

SMART SOLUTIONS TO SUPERCHARGE QLD



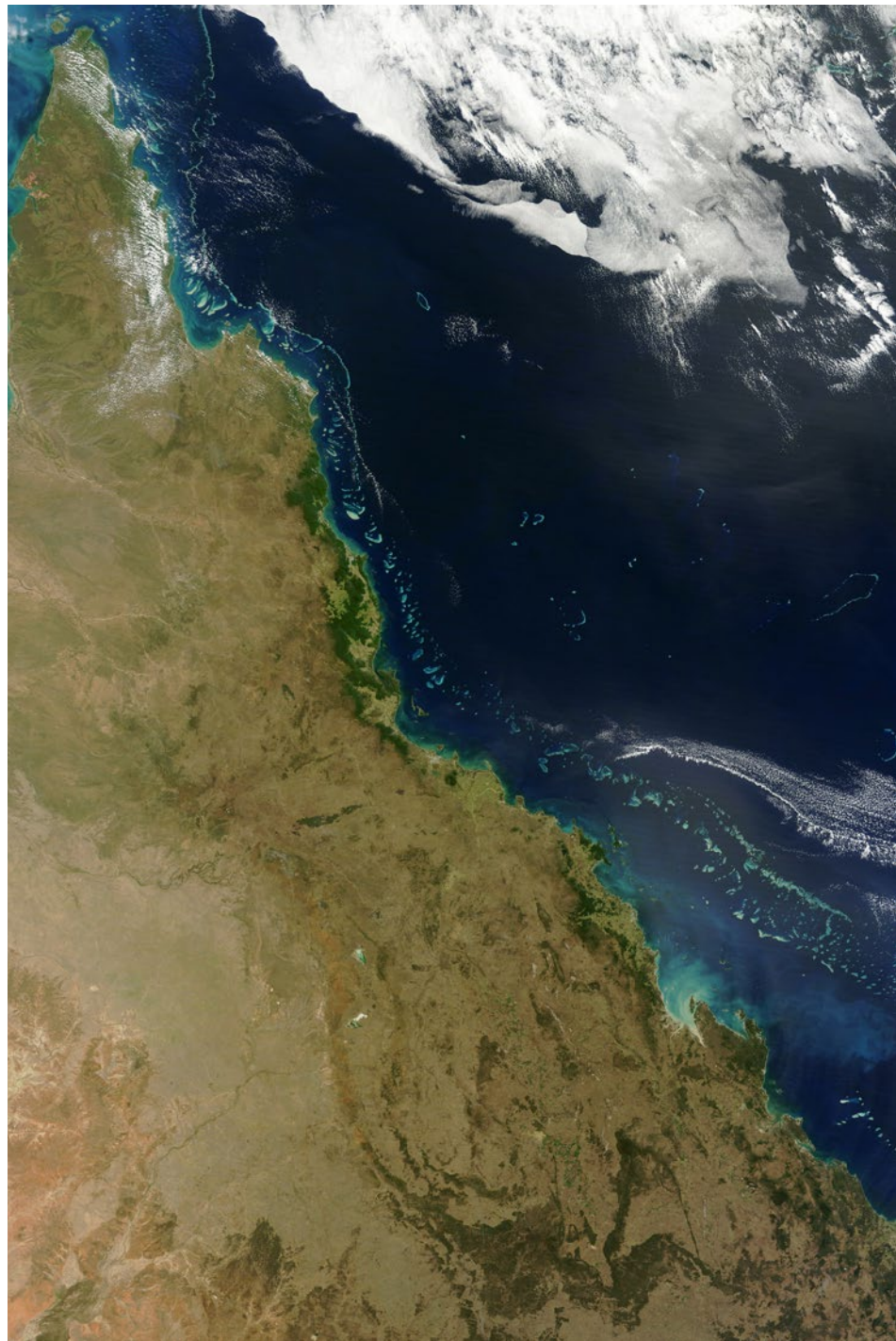
BACKGROUND

The Queensland Government is cutting greenhouse gas emissions and capitalising on Australia's renewable energy boom and growing clean industries, including endorsing a net zero by 2050 target and adopting a 50% renewable energy by 2030 target (Department of Energy & Public Works 2020). However, there are further opportunities available to Queensland that make the most of its competitive advantages in renewable energy and other climate solutions, and bolster the state's resilience to worsening climate impacts. *Smart Solutions to Supercharge Queensland* outlines initiatives that would be transformational for the state, and also make a tangible improvement to the lives of everyday Queenslanders. These solutions will create jobs, build resilience in regional Queensland and position the Sunshine State as a world leader on the international stage.

The Queensland Government has already taken important steps to reduce greenhouse gas emissions and capitalise on Australia's renewable energy boom.

1 OUR ROADMAP FOR SUCCESS: MITIGATE, ADAPT AND THRIVE UNDER THE CLIMATE ACTION PLAN

The Queensland Government's forthcoming Climate Action Plan can firmly establish Queensland as a global leader in low and zero carbon economies around the world. By building on solid **foundations**, embracing all our **opportunities**, and defining our **ambition** with science, the Climate Action Plan can become Queensland's guiding light. It will be a future-proofed roadmap with clear timeframes and targets that the entire Government and our state can unite behind.



OUR OPPORTUNITY

1. A clear 10-year roadmap that unlocks Queensland's potential as a clean job superpower by:
 - a. Using the latest climate science to develop whole-of-economy interim targets to support Queensland's pathway to net zero well before 2050.
 - b. Committing to achieve net zero emissions across Government operations by 2030 and embedding a climate risk / opportunity lens across all Government investment decisions.
 - c. Establishing a clear, transparent Ministerial level framework for a whole-of-government approach to managing Queensland's climate response.
 - d. Leveraging the above initiatives to position Queensland as a destination of choice for global green finance and investment.
 - e. Building upon the Queensland Climate Advisory Council (QCAC) to strengthen the provision of independent scientific advice to Government on targets and mitigation pathways via the establishment of a dedicated Queensland Climate Change Authority by 2024.

OUR FOUNDATION

2. The Climate Action Plan must build upon existing Government policies to:
 - a. Provide a clear overview of all of Queensland's existing climate policy infrastructure and programs, and use this benchmark to track Queensland's progress against the implementation of climate and energy policy in priority sectors.
 - b. Ensure the Government's existing adaptation measures and key stakeholders are adequately resourced, and enact priority adaptation measures previously identified.
 - c. Set science-based 2030 sector mitigation targets to distribute emissions reduction efforts across the economy.

OUR AMBITION

3. Harnessing additional opportunities that ensure Queensland exceeds its current ambition for the 2020s. This should include setting a strong interim target, and setting the state on a path to comfortably beat its 2030 target. Beyond 2030, emissions reduction targets should be in line with the latest climate science, and incorporated into long-term plans for each sector.

Q CASE STUDY: SOUTH AUSTRALIAN CLIMATE ACTION PLAN

In the absence of Federal Government policy or coordination, Australian states and territories have been progressing their own policies and taking steps to reduce emissions, support renewable energy development and increase energy efficiency in their own jurisdictions.

In December 2020, the South Australian Government released the South Australian Climate Action Plan 2021-2025 to provide a practical approach to dealing with a changing climate, building a strong climate-smart economy and further reducing greenhouse gas emissions (Department for Environment and Water, 2020). The plan includes 68 actions across seven focus areas that build upon existing investments in renewable energy to increase investment and jobs in low emissions and climate resilient business and industry over the next five years. The South Australian Climate Action Plan is underpinned by an economy-wide greenhouse gas emissions reduction target of 50% by 2030 and net zero by 2050 (Department for Environment and Water 2019). While the latest climate science demands both a more ambitious target for 2030 and earlier date for achieving net zero emissions, the Plan is an important foundation that can be built upon, and a useful model of a sector-wide approach.

The South Australian Climate Action Plan 2021-2025 focuses across the following 7 areas:



1. Clean energy transformation
2. Climate smart economy
3. Climate smart agriculture, landscapes and habitats
4. Low emissions transport
5. Climate-smart built and urban environments
6. Resilient communities
7. Government leading by example

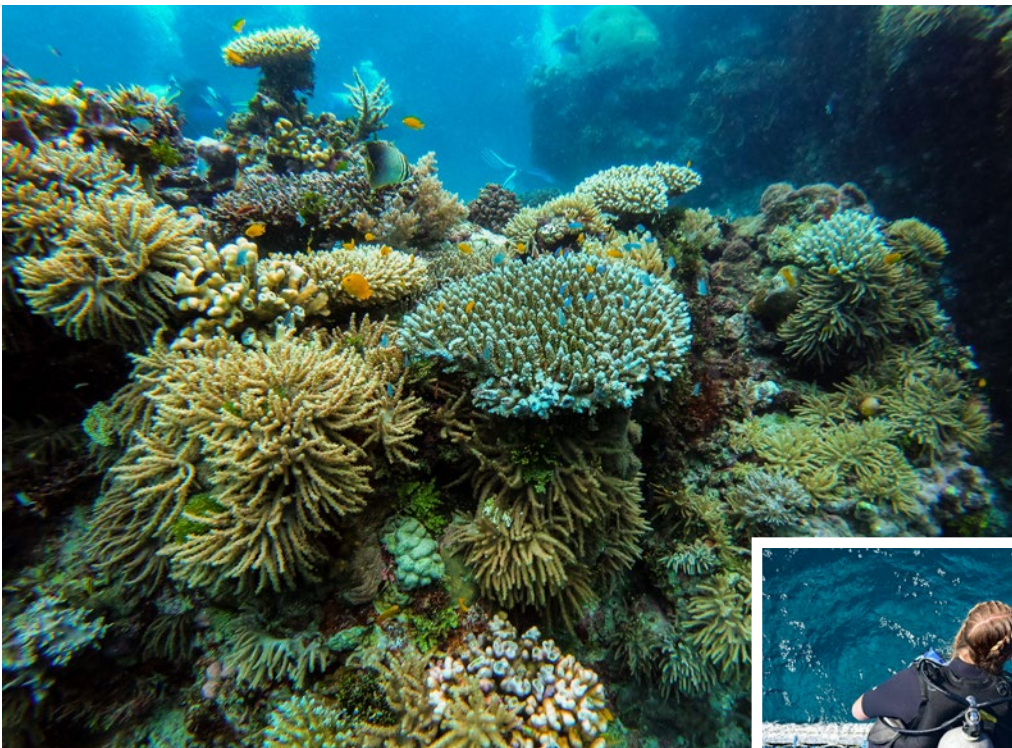
CASE STUDY: A LOW CARBON ECONOMY AND THE GREAT BARRIER REEF

Queensland is home to some of the world's greatest natural wonders, including the Great Barrier Reef, the Daintree and Fraser Island.

Our natural assets are a key driver for our tourism industry - with the Great Barrier Reef alone underpinning tens of thousands of jobs across the state. Protecting and enhancing our natural environment is a jobs creator. For example, the Queensland Government could create an additional 5,500 jobs over the next three years by investing \$500-600 million in ecosystem restoration, including through re-vegetation and irrigation improvements,

according to the Climate Council's Clean Jobs Plan. Both the Great Barrier Reef and Queensland workers who depend on it for their livelihood are highly vulnerable to worsening climate impacts. This necessitates a two-fold approach to long-term resilience: by accelerating the transition to a zero carbon economy, and providing direct, on-the-ground investments that support sustainable tourism and reef health.

The Government's Climate Action Plan will have a critical role to play in protecting the long-term health of the Great Barrier Reef and many Queenslanders and communities who rely on it.



2 MAKING QUEENSLAND THE RENEWABLE ENERGY CAPITAL OF AUSTRALIA



Utility Scale Renewables could create 2,200 direct jobs in QLD (over three years) with downstream potential (Climate Council and Alpha Beta, 2020).

Queensland has the abundant natural resources, skilled workforce and existing industrial base needed to become a renewable energy and clean industrial superpower. The rapid installation of utility-scale renewables underpins that future prosperity, and can be achieved by:

1. Committing an additional \$155 million to underpin further planning and essential infrastructure upgrades that support Renewable Energy Zones (REZs) over the next three years.
2. Ensuring the rollout of REZs across regional Queensland is accompanied by best practice landholder and community engagement, including the adoption of benefit-sharing and community-ownership project models (Re-Alliance 2019).
3. Unlocking Queensland's downstream manufacturing potential through support for Renewable Energy Industrial Precincts (Beyond Zero Emissions & WWF 2021).
4. Delivering a bilateral agreement with the Federal Government to accelerate Queensland's clean energy transition; drive down prices, provide investment certainty, underpin transmission for REZs and Renewable Energy Industrial Precincts, and address underlying system strength issues.¹ Importantly, this bilateral agreement should not include any new gas developments or require an increase in gas production. The roll out of REZs and Industrial Precincts should happen at a speed and scale consistent with the goals of the Paris Agreement.
5. Ensuring Government-Owned corporations rapidly increase investment in renewable energy, with increased transparency over commitments as part of target reporting.
6. Building upon recent investments in the large-scale grid connected battery trial and the work of the Queensland Energy Security Taskforce to establish an integrated Energy Storage Strategy and ambitious energy storage targets by 2024 (Queensland Cabinet and Ministerial Directory 2021a; Department of Energy and Public Works 2018).
7. Committing to legislate an increase in Queensland's Renewable Energy Target to ensure that Queensland emerges as a global renewable energy superpower.

1 For further detail on system strength, see https://www.aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/Operability/2020/2020-System-Strength-and-Inertia-Report

CASE STUDY: NEW SOUTH WALES ELECTRICITY INFRASTRUCTURE ROADMAP

The \$32 billion Electricity Infrastructure Roadmap was released in 2020 following extensive consultation, and built upon the NSW Electricity Strategy (Department of Energy, 2020). The plan involves a coordinated approach to transmission, generation and storage. By 2030, the NSW Government aims to:

- › Deliver about 12 gigawatts (GW) of new transmission capacity through Renewable Energy Zones in three regional areas by 2030. This would most likely be generated by wind and solar.
- › Support about 3 GW of energy storage to back up renewable energy supplies. This will involve batteries, pumped hydro and other dispatchable technologies.
- › Attract up to \$32 billion in private investment in regional energy infrastructure investment by 2030.
- › Support more than 6,300 construction and 2,800 ongoing jobs in 2030; mostly in regional NSW.
- › Reduce NSW's carbon emissions by 90 million tonnes.

The plan also aims to reduce the average NSW household electricity bill by about \$130 a year. Regional landholders hosting renewable projects on their properties are expected to collectively earn \$1.5 billion in revenue over the next 20 years.



3 LEADING THE WAY: GOVERNMENT AS OPPORTUNITY CATALYST



Retrofitting public buildings to improve energy efficiency could create an additional 1,600 jobs across urban and regional centres in Queensland within three years. (Climate Council and Alpha Beta, 2020).

Improving energy efficiency and clean energy uptake across government facilities is a wonderful opportunity to create long term budget savings for the government, grow demand for locally manufactured clean energy and storage solutions, create jobs, provide leadership to the community and reduce emissions.

The Climate Council's Clean Jobs Plan found that retrofitting public buildings to improve energy efficiency could create an additional 1,600 jobs across urban and regional centres in Queensland within three years. Modelling by the Australian Conservation Foundation and the University of New South Wales outlines the potential to generate an additional 844 jobs in Queensland through the installation of renewables on public sector buildings including schools, hospitals and libraries (ACF and UNSW 2020).

The Queensland Government can realise such benefits quickly, and maximise this opportunity, by:

1. Setting science-based emission reduction and renewable energy targets for all Government operations and contracts. This includes committing to achieve net zero emissions across Government by 2030 under the Climate Action Plan, and introducing a phased approach to a local content mandate to support Queensland manufacturing.
2. Rapidly reducing the Queensland Government's energy footprint by installing solar and batteries in every hospital and other large public buildings, and in state schools.
3. Supporting local governments to create clean jobs through advancing Power Purchase Agreements and underpinning practical investment in regional infrastructure including LED streetlights and EV charging infrastructure.

CASE STUDY: SOLAR & BATTERIES FOR SCHOOLS & HOSPITALS

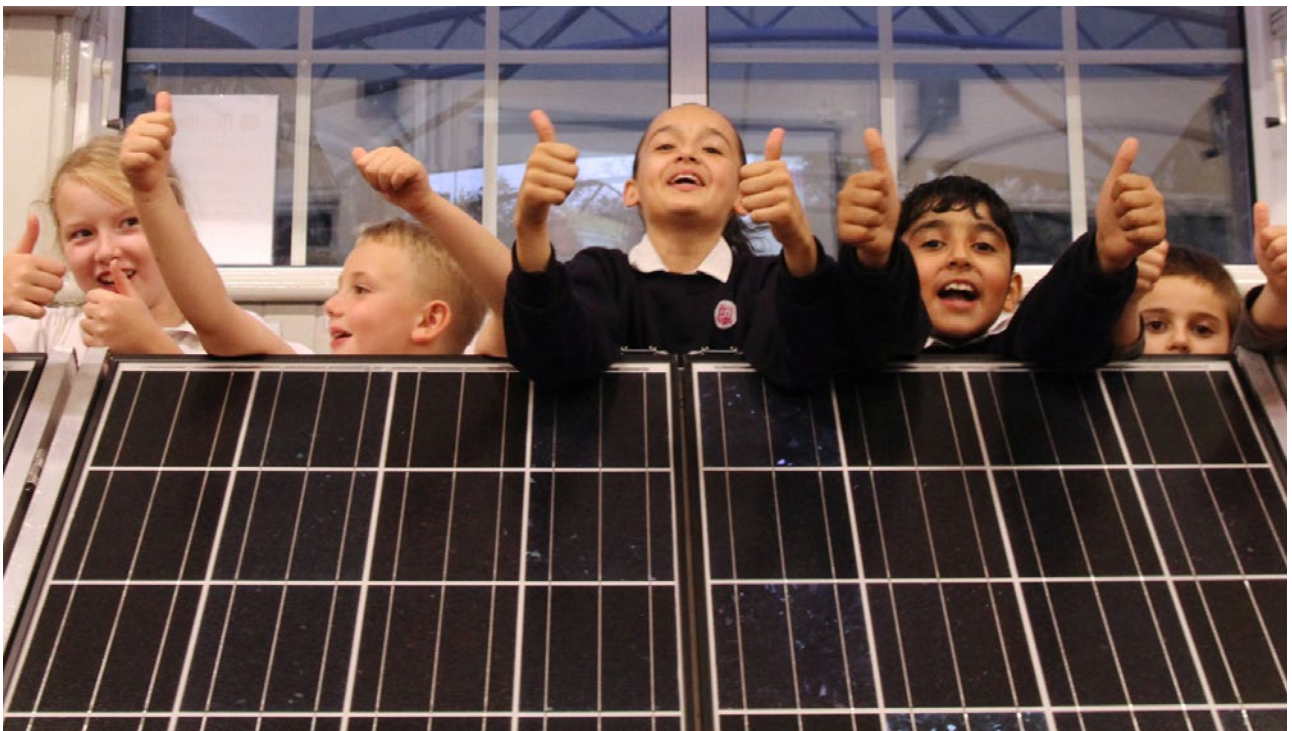
Schools

By installing battery storage in every school in the state, the Queensland Government would create 300 jobs while saving schools up to \$120,000 a year. These savings would provide an opportunity to reinvest in the learning environment: better supporting the next generation of Queenslanders to reach their full potential.

The Queensland Government's Advancing Clean Energy Schools program has already pledged that 800 schools across the state will receive solar installations by June 2022 (Department of Education 2020). Scaling up and speeding up this program would deliver additional jobs and cost savings for all schools. That would benefit school communities everywhere - from Caloundra to Mt Isa, from South Brisbane to Barron River.

Hospitals

Hospitals are large energy users and can significantly reduce their power bills by installing solar. The Friendly Society Private Hospital in Bundaberg installed a 545kW solar system in 2017. This reduced the hospital's electricity usage by a quarter, which will save the hospital \$3 million in electricity costs over a decade (Gem Energy, 2019). This could be a stimulus program that delivers jobs now, and long-term savings that help Queensland hospitals best deploy their resources to continue to deliver world-leading healthcare. Solar and batteries can also help maintain a vital, uninterrupted energy supply for patients; and reduces the need for diesel generators if mains power is interrupted by worsening extreme weather.



4 RESILIENT HOMES & COMMUNITIES



1,600 jobs could be created over the next three years in Queensland by investing \$200-300 million in retrofitting households to make them more energy efficient. A further 500 jobs, along with improved community resilience, are expected to be realised.

Queenslanders are no strangers to a capricious climate. From baking summer heatwaves, torrential flooding and endless humidity, Queensland weathers the elements year in and year out. So it should be no surprise that it also carries the greatest costs associated with disasters of any Australian state or territory (Climate Council 2021). The Climate Council envisages a future when Queensland homes are universally recognised not only for iconic design, but also climate resilience, zero carbon footprint and energy efficiency, with every Queensland household and community enjoying the benefits that come with a more comfortable home or building, that is cheaper to power.

The Climate Council's Clean Jobs Plan found that 1,600 jobs could be created over the next three years by investing \$200 to \$300 million in retrofitting households to make them more energy efficient. The Clean Jobs Plan finds that approximately 500 additional jobs could be created through the installation of community scale storage and generation, along with improved community resilience outcomes (Climate Council and Alpha Beta 2020).

To create homes that are cooler in summer and warmer in winter, and for more resilient communities the Queensland Government should:

1. Commit \$215 million to install energy efficiency upgrades or solar panels on all of Queensland's social housing (50,000), and ensure that newly-built social housing is equipped with solar; a strategy modelled to create 1800 new jobs (Solar Citizens & QCOSS 2020).
2. Establish a Queensland Net Zero Home program and establish clear targets for residential building standards beyond 2030 (Sustainability Victoria 2021).
3. Expand the interest free loan and rebate scheme for household energy storage installation.

4. Expand and prioritise the rollout of solar and storage solutions (including local procurement requirements) for remote communities, building upon the successful Decarbonising Remote Communities program to support regional resilience, reduce costs and support the development of new jobs and skills (Department of Energy and Public Works: Queensland 2021).
5. Build upon successful examples in New South Wales (Energy NSW 2020) and Victoria (Department of Economic Development: Jobs Transport and Resources 2015) to establish a Community Energy Guide for small scale projects, supported by a \$15 million Regional Community Energy Fund.

CASE STUDY: BATTERIES INCREASE COMMUNITY RESILIENCE

The country Victorian town of Yackandandah trialled one of Australia's first "mini-grids" in 2017. Rather than having individual households within the township add a battery (and potentially disconnect from the electricity grid), households within Yackandandah banded together and remain connected to each other. Different households have solar panels and battery storage installed on their properties, but all of these systems are controlled centrally and remotely. This enables all the solar and storage systems to effectively operate as one virtual power plant (The Border Mail 2017). Today, Yackandandah has three functioning microgrids with a 200-property mini-grid, and installation of a 274 kilowatt-hour community retail battery under way (Totally Renewable Yackandandah 2021). The mini-grid has generated more than 3 gigawatt-hours of renewable energy, and collectively saved the households involved nearly \$500,000 in electricity bills (Mondo 2020). A similar scheme is underway in the off-grid community of Lockhart River in Cape York Peninsula. Electricity distribution company Ergon Energy will install 200 kilowatts of rooftop solar and a number of battery storage units. The system will supply 10% of the community's power and reduce its reliance on expensive and polluting diesel (Ergon Energy 2017).



5 TRANSFORMING OUR TRANSPORT SYSTEMS: 1,200 JOBS + HEALTHY, CONNECTED COMMUNITIES



Investment in transport systems is a significant jobs creator, with the Climate Council's Clean Jobs Plan finding that 1,100 jobs could be created over the next three years in this sector (Climate Council and Alpha Beta, 2020).

The road to zero emissions transport provides an opportunity to reduce disadvantage, create jobs and connect communities. Investment in transport systems is a significant job creator with the Climate Council's Clean Jobs Plan finding that 1,100 jobs could be created over the next three years by improving Queensland's active and public transport systems, with an additional 100 jobs created via the expansion of the electric vehicle (EV) network.

In order to achieve this, the Queensland Government can:

1. Accelerate electrification of Queensland's transport systems by aiming for the Government car fleet to be at least 75% electric or plug-in-hybrid by 2024 (where fit for purpose), and facilitating aggregation models to support Local Governments of all sizes to do the same.
2. Support Local Governments to further expand Queensland's Electric Vehicle infrastructure to alleviate 'range anxiety' beyond the Electric Super Highway.
3. Establish robust targets for active transport adoption within urban areas and in partnership with Local Governments.
4. Elevate Queensland's role as a global leader in future fuels with further investments to unlock small scale renewable hydrogen and zero emissions technologies for domestic freight fleets.
5. Build upon existing pilot projects to accelerate Queensland's transition to zero emissions public transport by implementing procurement policies that prioritise electric buses and include local content manufacturing requirements.

CASE STUDY: BUSTECH'S ON THE MOVE WITH ELECTRIC

Queensland-based BusTech Group is switching its commercial production focus from hybrid-diesel/electric to all-electric buses and has a hydrogen bus in the project scope and design phase (Spence 2021). BusTech will build 10 electric buses for the Queensland Government, with the first ones to be trialled in 2021. The electric bus will run for 12 months at a cost of \$1 million as part of Queensland Government's \$23 million Queensland Transport and Roads Investment Program and will be run in collaboration with local bus companies Clarks and Kinetic Group (Schmidt 2020).

The company has a manufacturing plant in Gold Coast, with this trial alone expected to create 150 direct jobs (Spence 2021; Schmidt 2020).

The company already has a number of all-electric prototypes and is now looking to establish a manufacturing site in New South Wales, as the NSW government has committed to transitioning its entire bus fleet to zero emissions by 2030, starting with 120 electric buses in 2021 (Transport NSW 2021).



6 MORE THAN A QUARRY: MAXIMISING QUEENSLAND'S MANUFACTURING CAPACITY

Clean energy offers a unique opportunity to revitalise Queensland's manufacturing industry - creating long-term regional jobs and capitalising on Queensland's natural advantages in a decarbonised global economy. Manufacturing that's powered by clean energy will transform the Sunshine State into a clean jobs superpower.

To capitalise on these opportunities, the Queensland Government can:

1. Embrace the opportunities for battery manufacturing, including the fast-growing global market for lithium-ion batteries (see case study below).
2. Kick-start Queensland's emerging clean steel industry by establishing a clean steel procurement mandate for all Government projects to commence from 2025, with the foundations to be laid through strategic investment in renewable hydrogen technologies and supporting a clean steel pilot plant.
3. Support the development of new Renewable Energy Industrial Precincts and eco-industrial precincts (Beyond Zero Emissions & WWF 2021; Queensland Circular Economy Lab 2019).
4. Continue to support new job opportunities by building upon recently announced training mechanisms and job opportunities around renewables, renewable hydrogen, clean technologies and products, and knowledge-based analytical skills, particularly digital skills (Queensland Cabinet and Ministerial Directory 2021b; EY 2019).

CASE STUDY: ADVANCED MANUFACTURING

The Climate Council has previously found that Queensland could become a leader in advanced manufacturing that will be central to the global clean economy for decades to come (Climate Council 2020). One such opportunity is manufacturing lithium-ion batteries, which are used in a range of applications including electric vehicles, energy storage, and consumer electronics. This is a fast-growing global market, projected to expand from US\$30 billion in 2017 to more than US\$100 billion by 2025 (Centre for Future Work 2020).

Australia is the world's largest producer of lithium, with much of this coming from Western Australia (Commonwealth of Australia 2019). Queensland is a major producer of some of the other nine elements required to produce a lithium-ion battery, including copper, nickel, cobalt, phosphate, and aluminium (Commonwealth of Australia 2018), with Townsville identified as a promising location for lithium-ion battery manufacturing (Commonwealth of Australia 2018).



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