



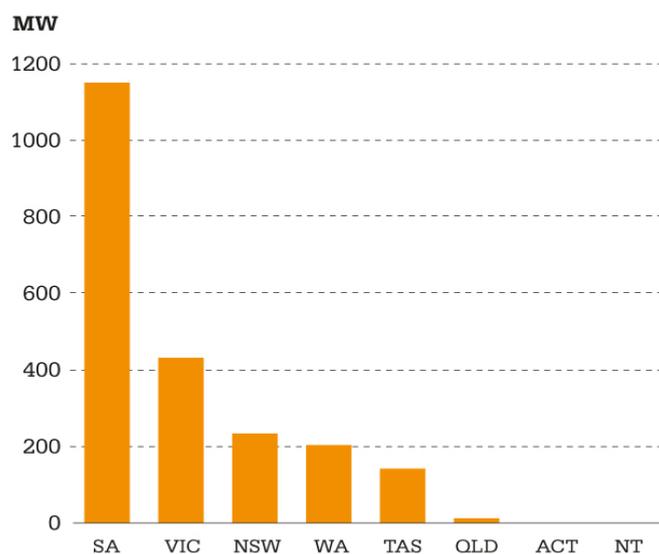
**Energy is fundamental to the way we live, our economy and our future. Like Australia's other states and territories, South Australia has relied mainly on gas and coal to produce its electricity. Burning of fossil fuels is the main source of greenhouse gases that are triggering the changes we are seeing in the global climate.**

To avoid the most damaging consequences of climate change, we need to use energy more efficiently and harness low-emissions energy technologies, including renewable energy.

South Australia has world-class renewable energy resources, and is already one of Australia's leading renewable energy-producing states. For example, around half of Australia's wind-powered electricity generation capacity is in South Australia (Figure 1). South Australia's wind-powered electricity generation both as a proportion of total generation and per person are now similar to those of Denmark, the world's leading wind power country.

South Australia reached its target of generating 20% of electricity from renewable energy in 2011, three years ahead of schedule (RenewablesSA, 2011). South Australia now has a target of producing one third of its electricity from renewable energy by 2020.

**Figure 1: Wind power installed by state (MW)**



Source: CEC, 2011

### Wind

- South Australia's wind farms contributed about one quarter of the state's total electricity production in 2011/12.
- In 2011/12, wind generation overtook coal to become the second largest (behind gas) source of electricity in South Australia (AEMO, 2012a).
- Using more wind power can help lower wholesale electricity prices in South Australia (RenewablesSA, 2011; AEMO, 2012b).
- South Australia has short periods of very high electricity demand, such as hot summer afternoons. The expansion of South Australia's wind generation capacity across diverse geographic areas has helped increase the amount of wind-powered electricity that can be supplied during periods of peak demand (AEMO, 2012b).
- Wind farms can provide employment and other economic benefits for regional communities (SKM, 2010).

### Solar

- South Australia's capacity to produce solar-powered electricity is growing.
- About one in five South Australian homes has rooftop solar photovoltaic (PV) systems installed. This is the highest uptake level in the National Electricity Market, which includes Australia's five eastern states and the Australian Capital Territory (AEMO, 2012a).
- Rooftop solar PV systems produced the equivalent of 2.4% of South Australia's annual energy in 2011/12 (AEMO, 2012a).



Wind energy, such as the Hallett Hill wind turbines pictured, now provides more than a quarter of the state's electricity.

Source: Flickr/Dave Clarke

### The future

South Australia is well-placed to expand its capacity to produce electricity from low-emissions sources, including wind and solar as well as other sources such as waves, geothermal and biomass.

- Concentrated solar thermal power plants are being developed to produce electricity on a large scale and store energy so that electricity can be supplied even when the sun isn't shining. A community-led proposal is advocating for the potential replacement of two existing coal-fired power stations in Port Augusta with solar thermal technology. A South Australian Parliamentary Committee is investigating this proposal.
- South Australia's coastline has significant wave energy resources (Behrens et al., 2012). Some wave power projects are in early stages of development (RenewablesSA, 2011).
- South Australia has large resources of geothermal energy which is largely in the form of hot underground rocks. Most of the investigations into geothermal energy in Australia have been in South Australia.

Transforming the ways in which electricity is produced brings new challenges. For example, existing electricity grids are designed around a few large power stations, rather than numerous widely distributed and more variable power sources. The rapid expansion of South Australia's wind power capacity has highlighted the importance of ensuring that the grid can accommodate this new capacity. Around the world countries are dealing with common challenges in transmission, storage and local demand management to integrate renewable electricity sources effectively into their grids.

### Sources

This fact sheet draws on *The Critical Decade: Generating a renewable Australia*, and the following sources.

AEMO (Australian Energy Market Operator) (2012a). *South Australian wind study report 2012*. Retrieved from <http://www.aemo.com.au/Electricity/Planning/Reports/South-Australian-Advisory-Functions/Wind-Study-Report>

AEMO (2012b). *2012 South Australian electricity report*. Retrieved from [www.aemo.com.au/Electricity/Planning/Reports/South-Australian-Advisory-Functions/South-Australian-Electricity-Report](http://www.aemo.com.au/Electricity/Planning/Reports/South-Australian-Advisory-Functions/South-Australian-Electricity-Report)

Behrens, S., Hayward, J., Woodman, S., Hemer, M. and Ayre, M. (2012). *AEMO 100% renewable energy study: wave energy*. CSIRO, Newcastle, Australia. Retrieved from [http://www.climatechange.gov.au/government/initiatives/aemo-100-per-cent-renewables/~/\\_media/government/initiatives/aemo/APPENDIX7-CSIRO-wave-energy.pdf](http://www.climatechange.gov.au/government/initiatives/aemo-100-per-cent-renewables/~/_media/government/initiatives/aemo/APPENDIX7-CSIRO-wave-energy.pdf)

RenewablesSA (2011). *A renewable energy plan for South Australia*. Government of South Australia. Retrieved from [www.renewablesa.sa.gov.au/about-us/publications-and-reports](http://www.renewablesa.sa.gov.au/about-us/publications-and-reports)

SKM (Sinclair Knight Merz) (2010). *Economic impact assessment of the Hallett wind farms*. Retrieved from [www.agl.com.au/Downloads/AGL%20Final%20Economic%20Impact%20Report.pdf](http://www.agl.com.au/Downloads/AGL%20Final%20Economic%20Impact%20Report.pdf)



Renewable energy is growing in South Australia.  
Source: Flickr/Dave Clarke