

Some facts about wind energy

Wind is one of the world's most reliable power sources

Wind energy is a powerful resource which won't run out. It consumes nothing and produces no pollution. It is safe, clean, abundant and it does not cause irreversible and unknown damage to our climate and environment. It is immune from long-term price volatility and will never be a terrorist target.

Wind farms create electricity when it is needed the most

Most of Australia's wind farms are subject to hot northerly winds on summer days when the power system faces the biggest demand, largely due to the use of large numbers of air conditioners. On those days, wind farms contribute energy when it is needed the most.

The flow of electricity from wind farms on these hot days reduces the need for the power system operator to pay end-user companies expensive rates to reduce their power usage during these periods of peak demand.

Wind energy is a developed technology which is available today

Wind energy does not need to be invented, nor is there need to wait for a technological breakthrough – it is being implemented globally now.

The USA, Canada, India, China and many European nations are leading the way in wind power, with the US planning to install 3,000MW of new wind generation this year alone – that's more than four times the total capacity of all Australian wind farms.

A single wind turbine can produce 200 times more power than its equivalent two decades ago. Modern wind farms already exist that provide bulk power equivalent to conventional power stations.

Wind energy reduces our long-term energy costs

Wind energy has zero fuel price risk, zero fuel costs and extremely low running costs. Its fuel is free and endless. As electricity prices rise, wind energy is an obvious choice for the economic security of Australia's energy supply.

The cost of wind energy for the consumer is currently up to twice the cost of fossil-fuel generated electricity, but with economies of scale and fossil-fuel costs rising, wind energy will be cost-competitive within 10-15 years. If the cost of environmental and health pollution caused by greenhouse gas emissions were factored in, wind energy would be cost-competitive with fossil-fuels today.

Investors are choosing wind energy because it works

23 renewable energy technologies had equal access to the Federal Government's Mandatory Renewable Energy Target (MRET) scheme – until recently the key mechanism to encourage the uptake of renewable energy in Australia. Wind energy experienced the greatest growth because it is one of the most attractive renewable energy technologies for investors. It is cheap, it is proven and it is available today, producing electricity with zero emissions.

Modern wind turbines are more efficient at converting their fuel source to electricity than coal

Modern wind turbines work at an efficiency of up to 45% - this is the ratio of converting fuel into electrical energy. In contrast, converting coal into energy is significantly less efficient. Black coal works at about 35% and brown coal about 30%. But in the case of wind energy this point is somewhat irrelevant. For example, if your car ran on fresh air would you worry about its fuel efficiency?

Wind farms are designed to capture the maximum amount of power from the wind

Critics sometimes claim that wind farms are inefficient. This argument is false and misleading.

Every energy generator has a capacity factor, which measures a generator's actual power output compared to its rated maximum output. Eg: a power station with a rated capacity of 1000 megawatts (MW) may only utilise 500 MW on average each year, giving it a capacity factor of 50%.

The capacity factor for Australian wind farms is between 30-40% and increasing. This is almost twice as high as for wind farms in Europe. It is also much higher than most gas, oil, solar and hydro-powered generators.

It is more useful to consider the amount of energy each wind turbine actually produces. An average 2 MW turbine produces over 6000 MW hours every year (based on the average 35% capacity factor); that's enough to power over 850 Australian homes during its entire 20-year life span.

How wind energy fits into our electricity supply system

The electricity grid keeps the constantly changing demand from millions of customers in balance by adjusting the output from individual generators. Backup is a normal part of every power system, with or without wind energy.

All energy generators can reduce their output or go offline for a number of reasons, such as mechanical breakdown, routine servicing or natural events like storms or bushfires. Backup is particularly important for large power stations, which can experience a significant instantaneous loss in their output at any given time.

The CSIRO and Australian Greenhouse Office (AGO) in 2003 showed that the cumulative variations in the output from wind farms will be reduced as we establish more generators in different locations around the country. This is because, unlike many countries, Australia enjoys a diverse range of weather conditions over a large area, so the geographical spread of wind farms reduces fluctuations in the entire power system.

There are no unsolvable technical barriers to the expansion of the wind energy industry in Australia

All technological issues can be resolved through cooperation between industry, the power system operator and the National Electricity Market.

The AGO also found that the National Electricity Market can support 8000 MW of wind power (more than 10 times our current level), provided that: new wind farms are geographically well spread; commercial wind energy forecasting is in place; and interstate connectivity continues to be enhanced.

DID YOU KNOW?

At the end of 2006 Australia's total installed wind energy capacity was 817 Megawatts (MW), comprising 563 wind turbines in 42 wind farms.