

WINNING GOLD

TRACKING QUEENSLAND'S PROGRESS ON CLEAN ENERGY



SolarCitizens

Key Findings

1. Queensland gets a bronze medal for its current progress on slashing emissions and rolling out renewable energy projects.

Although the State government is making progress, the Sunshine State is lacking the ambition that we're seeing elsewhere in Australia, like in New South Wales and Victoria.

2. The Queensland government has set no target for the amount of new renewable energy generation they are aiming to unlock in the State's Renewable Energy Zones, which means that some regions are likely to miss out on renewable jobs and investment.

Victoria has a goal of unlocking 10,000MW of new renewable energy generation and New South Wales is aiming for 12,000MW of new generation and 2,000MW of storage by 2030.

3. As of 2019, Queensland's emissions were approximately 14% lower than 2005 levels.

There's still a long way to go to reach the existing 30% by 2030 target and then go beyond that for the 2032 climate positive Olympics.

4. Queensland currently has 37 large-scale solar and wind farms operating across the state, with a further eight large-scale renewable projects under construction.

The projects currently under construction are powering 6,300 job years* and represent a substantial 1,757MW of new generation capacity for Queensland.

5. As it stands, an estimated 3,410MW of new large-scale renewable generation will come online in Queensland by 2025.

This will create almost 11,000 construction job years.

6. In the Australian Energy Market Operator's (AEMO) most ambitious growth scenario, Queensland's rooftop solar capacity is set to reach a total of 11,100MW over the next 10 years.

This is a growth of 6,975MW of installed small-scale capacity. This additional clean energy would create 4,050 ongoing installation jobs over that 10 year period.

*A job year is a full-time equivalent job that lasts for a year.

Introduction

Qld's Bright Energy Future

A key part of decarbonising Queensland and reaching the State's net zero by 2050 pledge will be making the switch away from combusting fuels to powering almost everything with renewable electricity.

The switch to powering the Sunshine State with renewable electricity is no small undertaking. Research shows that electrifying everything Australia-wide will require approximately three times as much electricity than we currently generate [1]. This big shift in the way that many Australian households cook, heat their homes and power their vehicles will create a range of benefits that go beyond healthier air and reduced emissions.

The process of rolling out new clean energy projects, retrofitting households with electric appliances and upgrading our transport system will stimulate the economy and create jobs for thousands of Australians. Even better, Australian households can expect to save \$5,400 per year from 2030 if the process of electrification is coupled with the right policy settings that incentivise abundant cheap renewable energy and affordable electric transport [2].

Here in Queensland, more than 800,000 solar homes and businesses now represent the Sunshine State's largest power station. These existing solar households, alongside the thousands more who are going solar each year, will play a major role in providing cheap electricity to the grid to power additional demand as we decarbonise.

But it's not only households and small businesses that will see their bottom line benefit from the rollout of cleaner energy and transport. The growing global demand for low carbon products, such as 'green' steel and aluminium, and renewable hydrogen, is an opportunity to revive Australian manufacturing and create good, long-term jobs across the regions.

Australia's abundant renewable energy resources, skilled workforce and mineral deposits mean that we're well-placed to begin manufacturing low carbon products to meet this growing demand. Already, big energy users, such as mines and even metal refineries, are turning to solar, wind and storage to power their operations more affordably while meeting global emission reduction expectations.

Rolling out abundant renewable energy to capitalise on these trends is an exciting opportunity for Queensland. Research from Beyond Zero Emissions shows that building a local Renewable Energy Industry Precinct (REIP) in Gladstone will power 11,000 Queensland jobs and raise local wages by \$20,000 per year on average [3]. In Queensland's biggest regional city, Townsville, powering forward with clean energy industry proposals underpinned by local renewable energy would create 11,000 jobs and add \$154 billion to the local economy over the lifetime of the projects [4].

Decarbonising Queensland's economy will drive more regional employment, ease the cost of living and help revitalise local manufacturing – but there are hurdles slowing the transition to clean renewable energy and electric transport.

This report looks at the progress that Queensland has made towards reducing emissions and rolling out both large and small-scale clean energy.

Going for Gold

Brisbane is set to host the 2032 Summer Olympic games and, for the first time, these games will be climate positive. In fact, the Organising Committee for the Olympic Games from 2030 onwards requires that hosts ‘implement lasting zero-carbon solutions for the Olympic Games and beyond’.

The Queensland government has committed to achieve zero net emissions by 2050, and has an interim 2030 target to reduce emissions by 30% below 2005 levels. This 2030 target represents a 57MtCO₂-e reduction from 2005 levels, which is almost equivalent to transitioning Queensland’s entire electricity generation fleet to renewable energy. The electricity sector is currently Queensland’s largest emitter, accounting for 39% of emissions, closely followed by the transport sector at 14% [5].

As of 2019, Queensland’s emissions were approximately 14% lower than 2005 levels, so there’s still a long way to go to reach the existing 2030 target and then go beyond that for the 2032 Olympics.

In 2012, the London Summer Olympics created 3.3MtCO₂-e emissions, which is almost equivalent to the entire yearly emissions of Queensland’s Kogan Creek coal-fired power station [6]. To ensure the Brisbane games are climate positive and support lasting emission reduction cuts, the Queensland government has an imperative to rapidly reduce emissions particularly in the State’s electricity and transport sectors. This could be achieved by transitioning Queensland’s entire electricity generation fleet to renewable energy backed by storage while also making the shift to all-electric public transport by 2030.

Queensland’s progress towards emissions reduction goals:

Bronze



While the Queensland government has made some progress towards their emission reduction goals, there are vital missing pieces, including:

- Despite being promised, we’re still yet to see a full Climate Action Plan that details how the government will meet the interim 2030 target of a 30% emission reduction compared to 2005 levels.
- The State government maintains that the State’s coal-fired power stations will continue to run until the end of their technical lives. Burning coal is the single biggest contributor to climate change and yet some of the State’s coal stations are slated to run past 2050. This is not aligned with the zero net emission by 2050 target.

Trends In Large-scale Renewable Energy

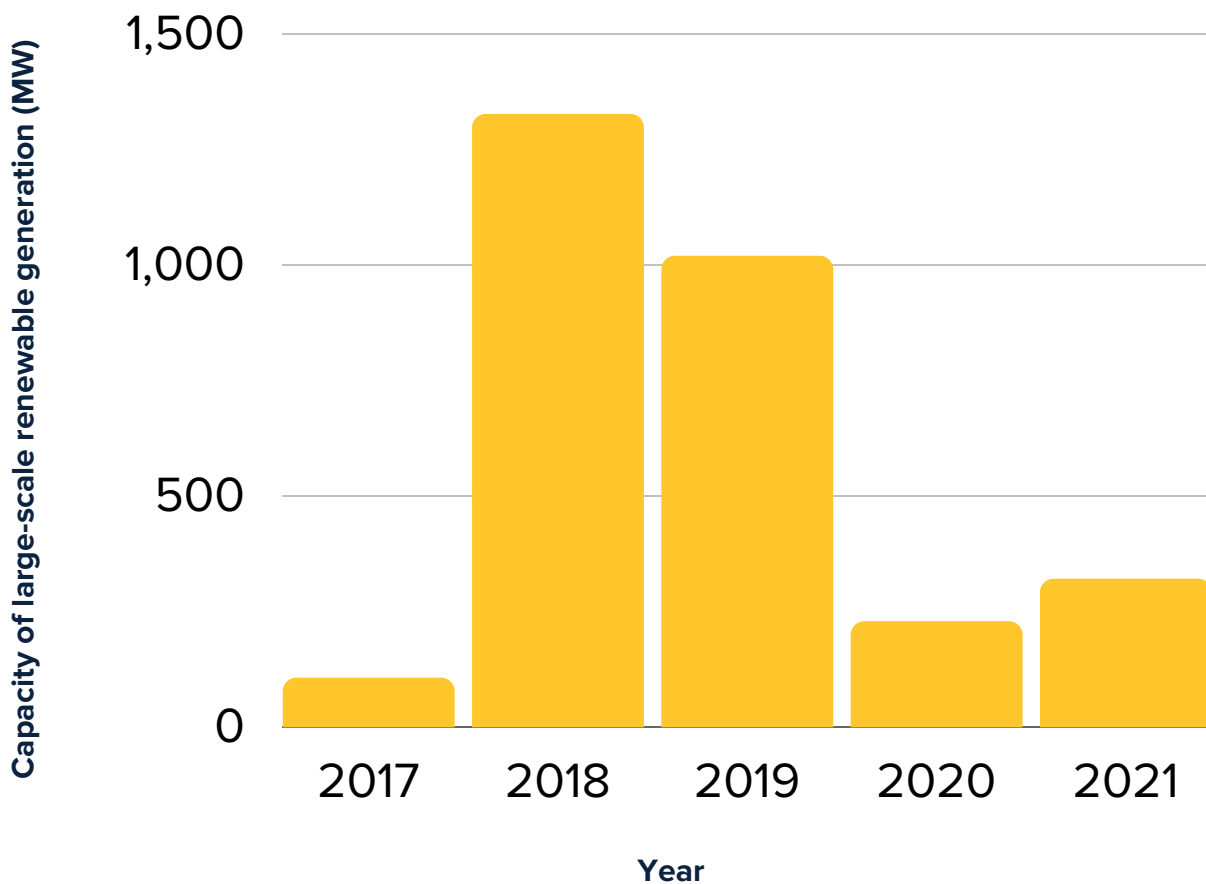
Queensland currently has 37 large-scale solar and wind farms operating across the state, with a further eight large-scale renewable projects under construction. The projects currently under construction are powering 6,300 job years and represent a substantial 1,757MW of new generation capacity for Queensland – that’s more than the capacity of the Sunshine State’s biggest coal-fired power station in Gladstone.

Table 1. Large-scale Renewable Projects Under Construction in Queensland.

Project Name	Capacity (MW)	Region
Kidston pumped hydro	250	North Queensland
Woolooga solar farm	214	Wide Bay
Western Downs Green Hub	460	Darling Downs
Kaban Green Power Hub	157	Far North Queensland
Columboola solar farm	162	Darling Downs
Edenvale solar park	204	Western Downs
Moura solar farm	110	Central Queensland
Blue Grass solar farm	200	Western Downs

But the story of large-scale investment in Queensland is not always a sunny one. Already, we’ve seen boom and bust investment cycles, which can have negative implications for workers and hosting communities. A strong pipeline of large-scale renewable energy projects creates the right environment for a skilled local workforce to be built up that can move from project to project, while maintaining ongoing regional investment.

Graph 1. Capacity of new large-scale renewable generation beginning operation per year.



As is demonstrated in Graph 1, a substantial amount of renewable energy generation connected to Queensland's grid in 2018-19 followed by sharp investment decline in 2020. There are major hurdles that are halting renewable energy developers from investing in Australia, which include:

- Federal energy policy and regulatory uncertainty;
- Grid connection delays and uncertainty;
- The need for transmission upgrades and system strength remediation;
- Low wholesale electricity prices.

These investment hurdles make it difficult for large-scale renewable energy projects to proceed to financial close without corporate power purchase agreements or government backing. The Federal government's recent interventions in the electricity sector, such as the proposed Kurri Kurri gas plant, are frequently viewed by the renewable energy industry as additional hurdles to overcome, which leaves State governments responsible for ensuring investment continues.

This is evident in Queensland where the majority of large-scale projects either under construction or likely to proceed to construction are supported by government-owned corporations or direct government funding for transmission infrastructure. As it stands, an estimated 3,410MW of new large-scale renewable generation will come online by 2025, creating 10,950 construction job years.

Table 2. Proposed Large-scale Renewable Projects Supported by Government-Owned Corporations.

Project Name	Capacity (MW)	Region
Macintyre wind farm	926	Darling Downs
Karara wind farm	100	Darling Downs
Clarke Creek wind farm	450	Central Queensland
Dulucca wind farm	180	Western Downs

In addition to this, over the last year the Queensland government has allocated \$2 billion to the Renewable Energy and Hydrogen Jobs Fund, which will allow government-owned energy corporations to build, own and operate new renewable energy and hydrogen projects. They have also committed to establishing three Renewable Energy Zones (REZs) with \$145 million.

A Renewable Energy Zone is a region with good renewable energy resources where it is strategic to build or upgrade infrastructure so new large-scale solar, wind and storage projects can connect to the grid. New South Wales and Victoria have also announced plans to develop REZs but, unlike Queensland, they have a goal for how much renewable capacity their zones will unlock.

Table 3. Ambition and Funding for Renewable Energy Zones in Australia's Eastern States.

State	Number of REZs announced	Funding	REZ target
New South Wales	Five	\$499 million	12,000MW of renewable energy and 2,000MW of storage by 2030.
Victoria	Six	\$540 million	10,000MW
Queensland	Three	\$145 million	Unspecified

Taking a Closer Look

The Northern Queensland Renewable Energy Zone

Forty million dollars from the Queensland government's \$145 million REZ fund has been allocated to the Northern Queensland Renewable Energy Zone.

The transmission upgrade to receive this funding will unlock 500MW of hosting capacity in Far North Queensland (FNQ) and allow the 157MW Kaban Green Power Hub to proceed to construction.

This is an important step forward and the proposed upgrade is compatible with future upgrades in FNQ that will unlock additional capacity. However, just in the Townsville Local Government Area there are already several active manufacturing, mining and minerals processing proposals that will add between 2,000MW-3,000MW of new demand to northern Queensland [4]. This is without taking into consideration additional demand that will arise from the electrification of existing industry, transport and household appliances.

It's clear that unlocking 500MW of grid hosting capacity in Northern Queensland is not sufficient, and additional hosting capacity will be required as manufacturing projects begin coming online from 2023.

State Race on Renewable Energy Zones: Bronze



New South Wales: Gold

Victoria: Silver

Queensland: Bronze

The Queensland government's \$2 billion Renewable Energy and Hydrogen Jobs Fund is a strong indicator that the government is serious about maintaining majority public ownership of the electricity generation fleet and keeping large-scale clean energy investment coming.

However, budget papers reveal that this \$2 billion will likely be allocated over the next 10 years. Without a plan for the scale of Renewable Energy Zones announced in Queensland, and with a relatively small amount allocated to build out the REZs, Queensland is set to fall behind the pack.

The Rise of Rooftop Solar

Australian homes are taking the power back and have installed solar panels at some of the fastest rates in the world. Queensland now has over 800,000 solar homes and businesses and 4,125MW of installed small-scale solar capacity across the state.

Postcode installation data available from the Clean Energy Regulator demonstrates that areas with the highest uptake of rooftop solar tend to be regional and outer suburban areas [7]. The continued growth of small-scale solar will go a long way towards providing cheap, local energy to power homes, businesses and electric transport. According to data made available from the Australian Energy Market Operator (AEMO), it's predicted that rooftop solar installation will continue to increase rapidly over the next 10 years [8]. It's expected that:

- Business as usual will see Queensland reach a total of 8,400MW of installed small-scale solar capacity in 10 years. This growth represents an additional 4,275MW of installed capacity. In this scenario, the additional clean energy would create 2,480 ongoing installation jobs.
- In the most ambitious growth scenario, Queensland is set to reach a total of 11,100MW over the next 10 years. This is a growth of 6,975MW of installed small-scale capacity. This additional clean energy would create 4,050 ongoing installation jobs.

There's an ongoing discussion in Australia about how to handle increasing instances of high solar generation and the continued uptake of rooftop solar. Concerns raised by some energy stakeholders, including distribution network service providers (DNSPs), have resulted in the Australian Energy Market Commission ruling that DNSPs will be allowed to charge solar homes and businesses for exporting excess solar electricity to the grid. Solar Citizens does not support this conclusion, and instead encourages State and Territory governments to support the rollout of community and household battery storage, Dynamic Operating Envelopes, and electric transport to utilise this abundant affordable solar energy.

Cheap local solar for all:

Silver



Queenslanders are world leaders in the uptake of rooftop solar and demand for solar is expected to remain strong for many years to come. However, the State government is not doing all that it can to ensure that everyone can be included in the rooftop revolution.

The State government ran a Solar for Renters trial that successfully saved participating tenants on average \$600 per year, but unfortunately this program has not been extended. Similarly, the State government is yet to assist people living in social housing to access the benefits of solar or energy efficiency upgrades.

Recommendations for Building a Bright Renewable Future

Done well, electrifying Queensland's economy offers a pathway to slash greenhouse gas emissions while bringing down the cost of living for households. What's more, the global shift towards decarbonisation means there's a growing demand for products that Australia can competitively manufacture, such as lithium-ion batteries, renewable hydrogen and 'green' steel and aluminium.

But seizing these opportunities and stimulating good, long-term regional employment and a lower cost of living for Queenslanders, requires abundant renewable energy backed by storage that can competitively power industry and households.

That's why Solar Citizens are calling on the Queensland government to ensure that at least 2,000MW of new renewable energy is added to each of Queensland's Renewable Energy Zones by 2025 on top of the projects already under construction.

If the government commits to this through the development of their 10 Year Energy Plan they would fast-track approximately 15,300 construction job years across the regions, including in Gladstone, Rockhampton, Townsville, as well as the Western and Darling Downs.

This goal should be implemented alongside policies that stimulate the uptake of electric transport and battery storage, ensure rooftop solar is accessible to all, and encourage manufacturers to set up shop in Queensland.



References

[1] Otherlab. (2020). The Path to Decarbonise Australia. <https://www.otherlab.com/blog-posts/the-path-to-decarbonize-australia>.

[2] Rewiring Australia. (2021). Castles and Cars: Discussion Paper.

[3] Acil Allen. (2021). Regional Economic Impact Analysis of Renewable Energy Industrial Precincts.

[4] Acacia Sustainability. (2021). Renewable Energy Hub Jobs - A Transformative Opportunity for Townsville.

[5] Australian Government. (2021). National Greenhouse Gas Inventory.

[6] Clean Energy Regulator. (2021). Electricity sector emissions and generation data 2019-20.

<http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/electricity-sector-emissions-and-generation-data/electricity-sector-emissions-and-generation-data-2019-20>.

[7] Clean Energy Regulator. (2021). Postcode data for small-scale installations.

<http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations>.

[8] Australian Energy Market Operator. (2021). 2021 Inputs and Assumptions Workbook.



