

# THE NATIONAL ELECTRICITY MARKET

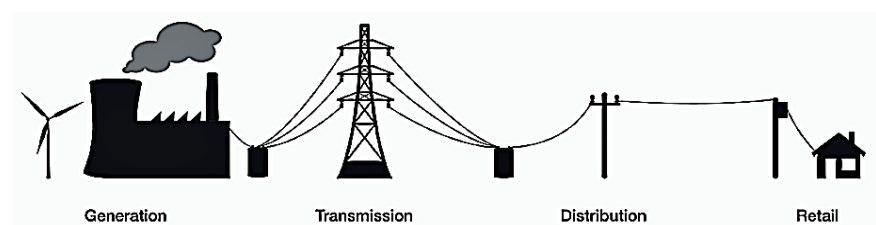
Wholesale electricity in eastern and southern Australia is traded through the National Electricity Market (NEM).

The NEM was established in 1998 and covers around 5,000 kilometres, making it the world's longest interconnected power system

The NEM's five trading regions - New South Wales (including ACT), South Australia, Victoria, Tasmania and Queensland - are interconnected through around 40,000 km of extra high voltage transmission lines and cables. It supplies almost 10 million residential, commercial and industrial energy users.

Western Australia and the Northern Territory are not connected to the NEM, due to the large geographical distance between regions. The vast size of Australia and the spread between heavily populated areas means it is not economically sustainable to have a completely interconnected national electricity grid.

**Figure 1: Electricity supply, how power is delivered**



Source: Government of South Australia



## How power is delivered



**Generators** produce electricity from sources like coal, gas, hydro, solar and wind. They then sell electricity on the wholesale market, which is known as the NEM.



**Transmission companies** (there is one for each state) are responsible for the high voltage transmission lines that link the generation to the local poles and wires. Power is carried through the NEM's transmission grid.



**Distributors** own the poles and wires that deliver electricity to your home.



**Retailers** buy wholesale energy from generators through the NEM. They package this energy with transmission and distribution network services to sell, and have it delivered directly to households.

## THE NEM'S ENERGY POOL

Retailers have different tariffs and offers, but no matter which retailer you are with, all electricity sales are traded through the NEM.

Electricity cannot be easily stored, so the NEM works as a centrally coordinated 'spot market' (or pool) where electricity generation and consumption is matched in real-time.

Generators sell electricity into the pool, while retailers buy electricity to on-sell to businesses and households. There are over 200 generators and retailers involved in selling and buying electricity on the NEM, making it a highly competitive market that delivers the most competitive prices possible.

## SUPPLY AND DEMAND

Through the NEM, generators make an offer to supply the market with a certain amount of electricity at a specific price, and for a specific time.

Generators submit offers every five minutes of every day. From all the offers, the Australian Energy Market Operator (AEMO) selects the generators with the cheapest wholesale price to supply the market first. AEMO then progressively accepts increasingly expensive offers until electricity supply matches demand. Some extra capacity is also held as a backup reserve.



## Price setting

The price of wholesale electricity is calculated on two components:

- The generator offers AEMO receives through the NEM; and,
- The rate of demand at the given time.

A dispatch price is determined every five minutes, and six dispatch prices are averaged every 30 minutes to determine the half-hourly spot price for each region of the NEM.

Prices are highly volatile and can fluctuate throughout a day, month or seasonally depending on supply and demand. Factors like extreme weather, generator availability and supply scarcity can also effect the price.

The price varies from \$-1,000 per megawatt hour, which is called the market floor, to \$14,700 per megawatt hour, which is called the market cap.

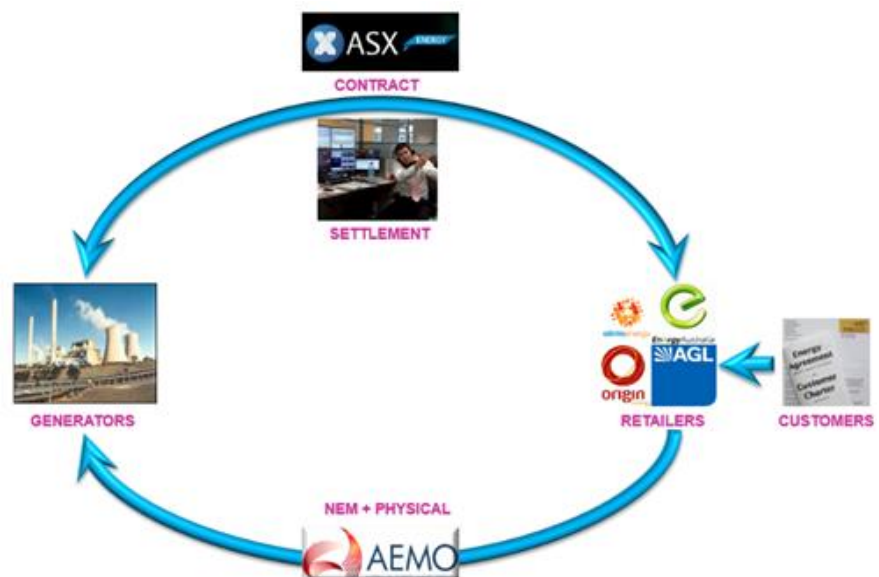
## CONTRACTS MARKET

Fluctuating wholesale energy prices directly affect retail prices, so an important role of the retailer is to manage this risk.

Generators and retailers often 'hedge' the risk of the market's floating prices by setting a fixed price by buying or selling derivative contracts. These contracts lock in a fixed price for a defined quantity of electricity, for a specific amount of time, between a generator and their customer (retailer).

While all electricity is still sold and bought through the NEM, these contracts operate independently and parallel to the market as a direct agreement between a generator and retailer.

**Figure 2: Hedging to manage spot risk**



Having entered into such a contract, irrespective of the fluctuations in the NEM's spot market price, the retailer pays a fixed price. If the spot price is greater than this fixed price the generator refunds the difference to the retailer, paid to AEMO.



## NEM MONITORING

The Australian Energy Market Commission is responsible for determining rules and policy for the NEM, while the Australian Energy Regulator (AER) monitors the NEM to ensure compliance with legislation and rules.

The AER has the power to enforce compliance though issuing infringement notices for breaches of the National Electricity Law and if necessary, can take further legal action. AER's monitoring of the market also provides key information to policy makers, the energy industry and community about wholesale market activity and prices.

### More information:

[Australian Energy Market Operator](#)

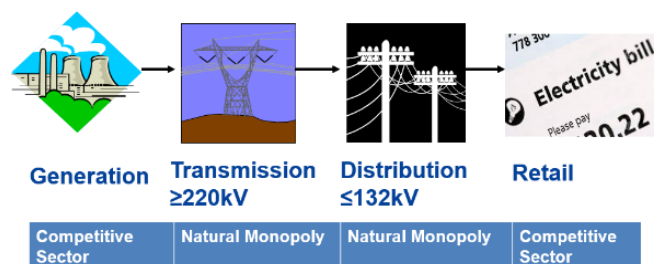
[Australian Energy Market Commission](#)

[Australian Energy Regulator](#)

## NETWORKS

The transmission and distribution businesses are natural monopolies (there is only one grid) and therefore, do not compete in the market previously described. Their appropriate level of income is determined by the AER under a process described in the rules. Once this allowable income is determined, a network tariff is set that is collected from customers.

**Figure 3: The competitive sector and natural monopolies**



Retailers are obliged to recover this tariff from customers on behalf of the networks as well as recovering their own costs. Read more about what makes up a [customer bill here](#).