

Why we need clean energy

Energy drives the economy; however Australia's stationary energy sector is derived mostly from high-emission fossil fuels and is therefore responsible for 50% of our greenhouse gas emissions. Australia's economic security is at risk from climate change unless we can compete in a low carbon world. Any successful climate change solution must target the energy sector specifically.

Australia has some of the world's best renewable and low-emission power sources. Some of these technologies are in development and will soon join the existing mature clean energy technologies that are already meeting the growing energy demand while giving us a clean-powered, sustainable economy. This Fact Sheet is part of a series that provide the basics about clean energy.

Solar Photovoltaic – how it works

Solar Photovoltaic (PV) panels on the roofs of homes and businesses capture the sun's energy to generate electricity cleanly and quietly. Light energy is converted directly into electricity by transferring sunlight *photon* energy into electrical energy. This conversion takes place within cells of specially fabricated semiconductor crystals.

While it might be true that solar cannot generate electricity all the time, it does generate electricity when it is needed most – during the day and on hot sunny days when electricity demand is at its peak driven by air-conditioners.

Importantly, electricity is generated at the point of demand - where people live and work. Having solar panels is like having a mini power station on your roof to power appliances such as fridges, air-conditioners and televisions. This lightens the load on our electricity infrastructure - the expensive network of poles and wires that transmits electricity from the nation's large, centralised coal-fired stations to where it's needed.

Greenhouse gas savings

Solar power is a zero-emission electricity source. One megawatt hour of solar-derived electricity avoids approximately one tonne of CO₂.

In Australia

Today solar PV power is installed on around 25,000 homes across Australia. Solar PV also has a long history of supplying reliable '*off the grid*' power to outback and regional communities, with isolated telecommunications and repeater stations, transport signalling, and working properties supported by a large number of solar PV installations.

Australia has been somewhat of an industry pioneer, with Australian manufacturers of panels and components are exporting to the world. More than 1,300 people are directly employed in the PV industry supply chain across Australia, contributing to industry sales of over \$285 million in 2005, of which \$132 million was from exports.

Potential

As the sunniest continents in the world, there is massive potential for solar PV to make a significant contribution to electricity generation in Australia. Couple this unrivalled resource with a multitude of open spaces, and there is no reason why Australia cannot have large scale installations generating many megawatts of electricity for sale into the grid.

Global view

Once an exclusive technology used only by organisations such as NASA to power space stations and satellites, solar PV is now a global industry supplying in large volumes to households and businesses.

The global solar PV industry is experiencing rapid growth of around 30 per cent per annum and is now an industrial scale operation. World solar cell production reached a consolidated figure of 2,204 megawatts in 2006 and exceeded newly installed nuclear power generation capacity in that year.

Current Issues

The main issues associated with solar PV at the moment are the considerable costs associated with this technology. As the technology develops these are expected to decrease in the short to medium term, providing the necessary incentive for householders to invest in a cleaner energy source.

The incoming ALP Federal Government will continue with the \$8,000 rebate scheme for Solar PV capped at 3,000 households per year for five years. They also announced a solar schools initiative that will provide \$20,000 for every school in Australia to install Solar PV, plus a further \$30,000 open to PV as well as other energy efficiency measures.

About the Clean Energy Council

The Clean Energy Council is the peak industry association that brings together the three fields of energy supply, business outcomes and environmental priorities. With over 410 members, providing close to a quarter of Australia's electricity, \$5.7 billion in annual sales and employment to over 20,000 people, our members have the knowledge and the technologies to drive the new clean-powered and efficient economy.

Go to www.cleanenergycouncil.org.au and register for info, events and updates.