



OVEN MOUNTAIN
PUMPED HYDRO STORAGE

Understanding the National Electricity Market (NEM)

The NEM is both the wholesale electricity market and the actual Electricity network and it is operated by the **Australian Energy Market Operator (AEMO)**. Electricity in QLD, NSW, ACT, SA, VIC and TAS is traded through the NEM.

There are currently over 500 registered companies participating in the NEM, composed of:

- **Electricity generators**
- **High voltage transmission network providers**
- **Low voltage distribution network providers**
- **National electricity market customers.**

Generators bid their electricity into the NEM wholesale market with bid prices determined by each generator.

Each 5 minutes AEMO dispatches generated electricity based on the generator's bid details, favouring lower priced bids. 'Dispatching' is flicking a switch to turn on the electricity available from the chosen generator.

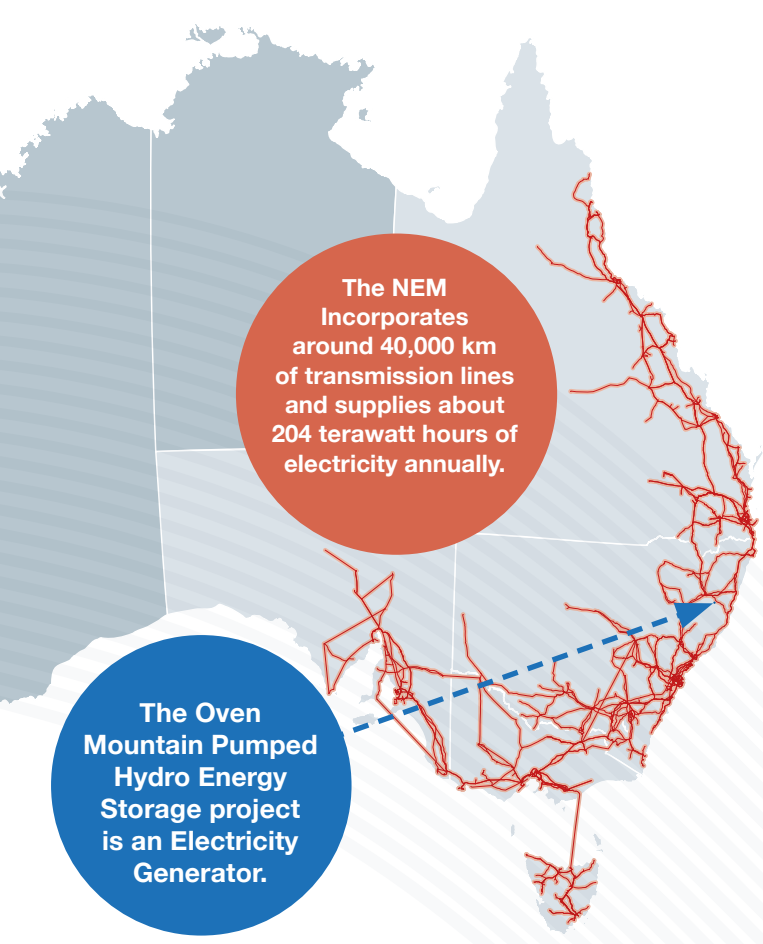
Throughout the day as demand for electricity and available supply fluctuates, the resulting wholesale energy price fluctuates reflecting the bid price of the highest priced generator dispatched.

The role of AEMO is to maintain a secure electricity supply 24 hours a day, ensure cost efficient energy to consumers and to keep traded energy prices in check.

Taking into account that solar electricity will not be available at night, AEMO determines which generator's electricity to dispatch to best meet demand at that particular time of day and over the whole 24 hour period.

The following graphs (over page) demonstrate how AEMO manages available supply and highlights the importance of generators who can supply on demand and battery storage to maintain consistent supply.

The Oven Mountain project meets both those needs.



The NEM
Incorporates
around 40,000 km
of transmission lines
and supplies about
204 terawatt hours of
electricity annually.

The Oven
Mountain Pumped
Hydro Energy
Storage project
is an Electricity
Generator.

There are over 500 companies participating in the NEM

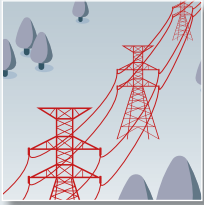


Electricity Generators

These are the coal and gas fired power stations, wind farms, solar farms, hydro generators, biomass generators and battery storage facilities.

Electricity generators trade the power they produce through the NEM.

Rooftop solar is bought by the NEM at a fixed price.

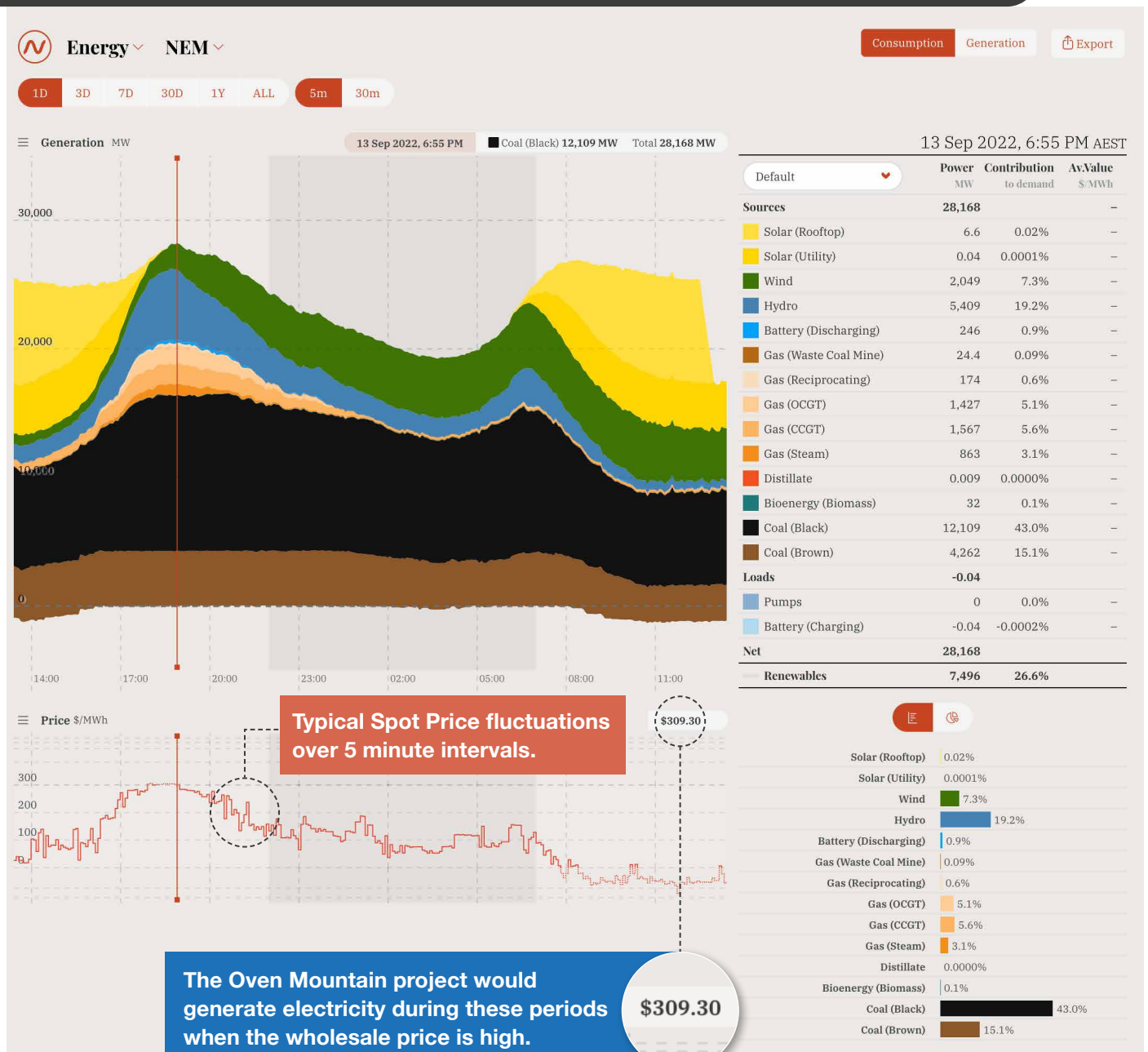


High voltage (HV) Transmission Network Providers

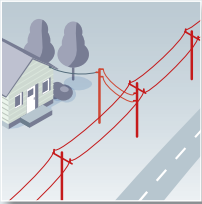
These providers operate the transmission lines that carry high voltage electricity long distances (in bulk), connecting cities and towns to the NEM network. Substations convert high voltage electricity to low voltage, so it can be distributed locally.

HV Transmission network providers costs are recovered via network charges to market customers.

The following two graphs are snapshots of the NEM, showing the fluctuations in the wholesale electricity spot price, available supply and consumer demand over a typical 24 hour period.



Source: opennem.org.au



Low voltage (LV) Distribution Network Providers (poles and wires)

These providers operate the low voltage poles and wires running through local streets and rural areas, that households and businesses connect to for access to electricity.

LV Distribution network providers costs are recovered via charges to market customers.

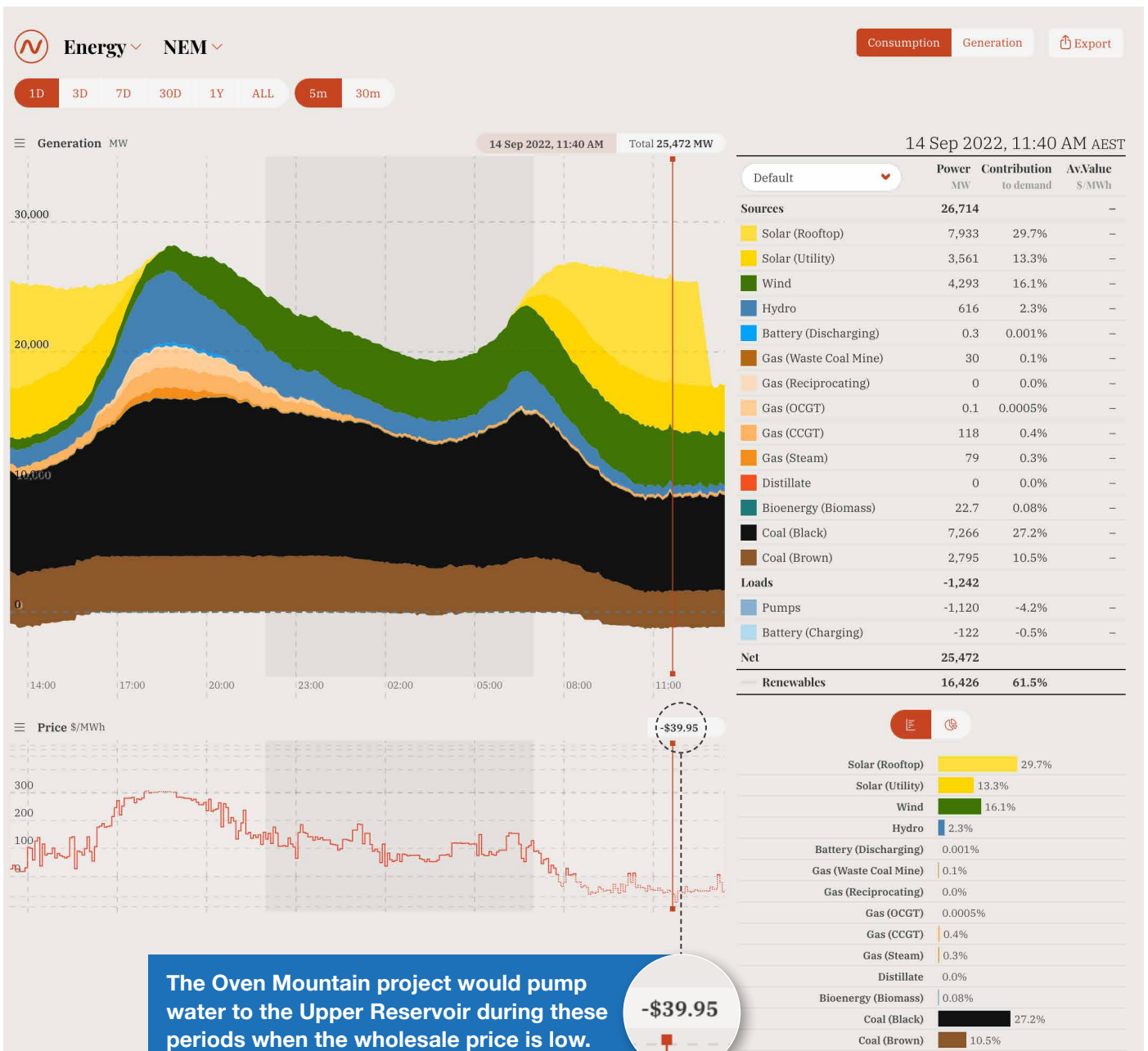


National Electricity Market Customers



These market customers include the electricity retailers a household or business will have an account with. They buy electricity from the NEM at wholesale prices and on-sell it to their own retail customers (households and businesses) on fixed price contracts.

Market customers buy bulk wholesale electricity from the NEM to resell.





Above: The Oven Mountain project site

A win for the environment

To reach zero carbon emissions and transition away from fossil fuels, NSW has a target to build at least 2GW of new long duration storage by 2030 with **Pumped Hydro** projects expected to play a crucial role towards meeting that target.

For more information go to:
www.nsw.gov.au/media-releases/pumped-hydro

Added value of pumped hydro

Pumped Hydro works in a similar way to a battery. Because the water contained within the closed loop system is always available, pumping back to the upper reservoir effectively recharges the system in the same way a battery is recharged.

Pumping back to the upper Reservoir can take place at anytime during the day when the wholesale price is low. This can happen at the flick of a switch making Pumped Hydro a vital component of a renewable energy network.

To learn more about AEMO and the NEM, visit
<https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem>

To find out more about the **Oven Mountain Pumped Hydro Energy Storage** project, or to sign up for our mailing list visit:
www.ompshydro.com

You can also contact the team at:
info@ompshydro.com or on **1800 518 194**



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