

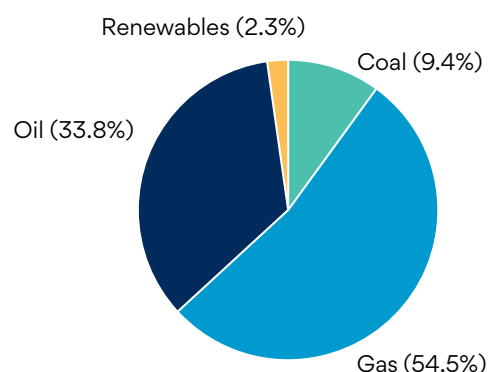


## Where does our electricity come from in WA?

In WA, we currently use a combination of renewable and non-renewable energy resources to generate our electricity:

 Carbon-based organic materials such as coal, oil and natural gas are called fossil fuels and take many millions of years to form. They are described as **non-renewable energy resources** because using them is not sustainable and they can be all used up at some point. When used to generate electricity, these resources produce greenhouse gases and other pollutants.

 **Renewable energy resources** are from sources that are constantly replenished by nature / naturally occurring. Except for bioenergy, they are not based on carbon materials, so they don't produce greenhouse gases when used to generate electricity. This is why they are described as clean and sustainable.



WA is moving towards an intelligent energy future, which includes making more use of our renewable energy sources to generate electricity. It's not just a matter of switching from one type of resource to another. The size, scale and infrastructure involved in the transition (such as wind turbines and virtual power plants) means that the process will take time.

## Renewable energy sources used in Australia:



### Solar

Photovoltaic technology converts sunlight energy into electricity and solar thermal panels convert solar energy to heat.



### Geothermal

Heat energy from underground is used to power steam turbines and generate electricity.



### Wind

Wind energy can turn the blades of a turbine to generate electricity.



### Marine energy

Tidal and wave energy is used to turn turbines and generate electricity.



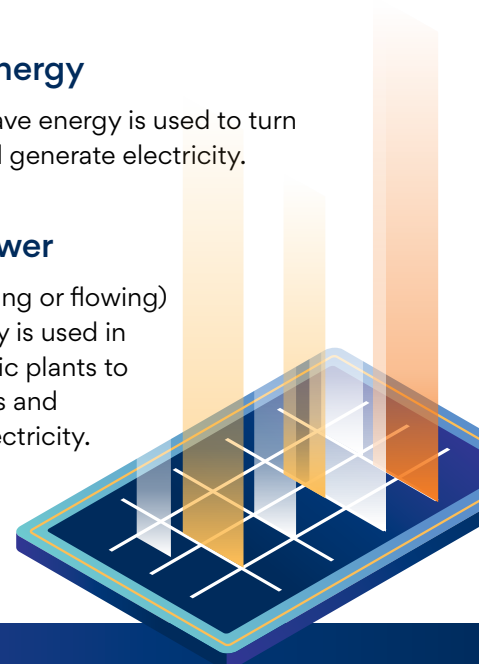
### Bioenergy

Decaying plant or animal matter produce gases that can be used to power turbines to generate electricity. Biomass includes: wood waste, manure, landfill wastes and crop-by-products such as sugarcane. Biomass is a carbon-neutral energy source.



### Hydropower

Moving (falling or flowing) water energy is used in hydro electric plants to turn turbines and generate electricity.



## WA is home to some leading energy tech

Synergy is working with a range of energy industry participants, including the WA State Government, to explore cleaner, smarter and more efficient ways to generate, use, store and trade electricity in WA.

Here are just some examples of initiatives in the electricity industry happening in WA right now.

### Alkimos Beach Energy Trial\*

- ✓ Every property in Alkimos Beach has a solar PV system size of 1.5KW or higher making it a location with a high concentration of solar PV systems.
- ✓ As part of a trial in this area, a community-size Lithium-Ion energy storage device (known as a CESD) has been running since April 2016.
- ✓ The CESD stores excess energy generated by the solar PV systems on the rooftops across the area. Community batteries like the CESD allow the benefits of solar and battery storage to be enjoyed by more people in the community.

### WA's first Virtual Power Plant (VPP)

- ✓ Synergy is working with the State Government to find energy solutions for WA's future energy needs. This includes exploring how VPPs could be used in WA, starting with the Schools VPP Pilot Project.
- ✓ With a VPP, energy from sources such as solar PV systems, batteries and electric vehicles are centrally aggregated and dispatched based on demand for electricity to provide the same services to the electricity system as a traditional power plant.

Everything we learn from innovative projects, like the ones listed above, assists Synergy to prepare for WA's intelligent energy future.

\* Trial terms and conditions apply. ^By virtual, we mean there is no physical battery connected to the premises storing electricity generated. Individual customers are allocated storage capacity in the battery.

### PowerBank^

- ✓ In this Australian-first trial, Synergy is working with Western Power to explore new ways to store energy, which involves working a utility-scale battery into the existing electricity network.
- ✓ The trial is called PowerBank which ran across 12 locations in metropolitan Perth and regional areas. Participants in the trial can virtually<sup>#</sup> store excess energy generated by their solar PV system and enjoy the benefits of battery storage without the large upfront costs of a battery, rather they are only required to pay a daily subscription fee.

### Western Australia's biggest lithium-ion battery system

- ✓ The WA State Government plans to install a 100 megawatt battery in Kwinana. Construction on the project commenced in November 2021, and the battery is projected to be operational by the end of 2022.
- ✓ The battery is estimated to have the capacity to power around 160,000 residential customers' homes for around two hours.

