

# Phoenix Pumped Hydro

Renewable Energy from ACEN

## Questions and Answers

### What is the Phoenix Pumped Hydro Project?

Phoenix Pumped Hydro is a proposed Pumped Hydro Project, 35km west of Mudgee, within the NSW Government's Central-West Orana Renewable Energy Zone (REZ).

The project will have storage sufficient to deliver power output of 800MW for 12 hours, with total storage for a maximum of 15 hours.

The project will have purpose built, off-stream, upper and lower storage reservoirs connected by a tunnel to a powerhouse containing a pump-turbine unit.

Phoenix Pumped Hydro will firm these renewables by providing large amounts of long-duration storage to keep the lights on even when the sun isn't shining, and the wind isn't blowing.

### Why is the project important?

Phoenix Pumped Hydro will help replace NSW retiring coal-fired generation capacity by providing clean, large-scale, long duration energy storage that is vital for the reliability of the NSW energy system.

Phoenix Pumped Hydro is dispatchable with a rapid response time meaning it is well placed to balance electricity demand and provide backup for variable renewable energy generation such as wind and solar.

The importance of Phoenix Pumped Hydro has been recognised by the NSW Government through its support by the Department of Climate Change, Energy, the Environment and Water through its Pumped Hydro Recoverable Grants Program and WaterNSW through its Renewable Energy and Storage Program.



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### Will the project impact Lake Burrendong recreation activities?

The project is a greenfield site with dedicated storage areas to be constructed off-stream, separate from Lake Burrendong.

The project will have minimal interaction with existing waterways and not impact camping, boating and fishing activities on Lake Burrendong.

### How will the reservoirs be filled?

Water will be pumped from Lake Burrendong to supply Phoenix Pumped Hydro the required volume for its first filling as well as ongoing 'top-up' water to replace evaporation losses.

The total water required for the project is 20,000ML or approximately 1% of the volume of Lake Burrendong.

Water rights will be acquired through a mix of temporary and permanent water entitlements.

### What is the project timeline?

We are currently working on the technical, environmental, cultural, social and economic assessments. This work is important to help inform approvals and permitting for the project and is expected to be completed by mid 2027.

Should the project go ahead, construction of the project and associated infrastructure will take approximately 5 years, with operation of the project to last 100 years.



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### What is pumped hydro?

Hydro energy uses the force of moving water to create electricity. Hydro energy is capable of rapidly providing power on-demand, to supply electricity to consumers when it is needed. The technology has been used for several centuries to drive water wheels and mills for various agricultural and industrial uses and since the late 19th century, it has also been used for electricity generation.

Storage systems and run-of-river systems use gravity or the natural flow of rivers to drive turbines and generate electricity.

Pumped hydro takes excess water from dams and pumps it to a higher storage point so it is available to be sent through turbines for electricity generation.

### What is pumped hydro energy storage?

A hydro-electric scheme operates as a large battery. Water is pumped into an upper reservoir using cheaper energy when demand is low or there is an excess of renewable energy because the sun is shining and the wind is blowing.

Large-scale hydro-electric facilities typically use storage or pumped storage systems whereas small-scale hydro-electric facilities more commonly use run-of-river systems. Essentially, the water stored in a reservoir awaiting use is the battery.

**Source: NSW Government- Pumped Hydro Roadmap**

<https://www.energy.nsw.gov.au/nsw-plans-and-progress/major-state-projects/pumped-hydro-roadmap>



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### What can hydro energy be used for?

Basically, the generation of electricity, although hydro energy generation is also one way of balancing variable renewable energy generation, such as wind and solar. This will be important as renewable energy increases its contribution to the NSW supply mix. Pumped hydro is an established and proven energy storage solution.

### Why is hydro energy used in NSW?

The expected retirement of power stations in NSW during the coming decades will require replacement energy supply to be developed; renewable energy is expected to play a significant role in meeting these needs. On-demand energy generators will complement renewable energy projects, providing energy when the sun isn't shining and the wind isn't blowing. Storing energy is crucial to ensure renewable energy is part of a reliable electricity system.

The NSW Government's Pumped Hydro Roadmap aligns with the goals under the NSW Renewable Energy Action Plan (REAP) and complements the government's Transmission Infrastructure Strategy.

Pumped Hydro Energy and Storage will benefit New South Wales' move towards a fully dispatchable renewable energy system

**Source: NSW Government- Pumped Hydro Roadmap**

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