Lake Lyell Pumped Hydro Energy Storage
fact sheet



EnergyAustralia recognises its Mt Piper power station and Lake Lyell is on the traditional Country of Wiradjuri peoples and respects and acknowledges their continued connection to Country and culture.

For around a century, coal-fired power plants have provided Australians with reliable and affordable power and supported jobs and economic development. As the world moves to cleaner forms of energy, EnergyAustralia wants to lead the transition to cleaner energy in a way that maintains that same reliable and affordable access to energy for everyone.

Renewable electricity is one piece of the energy puzzle – but more pieces, such as energy storage, are needed to deal with intermittency.

This fact sheet provides an overview of the proposed Lake Lyell Pumped Hydro Energy Storage Project and its potential to store large volumes of energy for quick release, particularly during periods of high demand.

EnergyAustralia believes the project could play an important role as part of the future energy mix in New South Wales and support Lithgow's future in becoming a renewable energy hub.

Lake Lyell Pumped Hydro

Pumped hydroelectric storage plants, commonly referred to as "pumped hydro storage", work like giant batteries; they store energy for use when demand for electricity is high.

EnergyAustralia is investigating a pumped hydro project on Wiradjuri Country at Lake Lyell near Lithgow in NSW.

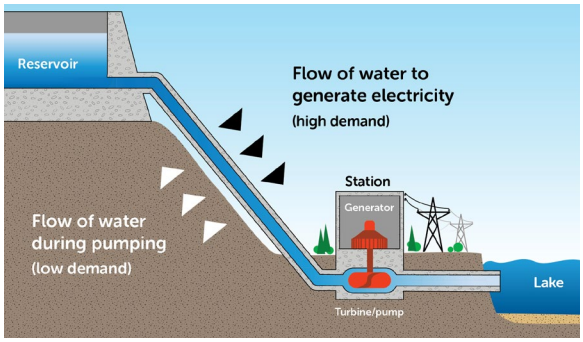
Lake Lyell was built to supply cooling water to Mt Piper power station, and before it was decommissioned, the Wallerawang power station.

The lake sits at the base of Mt Walker, the south side, which is land owned by EnergyAustralia. This project proposes to use Lake Lyell as a lower reservoir with a new upper reservoir built on the side of Mt Walker.

By using existing infrastructure, water, nearby transmission lines and EnergyAustralia land, the project has great potential to power homes in the state, support more renewables entering the system and contribute economic benefits to the region.

Preliminary studies by engineering firm Arup suggest that a pumped hydro project is technically feasible.

The site could accommodate a facility capable of producing up to 350 megawatts (MW) of electricity with around eight hours of storage. This is enough to power over 150,000[1] households during peak periods.



How pumped hydro storage works

Pumped hydro works by using two bodies (or reservoirs) of water, one at a high elevation, at the top of a hill, and another at a lower elevation, at the bottom.

When demand for power is lower and electricity is cheap (for example when there is lots of renewable energy generation) the plant uses energy to pump water from the lower reservoir to the upper reservoir. Energy is stored there in the gravitational potential of water. When demand rises, as it does on hot days during summer, the process is reversed.

350 MW
production capability

8 hours
storage capability

150,000[1]
homes powered during peak periods

1. Based on a POE10 demand of 1.97kW for EnergyAustralia's portfolio of NSW residential customers at 350MW of generation.

Information current as at May 2021

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Water from the upper reservoir is released back into the lower reservoir through the same system of pipes, except this time the turbines act as they would in a traditional hydroelectric plant. The turbines generate electricity that is then sent to the grid for use in homes and businesses.

Fresh water pumped hydro has been used around the world. In fact, the Shoalhaven and Wivenhoe pumped hydro schemes have operated for decades on the east coast of Australia as well as the planned Kidston pumped hydro facility in Queensland which EnergyAustralia will be the offtake partner and operator.

Along with other forms of storage, such as batteries, pumped hydro will be an important part of integrating more renewable power and delivering reliable and affordable supply of electricity to NSW.

Benefits

The work we've done to date indicates pumped hydro at Lake Lyell has potential benefits including:

- **It's reliable** – pumped hydro doesn't rely on seasonal water flows like traditional hydroelectricity. In fact, adding an upper dam increases water security by adding more water storage to the system.
- **It supports renewable energy** – storing large volumes of energy provides cover when renewables aren't available (e.g. when it's dark and still). When demand for power rises, pumped hydro storage plants can begin producing in minutes but keep running for many hours, keeping the lights on.
- **It's a natural fit** – the project can help progress the energy transition by leveraging existing infrastructure at Lake Lyell and nearby power lines.
- **It can help stabilise the grid –** the project can provide much-needed grid and system stability for NSW and will connect to the electricity grid in a strong part of the network.
- **It's long-life** –pumped hydro facilities can operate for decades with no reduction in storage capacity.
- **It creates jobs** – pumped hydro is a large infrastructure project that will create jobs during construction and needs a team of people to operate and maintain the asset over its long life.

Next steps

There's still a lot of work to do before we can make a final investment decision on this project.

Preliminary feasibility studies and concept development are ongoing with the aim to reduce technological and environmental risks. Assessments we have planned or in progress include engineering design, environmental impacts, planning approvals and more detailed financial modelling. To assist with the cost of detailed project feasibility studies, we are planning to tender the project into the NSW Government's Pumped Hydro Recoverable Grants Program, which provides funding support for the development of pumped hydro projects as part of the Electricity Infrastructure Roadmap.

We know that Lake Lyell is a popular recreational location for the local community, so we are looking at ways to minimise environmental and social impacts as we refine the project design. We're also consulting with the community to understand their views on the project. Ultimately any project we do must be good for the environment and good for people.

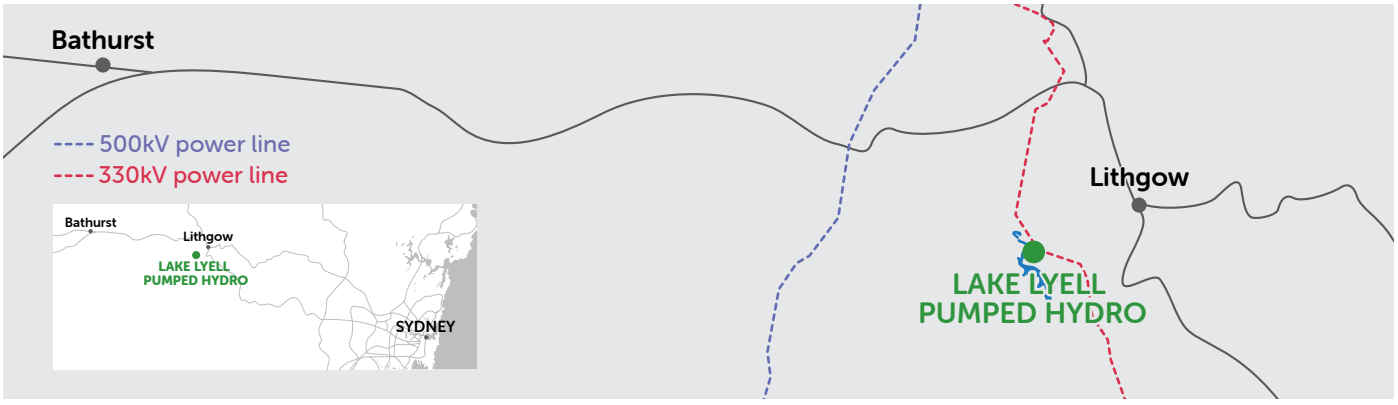
If the project continues to look promising, design and development work typically takes around two years and construction around three. That means a pumped hydro facility at Lake Lyell could be operating by 2026.

We think the technology has great potential to help deliver cleaner, reliable and affordable supplies of electricity in a modern Australian energy system.

About EnergyAustralia

EnergyAustralia is a leading energy retailer and generator with 2.4 million accounts across eastern Australia. We supply energy to our residential and business customers from a modern energy portfolio, underpinned by coal and gas power plants, as well as renewable energy sources.

We operate Australia's largest energy sector carbon offsets program, with more than 1.6 million tonnes of CO_2e already fully offset and accredited by Climate Active. Under our offsets offering, more than 250,000 of our customers receive carbon neutral electricity and gas at no extra cost.



Contact us at community@EnergyAustralia.com.au

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