bodies on pathways to net zero emissions. Our role as trusted advisors with a focus on high quality and practical opportunities for emissions reductions has allowed us to collaborate with key sectors of business, all tiers of government, advocacy organisations and interest groups. For example, ClimateWorks analysis on emissions reduction opportunities has supported other state governments such as South Australia, Victoria and Queensland in setting net zero emissions targets. For instance, we provided advice to the Queensland Government to understand the implications of setting a target of net zero by 2050 including analysis of a least cost pathway to meet that target.[4]

ClimateWorks offers a range of advisory services on net zero emissions strategies, scenario analysis, and identifying and quantifying risks and opportunities in a net zero emissions future. We also help stakeholders to explore and resolve barriers to change, plan implementation strategies and policy options.

ClimateWorks would like to offer assistance to the Western Australian government both through the research and analysis outlined in this submission and the ability to draw further on our research, analysis and our experience of advising state governments to devise and implement climate change strategies.

ClimateWorks currently has research or ongoing projects relevant to reaching net zero emissions economy-wide, as well as programs of work targeting the following six specific

[4] *Queensland can achieve net zero emissions by 2050* Climate Works 2016. Available at: https://www.qld.gov.au/__data/assets/pdf_file/0021/68322/cwa-tech-report-qld-net-zero-emissions-2050.pdf

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areas outlined in the Issues paper:

1. Transforming energy generation
2. Industry innovation
3. Future mobility
4. Regional prosperity

8. Liveable towns and cities
9. Resilient infrastructure and businesses.

The recommendation that Western Australia introduces a Climate Change Act and the above areas are the focus of our submission.

A Climate Change Act for Western Australia

- **We recommend that Western Australia introduces a Climate Change Act**. Examples of these are provided by Victoria and the United Kingdom. Following the Victorian example would result in 'a legislative framework that embeds climate change consideration into all material decisions of government - rather than prescribing the solutions, this approach prescribes the reporting and end-goal, allowing freedom for government to determine the most appropriate actions for the context over time'.[5]

The governments of Victoria and the United Kingdom have each introduced a Climate Change Act to assist the government to their meet their long term targets on emissions reductions in line with the Paris Agreement. The framework allows the respective governments to consider the long term need for transition in a manner that balances this with what is appropriate at a given time.

Anna Skarbek, ClimateWorks' CEO was part of the Independent Review Panel that recommended the introduction of the current Victorian Climate Change Act - the government accepted all but two of the panel's recommendations.[6] ClimateWorks could provide further information about this work on request.

Transforming energy generation

[5] *The Victorian Climate Change Act: A Model*, Calabro A, Niall S and Skarbek A Australian Law Journal, Vol 92, Pt 10 814-821 2018

[6] Independent Review of the Climate Change Act 2010 - report of the panel and the government response available here: https://www.climatechange.vic.gov.au/legislation/independent-review-of-the-climate-change-act-2010

[redacted]

- **Transforming energy generation** - Rapidly transitioning to an electricity sector fully supplied by renewable energy and storage is crucial for Western Australia to meet its economy wide net zero emissions goal, both by reducing the state's electricity sector emissions and by enabling emissions reductions in other sectors including stationary energy, mining, industry, transport and buildings.

An electricity sector fully supplied by renewable energy and storage will be crucial for Western Australia to meet its economy wide net zero emissions goal.

A cost effective approach to Western Australia achieving net zero emissions would see the electricity sector achieving more than a 'pro-rata' emissions reduction compared to other sectors of the economy. This is particularly the case given the availability, maturity and cost competitiveness of renewable energy and storage technologies. Clean electricity also plays a critical role in enabling emissions reductions in other sectors, particularly in transport, mining, and industry.

Western Australia is well placed to learn from the experiences of other Australian states and territories in developing policies and approaches for the state's transition to renewable energy. The experiences of states and territories such as the Australian Capital Territory (ACT), South Australia and Victoria demonstrate a rapid transition is possible and can deliver economic benefits in the form of local jobs and investment. For example:

- In eight years, the ACT contracted sufficient new renewable electricity to achieve its 100% by 2020 renewable energy target.[7] The ACT's reverse auction process - a competitive tender process where the lowest cost, highest benefit projects were selected - generated strong competition, delivered record low cost renewable electricity contracts, price transparency and economic benefits such as research and development, job creation and local investment.[8]
- In 15 years, South Australia's electricity has undergone a rapid transition from predominantly gas and coal powered to the state now leading the world in the integration of wind and solar power. South Australia reached 48 per cent renewable electricity generation in 2017/18, placing the state among global leaders in the integration of variable renewable energy (wind and solar) such as Denmark and Ireland[9]. The South Australian Government has recently outlined its plans to reach (net) 100 per cent renewable electricity before 2030, with the Australian Energy Market Operator projecting South Australia will reach 73% renewable electricity in 2020/21. South Australia currently has a $21.5 billion investment pipeline of wind,

[7] https://www.environment.act.gov.au/energy/cleaner-energy/renewable-electricity-costs-and-reviews
[8] https://www.environment.act.gov.au/__data/assets/pdf_file/0011/1096571/Review-Summary-report.pdf
[9] https://www.iea.org/newsroom/news/2017/march/getting-wind-and-sun-onto-the-grid.html

[redacted]

solar and energy storage projects under development.

- In 2017, Victoria legislated a 40% by 2025 renewable electricity target which the State this year extended to 50% by 2030. Victoria's 2030 renewable electricity target is being delivered through a series of reverse auctions. The target is supporting investment in new wind and solar capacity in advance of the closure of Yallourn coal fired power station in 2032, as well as providing up to $5.8 billion in economic activity and increasing employment by over 4,000 jobs a year.[10] Victoria's 2018 reverse auction supported the construction of six large-scale wind and solar farms across the state totalling 928MW capacity.

In addition to meeting Western Australia's own electricity needs, and reducing domestic emissions from other sectors such as transport, buildings and industry, renewable energy represents a potential new export market. For example, opportunities exist for Western Australia to export renewable energy to countries in South East Asia either directly through transmission lines, via renewable hydrogen or through using this clean energy to make energy-intensive products such as steel.[11] Research on renewable energy suggests that domestic energy has the potential to be cheaper under high export scenarios.

Industry innovation

- Western Australia has the potential to become a centre for zero emissions industry, making the most out of its natural resources especially in renewable energy. It could become a global leader by exporting renewable energy, mineral supplies for battery production (for example, lithium and cobalt) renewable hydrogen and/or green industries (for example, green steel and aluminium).

Western Australia is one of the few places in the world where vast renewable energy potential and extensive land area occurs in the same place as a major minerals province and an established resources and energy export industry. This gives the state the potential to pursue green industry export opportunities. A number of these opportunities have been identified in Western Australia's Renewable Hydrogen Strategy[12] and Future Battery Industry Strategy[13]. New economic opportunities include directly exporting renewable energy (via high voltage transmission line), renewable fuels (such as hydrogen and ammonia), mineral supplies for

[10] https://www.energy.vic.gov.au/__data/assets/pdf_file/0030/439950/Victorian-Renewable-Energy-Target-2018-19-Progress-Report.pdf
[11] https://www.energy-transition-hub.org/files/resource/attachment/innovation_and_export_opportunities_of_et_final_0.pdf
[12] http://www.drd.wa.gov.au/Publications/Documents/wa_renewable_hydrogen_strategy.pdf
[13] https://www.jtsi.wa.gov.au/docs/default-source/default-document-library/future-battery-industry-strategy-wa-0119.pdf?sfvrsn=ccc7731c_4

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battery production (for example, lithium and cobalt) and/or green industries (for example, green steel and aluminium).

ClimateWorks is developing the Australian Industry Energy Transitions Initiative (the Industry ETI) with Climate-KIC which will be an industry-led process to develop pathways to net zero emissions, focusing on supply chains across critical sectors of the Australian economy. The Industry ETI will support Australian industry to identify the opportunities, challenges and actions to achieve net zero emissions supply chains in Australia, including the potential for Australian industry to be a major supplier in a zero emissions global economy. The Industry ETI is a two-year initiative that seeks to address the key issues and opportunities identified and agreed by industry in the Issues paper.

The Industry ETI will identify practical actions, to drive investment and industry development, and employment opportunities across Australia. The initiative will do so by leveraging the research, expertise and influence of the Energy Transitions Commission internationally, while ensuring Australian industry leadership. The program will draw on international and Australian energy transition expertise such as the Rocky Mountain Institute and CSIRO, and the work of the National Hydrogen Strategy and other Australian research on industrial decarbonisation. The program is expected to highlight the importance of long term planning to support the diversification of supply chain industries and local economies - and identify the role for government in this diversification.

There are many opportunities for industry to play a key role in the transition to net zero emissions. For example, solutions to reduce emissions from industry include:

- Switching from fossil to renewable fuels and electricity
- Electrifying extraction, processing and transportation of energy and mineral commodities (for example electrification of Liquefied Natural Gas processing)
- Electrifying manufacturing processes
- Improving the efficiency of extracting and producing materials
- Developing materials with lower energy and emissions intensity
- Adopting low-emissions alternatives in iron and steel production.

Low emissions steel, aluminium and other metals such as lithium, copper and zinc are examples of new economic opportunities as the world transitions to net zero emissions. Demand for these products is increasing globally as regulators, investors and consumers are all calling for low emission technology to be implemented. For example Climate Action 100+, a group of 320 investors that manage more than $33 trillion in assets is demanding companies adhere to the Paris Agreement. In response, Heidelberg and Thyssenkrupp, the fourth largest global cement producer, and the second largest steel manufacturer in Europe, respectively have both pledged to achieve net zero emissions by 2050. In Germany, Thyssenkrupp recently

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launched a series of tests into the use of hydrogen in steel production to significantly reduce emissions (an industry-led initiative supported by government and research)[14].

Resilient infrastructure and businesses.

- Infrastructure built today in Western Australia will likely still be in use in 2050 when the state aims to reach net zero emissions. Western Australia has a timely opportunity to embed the state's net zero goal into infrastructure processes currently underway. Examples include the state's first 20-year State Infrastructure Strategy (being led by InfrastructureWA), the strategy for the long-term development of Perth's freight network (being led by the Independent Westport Taskforce) and the development of the Perth Greater CBD Transport Plan. ClimateWorks is supporting the Infrastructure Sustainability Council of Australia (ISCA) in partnership with the Australian Sustainable Built Environment Council (ASBEC) to provide guidance on how infrastructure advisors and decision-makers can consider net zero emissions in planning, designing, building and operating infrastructure, with plans to release an issues paper in early 2020.

Infrastructure assets are long term investments which last decades into the future. As such, infrastructure built today will likely still be in use in 2050 when Western Australia aims to reach net zero emissions. The critical role of infrastructure in adapting to climate change impacts and enabling emissions reductions was highlighted by the Western Australian Planning Commission's State Planning Strategy 2050:

> *Infrastructure that assists economic growth while decoupling the State from high emissions will be best placed to meet the challenges and realise the opportunities of the 21st century* [15]

ClimateWorks is supporting ISCA in partnership with ASBEC to explore and define the role infrastructure can play in supporting Australia's transition to a net zero emissions future. This initiative seeks to provide guidance on how infrastructure advisors and decision-makers can consider net zero emissions in planning, designing, building and operating infrastructure. As part of this initiative, we will be releasing an issues paper early in 2020.

ClimateWorks analysis has found around 70% of Australia's annual emissions are associated

[14] https://www.thyssenkrupp.com/en/newsroom/press-releases/world-first-in-duisburg-as-nrw-economics-minister-pinkwart-launches-tests-at-thyssenkrupp-into-blast-furnace-use-of-hydrogen-17280.html

[15] https://www.dplh.wa.gov.au/getmedia/d698cbff-65c6-4afb-b4b7-9e12e6a3b5dd/FUT-SPS-State_Planning_Strategy_2050

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with infrastructure assets. There are three types of emissions relevant to infrastructure:

- Embodied emissions result from the production of materials used in the construction of infrastructure, as well as from the construction process itself. Infrastructure decision-makers have control over these emissions through choices made in the procurement stages of a project (for example, sourcing less carbon-intensive steel for the construction of a bridge)
- Operating emissions result from the ongoing operations of infrastructure assets. Infrastructure decision-makers have direct control over these emissions through choices made in the planning, design and operating stages of the project (for example, installing LED lights rather than high pressure sodium bulbs in road street lights)
- Enabled emissions result from the activities of infrastructure's end-users. Infrastructure decision-makers have influence, but not control, over these emissions. Decision-makers can influence these emissions through the degree to which the infrastructure enables low-emissions behaviour and assets. For example, by building transmission infrastructure that connect renewable generation to the grid, infrastructure decision-makers can influence electricity sector emissions.

Western Australia has a number of long term infrastructure and related planning processes underway, which present opportunities to embed the state's net zero emissions goal including:

- Western Australia's first 20-year State Infrastructure Strategy being developed by InfrastructureWA
- The strategy to guide the long-term development of Perth's freight network being led by the Independent Westport Taskforce
- The Perth Greater CBD Transport Plan a 10-year vision for future transport investment being developed by the Department of Transport.

Further, the state government could consider updates to other key long-term strategy documents such as the State Planning Strategy 2050, consistent with the state's net zero emissions goal.

Future mobility

- Many climate solutions in the transport sector (for example, policies and targets, investment in public and rail freight transport infrastructure, and electric vehicle fleet procurement processes) require short-term action in order to unlock transport emissions reductions in the longer term. ClimateWorks is currently mapping out potential pathways for the Australian transport sector to achieve net zero emissions, with plans to release an issues paper in early 2020.

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Western Australia has been an early mover in electric and clean transport solutions. In 2015, the Royal Automobile Club of WA in partnership with local governments built Australia's first electric highway between Perth and Augusta - with electric car charging stations located along the route.[16]

Western Australia's State Planning Strategy 2050 identified the role of land use and transport planning in reducing the sector's greenhouse gas emissions:

> *Transit-oriented development, especially in and around activity centres, encourages more people to walk, cycle and use public transport. This is necessary for a modal shift to occur towards 'active transport', which increases daily physical activity levels, reduces greenhouse gas emissions through a reduction in cars on the road, improves social well-being and a helps create a greater sense of community.*
>
> *Integrating land use planning, land development and regional investment with transport: … reduces greenhouse gas emissions and reliance on finite and imported fossil fuels.*[17]

The transport sector is a significant emissions source in the Australian economy. It has also seen the most significant growth in recent decades, increasing more than 60% since 1990 to account for around one-fifth of total emissions in 2019. Demand for all forms of transport is expected to rise in the future, as population and economic activity grows.

The vast majority of transport sector emissions come from road vehicles, with passenger and freight vehicles accounting for 44% and 37% respectively. Australia currently has one of the most energy- and emissions-intensive road vehicle fleets in the world. Australia's average emissions intensity for passenger vehicles is 45% higher than Europe, and it is one of only a few Organization for Economic Cooperation and Development (OECD) countries without vehicle greenhouse gas emission standards.

Broadly, there are three main types of solutions to achieving net zero emissions in the transport sector:

- Avoid - solutions which avoid the need for travel, for example
    - through urban planning
    - telepresence

[16] https://rac.com.au/about-rac/advocating-change/initiatives/electric-highway?utm_source=vanity&utm_medium=print&utm_campaign=advocacy_electrichighway
[17] https://www.dplh.wa.gov.au/getmedia/d698cbff-65c6-4afb-b4b7-9e12e6a3b5dd/FUT-SPS-State_Planning_Strategy_2050

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- Mode Shift - solutions which involve a shift to lower or zero emissions modes of transport, for example
    - mode shift from car to public or active transport
    - air travel to fast rail, freight road to rail
- Improve efficiency and fuel - solutions which involve better use or more efficient, lower emissions technology, for example:
    - Renewable powered electric transport
    - Renewable fuels for freight and aviation

In addition to reducing emissions, many of these transport solutions will also deliver other important economic, social or environmental benefits - like cleaner air and quieter cities, lower transport costs, reduced congestion and new employment opportunities.

Many solutions to reduce transport sector emissions, despite being technologically mature and cost-effective, can involve long lead times to reach scale and achieve emissions reductions. For example:

- new public transport infrastructure and services can take time to plan and implement or construct, but have the potential to deliver large emissions reductions through mode shift from passenger cars
- procurement processes for state government transport vehicles such as buses, trains and car fleets occur on a cyclical basis
- policies and targets designed to encourage the uptake of electric vehicles by business and the community involve transitioning vehicle fleets over time, particularly as the average age of vehicles in Australia is 10 years.

Short term action to reduce emissions from the transport sector is required in order to achieve emissions reduction in the longer term. ClimateWorks is currently mapping out potential pathways for the Australian transport sector to achieve net zero emissions, with plans to release an issues paper in early 2020. The issues paper will bring together information about passenger and freight transport solutions - for passenger and freight transport, and identify ways of measuring progress and early opportunities to reduce transport emissions.

Liveable towns and cities

- In June this year, national, state and territory building ministers agreed to strengthen the National Construction Code in 2022 to provide stronger minimum energy provisions and a trajectory to zero energy and carbon buildings. ClimateWorks supports the proposed strengthening of the National Construction Code and recommends the trajectory be improved to cover all energy use influenced by buildings (rather than being limited to ‘regulated energy’ as proposed by Australian

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Building Codes Board in the *Scoping study: Energy efficiency NCC 2022 and beyond*). ClimateWorks also recommends developing a process for ongoing improvements to the energy provisions beyond 2025.

Consuming energy is costly for households. An average Australian family now spends about $2,115 on their electricity and gas bills each year, adding up to almost $20 billion across the country. Low-income households are particularly vulnerable to energy costs, spending up to five times more (as a proportion of disposable income) on electricity than higher-income earners. Personal experiences with energy aren't just about the bills though, as growing evidence demonstrates how a home's energy performance influences mental wellbeing and safety during heatwaves.

Research led by ClimateWorks Australia and ASBEC found stronger energy standards in the National Construction Code could reduce household energy bills by up to $900 each year. In Western Australia, this would add up to $2.7 billion in reduced household energy bills between now and 2050, $1.2 billion in reduced non-residential energy bills and would avoid 9.7 million tonnes of greenhouse gas emissions during that time.

On 18 July 2019, national, state and territory building ministers agreed to strengthen the National Construction Code in 2022 to provide stronger minimum energy provisions and a trajectory to zero energy and carbon buildings. A net zero energy and carbon building is a building that is highly energy efficient and fully powered from on-site and/or off-site renewable energy sources[18]. The National Construction Code sets minimum energy performance requirements for all new buildings and major renovations in Australia and applies at the point of design and construction. This is often the easiest and cheapest time to deliver energy performance outcomes.

In 2018, ClimateWorks partnered with ASBEC to publish *Built to Perform: An industry led pathway to a zero carbon ready building code*, which recommended: committing to a zero carbon ready building code; delivering a step change in 2022; and expanding the scope of the code and progressing complementary measures. This informed COAG Energy Council's *Trajectory for Low Energy Buildings*. *Built to Perform.*

In response to the Australian Building Codes Board Scoping paper, ClimateWorks:

1. supports the proposed approach for strengthening the minimum energy provisions in the National Construction Code and moving towards a trajectory to zero energy (and carbon) ready buildings
2. recommends strengthening the trajectory to cover all energy use influenced by

[18] https://www.worldgbc.org/advancing-net-zero/what-net-zero

buildings, beyond 'regulated energy'. For example, regulated energy covered by the proposed approach only represent 38-53% of the energy consumed by housing and office buildings, according to *Built to Perform*

3. recommends developing a process for ongoing improvement to the energy provisions beyond 2025.

This step towards improved energy requirements in the National Construction Code is timely. New construction adds up fast: 51 per cent of the buildings expected to be standing in 2050 will have been built from 2019 onwards.

In addition to the Code it will be important that relevant national and state policies and regulations set ambitious targets for net zero emissions buildings (both new and existing buildings) and processes for ongoing improvements to energy efficiency. ClimateWorks notes recent progress by the Council of Australian Governments Energy Council to consider further measures to improve energy efficiency in existing buildings.

Regional prosperity

- Sustainable food and land use practices - to reduce emissions; sequester carbon in soils, trees and other vegetation; and to protect, restore and build the resilience of natural systems - will be a key consideration for Western Australia's transition to net zero emissions. Through the Land Use Futures program, ClimateWorks Australia (working within Monash Sustainable Development Institute), CSIRO and Deakin University are seeking to address the converging challenges of meeting the needs of growing populations and demand for food and fibre products in the context of the accelerating impacts of climate change and the risks for farming and agricultural productivity.[19]

- Regional prosperity will also depend on Western Australia responding to the risks and opportunities from the transition to a net zero emissions world. Many regional jobs currently depend on industries linked to high emissions, which are at risk without changes within these industries. Western Australia would benefit from a planned, just transition for these industries to ensure that regional areas benefit from the opportunities outlined in the industry innovation section of this submission and transition risks are managed appropriately.

[19] For further information about the Land Use Futures program and outputs to date see: https://www.climateworksaustralia.org/land-use-futures

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Sustainable food and land use practices - to reduce emissions; sequester carbon in soils, trees and other vegetation; and to protect, restore and build the resilience of natural systems - will be a key consideration for Western Australia's transition to net zero emissions. ClimateWorks notes that this will be assisted by the latest government announcement that enables carbon farming on pastoral land such that this could earn Australian Carbon Credit Units.

Awareness and adoption of sustainable practices is increasing in the face of climate risks, unreliable weather patterns, competition for water, consumer concerns about health, environmental and animal welfare impacts of farming, and increasing accountability demands from governments. Indeed, some of the most innovative and inspiring examples of sustainable food production and land use originate in Australia.

For example, agricultural operations are becoming self sufficient through the use of renewable energy and storage technologies such as the avocado farm in Pemberton, Western Australia which has installed an award-winning solar and battery system to meet the farm's electricity needs.[20]

In another example, the Aboriginal Carbon Foundation is a national organisation that aims to catalyse life-changing community prosperity through carbon farming. The Aboriginal Carbon Foundation aims to provide social, environmental and economic benefits for Traditional Owners through the ethical trade of carbon credits. The Foundation has projects across Western Australia, the Northern Territory, Queensland, New South Wales, Victoria and Tasmania.[21]

The finance sector is also beginning to shift, with investment in sustainable land use increasing eightfold globally in the decade to 2015, and $4.5 trillion annual global business opportunities from investment in sustainable food and land use identified by 2030.

ClimateWorks (working within Monash Sustainable Development Institute), CSIRO and Deakin University are seeking to address the converging challenges of meeting the needs of growing populations and demand for food and fibre products in the context of the accelerating impacts of climate change and the risks for farming and agricultural productivity. The Land Use Futures program is taking a highly participatory approach to developing pathways and a roadmap for a sustainable food and land use system for Australia. The program is contributing to and benefiting from participation in the global Food and Land Use Coalition, led by the UN Sustainable Development Solutions Network, World Business Council for Sustainable

[20] https://www.pv-magazine.com/2018/06/27/off-grid-in-australia-unlimited-energy-and-tesvolt-discuss-their-award-winning-project/
[21] http://aboriginalcarbonfoundation.com/projects-overview

[redacted]

Development, World Resources Institute, SYSTEMIQ and others.

Many regional jobs in Western Australia depend on industries currently linked to high emissions - especially in mining. As discussed in the industry innovation section, ClimateWorks is working with other organisations and industry on the Industry ETI. Industry ETI will support Australian industry to identify the opportunities, challenges and actions to achieve net zero emissions supply chains in Australia, including the potential for Australian industry to be a major supplier in a zero emissions global economy.

The results of this initiative could help government understand the supporting role it could play in unlocking the potential opportunities for Western Australia's in industry, and identify demonstration projects - some of which could be location focussed. Western Australia has a number of areas where regional prosperity could be at risk in a carbon constrained world. A planned, just transition for high-emission industries will assist regional areas to benefit from the opportunities outlined in the industry innovation section and to manage transition risks appropriately. Regional transition planning currently underway in areas like the Latrobe Valley or international examples such in Germany[22] could assist the Western Australian government to determine what interventions would be effective.

Western Australia's potential climate change opportunities and risks

- There are economic opportunities for Western Australia as major countries and economies transition to net zero emissions. The state is one of the few places in the world where vast renewable energy potential and extensive land area occurs in the same place as major minerals resources and an established minerals and energy export sector.

Climate change impacts and the transition to net zero emissions present new growth opportunities as well as risks for different parts of the Western Australian economy. Economic activities or assets relying on emissions intensive activities, or producing high emissions during operation, risk becoming 'stranded' in a net zero emissions future due to unanticipated losses of value. On the other hand, low or zero emissions economic activities may experience increased demand and the opportunity for growth.

Climate change risks range from direct physical impacts from climate change; indirect effects

[22] See ACTU Policy Discussion Paper 2016 Sharing the challenges and opportunities of a clean energy economy: Policy discussion paper A Just Transition for coal-fired electricity sector workers and communities and presentation by Prof. Dr. Franz-Josef Wodopia, Chief Executive, German Coal Association, Coal industry restructuring in Germany presentation.

[redacted]

such as demand changes; and transition risks, such as the likelihood of future policy, regulatory or market changes.

Climate change can also pose new economic opportunities related to new markets. The global Task Force on Climate-Related Financial Disclosures (TCFD) recommends the use of scenario analysis to examine the potential risks and opportunities of climate change. Scenarios that draw on recognised frameworks, such as those presented in the Centre for Policy Development's Climate Horizons report, can support robust decision-making about managing risks and capturing opportunities.

Western Australia is well placed to benefit from the global transition to net zero emissions. The state has a formidable clean energy resource base, high quality mineral deposits (such as lithium and cobalt used in battery manufacturing) and established expertise in exporting critical energy and material resources - as discussed under the Industry Innovation section. The state's advantages are complemented by, Australia's large and sophisticated financial services sector capable of deploying significant capital to finance the transition to net zero. The state also has substantial potential in land carbon sequestration and ClimateWorks notes that this will be assisted by the latest announcement to allow carbon farming on pastoral land.

Industry-led pathways to net zero emissions can identify market opportunities and plan ahead to ensure Western Australia's economy and society benefits from the global transition to net zero emissions, with flow on benefits in terms of new industries, local investment and jobs.

On behalf of ClimateWorks, I thank you for the opportunity to provide input in response to the Issues paper. ClimateWorks would be pleased to support the Western Australian Government further on its climate policy development.

Yours sincerely,

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