

## Industrials: Renewable Energy

### PROPOSED OUTCOME

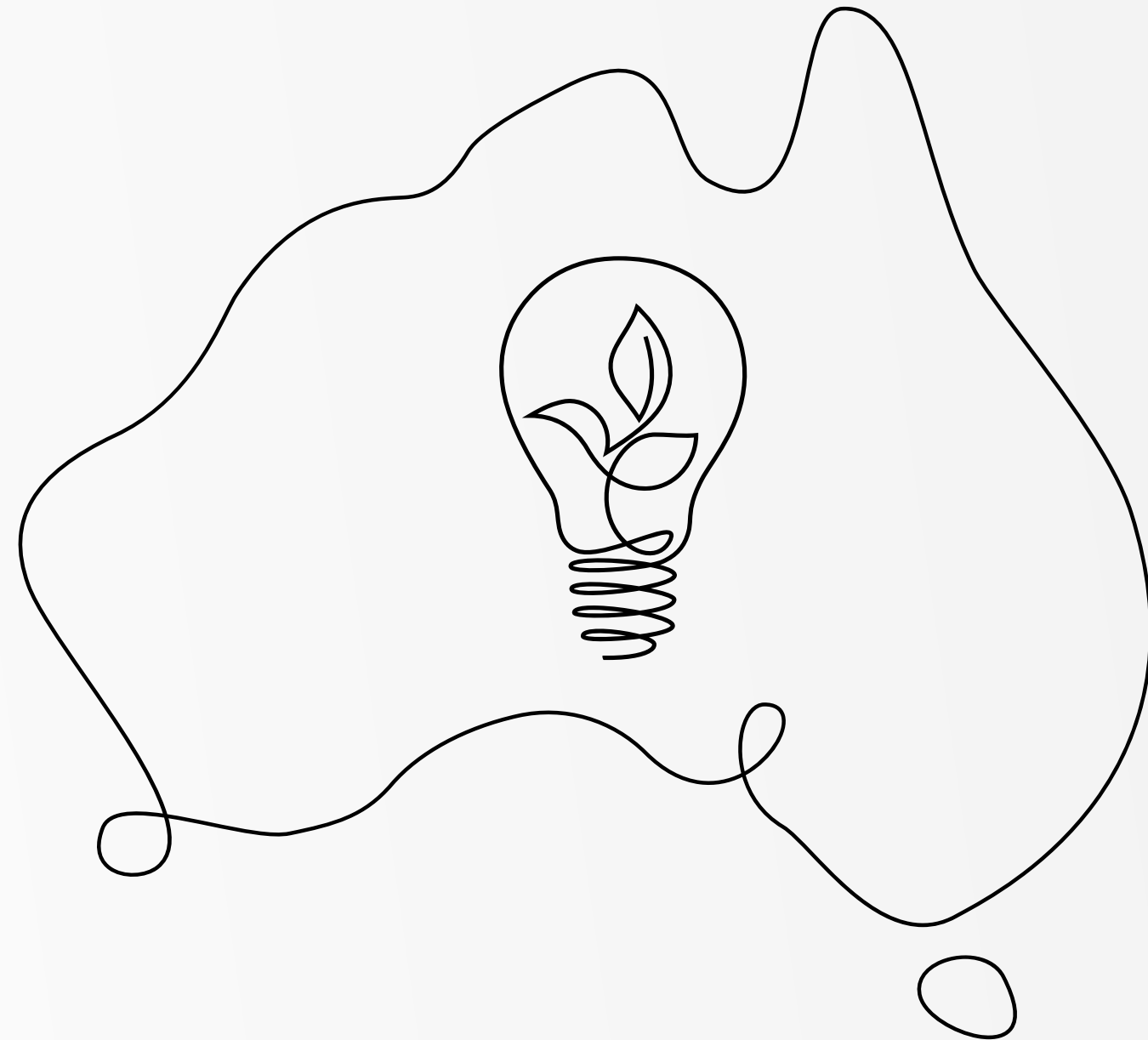
*Lithgow becomes a global example of successful transition to a renewables-led, new energy economy.*

#### CONTEXT

To achieve the Australian Government's commitment to net zero, the national Powering Australia plan is seeking to support a major increase in the proportion of renewables in the electricity system from about 33 per cent to 82 per cent by 2030. In NSW, Renewable Energy Zones (REZs) are being established to facilitate large scale investment in renewable energy 'hot spots', including building transmission infrastructure, to bring forward large-scale, low-cost and zero carbon energy to assist the decarbonisation of the NSW electricity grid.

Lithgow is well-placed to be part of the solution to the energy transition. The LGA has the advantage of existing high voltage transmission infrastructure, which can provide grid support and a critical link between the Central-West Orana REZ and Sydney. The LGA also has key natural resources that are well suited to renewable energy generation, including land, solar and water resources.

The **rapid acceleration** of the development of renewables is placing the national electricity grid, including transmission and storage capacity, under strain, while coal-fired power stations are closing more quickly than expected.



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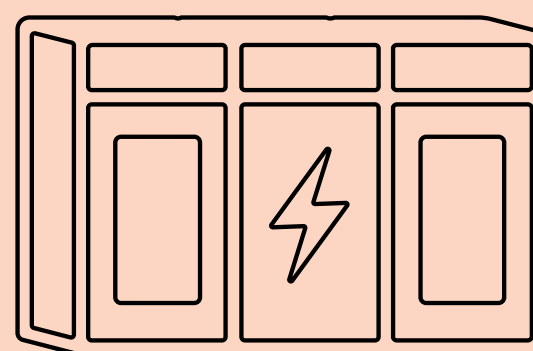
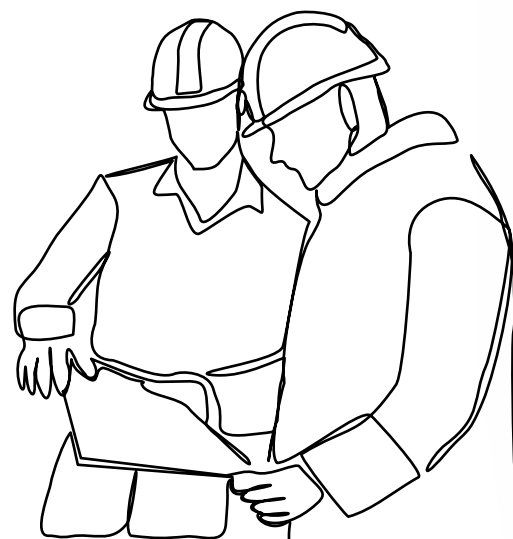
## GROWTH OPPORTUNITIES

### Renewable energy

Renewable energy – classified as Electricity, Water and Waste Industries – will be one of the most critical sectors for Lithgow's future growth.

However, while renewable energy projects have strong potential for economic value add and create significant high value jobs during construction, fewer roles are required in operation and maintenance.

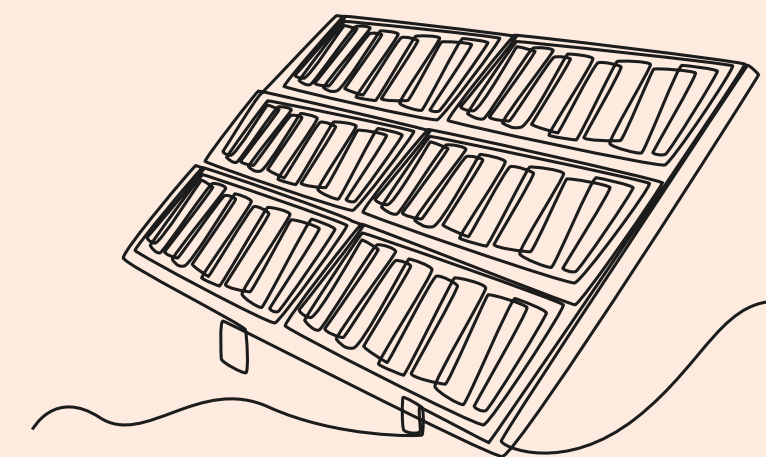
Skilled workers will also be in demand, so planning a pipeline through training and retraining will be vital, as well as ensuring school students are learning science, technology, engineering and maths (STEM) to be workforce-ready.



### Batteries

One of the challenges of renewable energy is that electricity generation is affected by when resources such as sun and wind are available. This requires surplus energy to be stored to provide grid stability during low generation periods. This need will be met through a mix of battery storage and pumped hydropower.

Batteries can be deployed very quickly – within 12-18 months – and require industrial land close to transmission lines. An ambitious and achievable aim could be to invest at least 2GW of battery capacity in Lithgow LGA by 2025.



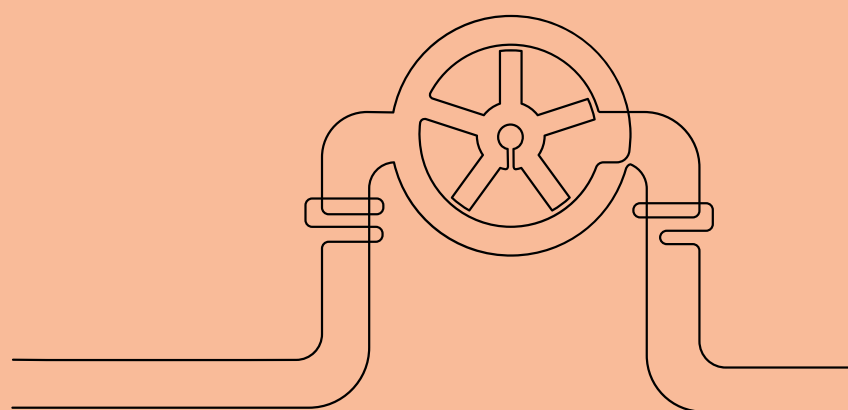
### Solar

Solar is the cheapest source of power in Australia. Lithgow LGA has a number of sites that have good potential for solar power generation, due to their exposure to the sun, proximity to transmission lines, and suitable land use and land slope for solar farm construction.

Solar power generation can be an early mover that provides a platform for further diversification in renewables, such as zero carbon energy for pumped hydro, or for other sectors, such as clean manufacturing. In addition to large-scale solar farms, a virtual power plant can also be developed using rooftops and other areas of homes and businesses.

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## GROWTH OPPORTUNITIES

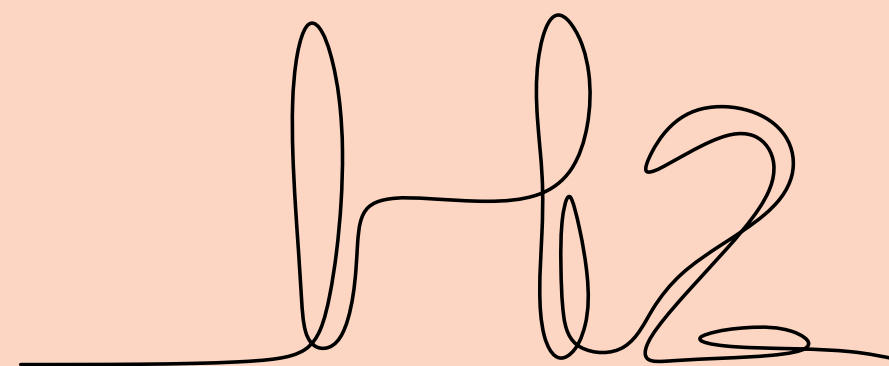


### Water and pumped hydro

Lithgow LGA is at the top of the catchment and has relatively high water security compared to lower valleys and catchments. There is an abundance of opportunities for pumped hydro, including sites that are classified as Class A for best cost-effectiveness, close to transmission lines.

The most likely form of pumped hydro energy storage (PHES) in the area is to use lakes previously used for coal mining and coal-fired electricity to pump water up to dams on nearby hills, usually using cheap grid power at night. When the water is released downhill, it creates energy on-demand.

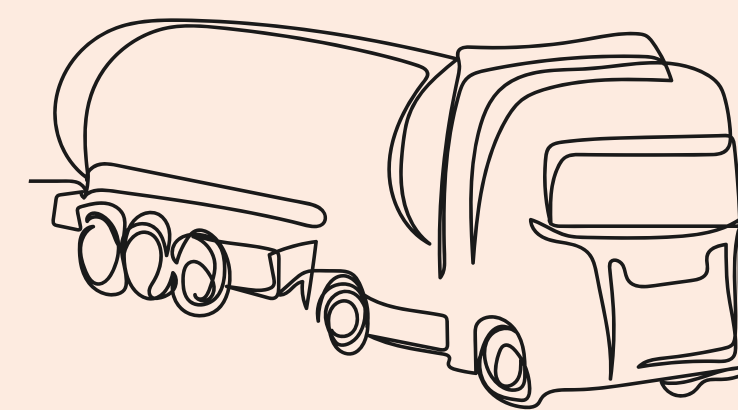
Approaches will need to consider the possible re-use of water and impacts on the catchments, communities and ecosystems that it serves, including climate change, social and cultural issues.



### Green hydrogen production

Solar energy and water can be used to generate green hydrogen as the lynchpin for a pipeline of high value jobs in Lithgow and its villages.

Investment in an electrolyser plant is an important first step for conversion to green hydrogen, which can be an offtake for other industries, such as manufacturing of fertilizer and/or green metals. The use of water for green hydrogen could also stimulate better management of resources including wastewater treatment.



### Green transport and logistics

Lithgow is very well placed as a gateway for future long haul transport vehicles using zero carbon powerfuels, electric vehicles and zero-carbon rail connections. Renewable hydrogen will likely be used for long haul transport using heavy vehicles and trains – rather than electric vehicles, which are more suited to passenger vehicles. The NSW Government aims to have 10,000 heavy vehicles and 20 percent of the government fleet powered by green hydrogen by 2030.

The LGA is well placed to support the development of renewable hydrogen hubs in the Hunter Valley and Illawarra regions. In particular, Lithgow could be a location for a refuelling station that links the planned East Coast hydrogen superhighway with the Hume Hydrogen Highway in western NSW.

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### WHAT'S HAPPENING

Greenspot and Shell Energy will partner on the 500 MW/ 1000 MWh Battery Energy Storage System (BESS) known as Wallerawang 9, in recognition of the 8 generation units that previously operated at the old power station.

Subject to a Final Investment Decision, Shell Energy will build, own and operate the BESS in stages, connecting to the 330KV Wallerawang Substation. The \$400 million project will generate 100 jobs in construction and could be operational by 2023-24.

#### Other projects include:

- **EnergyAustralia** is undertaking a feasibility study to use Lake Lyell as the lower reservoir for a 335 MW PHES with around eight hours storage, enough to power over 150,000 households during peak demand. A new upper reservoir would be built on the southern flank of Mt Walker.
- **Neoen**, which built the world's first big battery at the Hornsdale Power Reserve in South Australia, is proposing a 500MW battery to be known as the Great Western Battery, to be built just north of Wallerawang and the Great Western Highway.
- **Banpu Energy** – a sister company to Centennial Coal – is proposing to develop the 130 MW Pinecrest solar farm, which would connect to Transgrid's Wallerawang Substation.



Lake Lyell