



information sheet

SUSTAINABLE LAND USES

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Wind power information sheet

Please note: While all care has been taken in the preparation of this information sheet, it is not a substitute for legal advice in individual cases. The content of this information sheet is current as of August 2015.

This information sheet is one of a series on sustainable land uses which have been developed for Local Aboriginal Land Councils (LALCs) by the NSW Aboriginal Land Council (NSWALC). Copies of the information sheet are available from www.alc.org.au or by calling the NSWALC Policy and Research Unit on (02) 9689 4444.

What is wind power?

In this information sheet wind power refers to the generation of electricity from wind.

Wind power is one of the most advanced and commercially available renewable energy technologies and is an important part of international moves to mitigate climate change.

Wind power currently accounts for one per cent of all electricity supplied in Australia but is becoming more popular and new wind farms are being built around the country. NSW offers significant opportunities for wind energy development.

How wind power works

The sun creates wind by its uneven heating of the planet's atmosphere. It is moderated by the earth's rotation and irregularities in its surface. The planet's terrain, water bodies and vegetation then affect the wind flow patterns.



Wind power is harnessed by installing wind turbines which in turn can be used to generate electricity for use in homes and businesses. Wind hits the blades of the wind turbines, causing the blades to turn. This movement drives a generator which produces electricity.

Where can wind turbines be installed?

Wind turbines are available in a wide range of sizes and designs. Small turbines can be installed on small landholdings. Large turbines require a significant amount of space.

As a general rule, the average wind speed needs to be above 18km per hour to make installing a wind turbine worthwhile and wind conditions at the proposed site will be a key consideration. Wind can be affected by features like hills, trees and nearby buildings or structures. The NSW Wind Atlas shows that many of the sites with good potential for wind farms are situated on the western side of the Great Dividing Range.

Ideal locations for wind turbines are anywhere away from built-up areas including large undeveloped landholdings or on the coast. The most promising sites in urban built environments are broad open areas on the seashore and on top of high rise commercial buildings. NSW also has an extensive electricity transmission network, providing relatively good power grid access for new wind farms to supply their energy to.

An important consideration is where the electricity generated by a wind turbine will be used. If a LALC intends to sell power to the national electricity grid, the LALC will need to consider how the turbines will be connected to the grid.

Benefits of wind power

Wind power is a proven clean energy source that can be relied on for the long-term. The benefits of wind power include, but are not limited to:

- Reliable, cost-effective, pollution free energy.
- Operates day and night, whenever it is windy.
- Creates power without using fossil fuels, without producing greenhouse gases or radioactive or toxic waste.
- Reduction in global warming (by replacing electricity generation from fossil fuels).

¹(source: www.cleanenergycouncil.org.au/cec)

- Potential for employment, industry development, income for landholders, and supplementing existing tourist attractions.
- Remote areas not connected to the main electricity grid can use wind power as a viable option for their own power supply.
- Requires relatively low levels of maintenance.
- Supports the growth of renewable energy sources in Australia and diversity of energy supply, strengthening Australia's energy security.

Disadvantages

- Wind strength is not consistent, so it cannot be relied upon as the main electricity provider. Although a wide range of turbines is available, they all have an upper and lower wind speed at which they can operate.
- Wind turbines can be dangerous to bird and bat life (wind farms should be built away from migration paths).
- Set up costs can be substantial and the generators require a lot of space.
- Commercial wind turbines are very large and change the natural landscape.
- Turbines can create a lot of noise so are not always a good option for residential areas.
- Small wind turbines installed in typical urban areas are likely to operate at low capacity, be subject to periods of non-operation and take a long time before achieving payback on the initial costs.
- Remote areas not able to connect to the main electricity grid will not be able to sell their power to the main grid.

Associated costs

Costs for a wind turbine system can be anywhere from \$10,000 to \$60,000 (before rebates) for a small scale wind system (depending on the tower size, installation location and other factors) and up to \$3.5 million for a commercial-scale turbine.

Funding for small wind turbines

The Clean Energy Regulator is the statutory agency which oversees the Small-scale Renewable Energy Scheme (SRES).

The purchase of a Small Generation Unit (SGU) such as a small wind turbine may entitle you to Small-scale Technology Certificates (STCs) through the SRES. To be eligible, the wind turbine must have a capacity of no more than 10kW, and a total annual electricity output of less than 25MWh.

Installation of these systems permits the creation of

STCs. The number of STCs created is based on factors such:

- Geographical location of the system;
- Installation date of the system;
- Amount of electricity in megawatt hours (MWh) that is generated over a 15 year lifetime.

These certificates can be sold and transferred to a STC agent (usually electricity retailers) or sold in the STC market or through the STC Clearing House. A STC agent will offer you a financial benefit such as an up-front discount or delayed cash payment when you assign your STCs to them. A majority of owners take this option. As of August 2015 each STC created has a fixed-value of \$40.

Further information regarding this scheme can be found at:

<http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/How-the-scheme-works/Small-scale-Renewable-Energy-Scheme/>

Getting started

The process from first choosing wind power to having a turbine installed is likely to take several months or years. Key steps are likely to involve the following:

1. Culture and heritage suitability

- Consulting with LALC members and the broader Aboriginal communities including any native title claimants regarding culture and heritage significance on proposed land;
- Undertaking an Aboriginal Heritage Information Management Systems (AHIMS) search, searching the NSW State Heritage Register as well as the relevant local council Local Environmental Plan for potential culture and heritage items at the proposed site; and
- Considering whether the proposed land use is compatible with the past, present and future use of the site by the Aboriginal community.

2. Technical site and feasibility assessment by a wind turbine specialist including:

- Undertaking a wind resource assessment;
- Identifying appropriate turbine location;
- Undertaking an end user and distribution system assessment; and
- Undertaking a budget estimation.

3. System design by a wind turbine specialist, including:

- Providing finance calculations;
- Providing preliminary advice on planning permission

and environmental approvals;

- Providing system installation; and
- Providing system operation.

4. Fulfilling any legal requirements including

- Obtaining any planning permission required;
- Obtaining LALC members consent under s52E of the ALRA; and
- Obtaining any NSWALC consent that may be required under s42G of the ALRA.

For more information regarding planning laws in NSW, see the NSWALC planning fact sheets available from www.alc.org.au/culture-and-heritage/planning-laws.aspx.

Wind power and the *Aboriginal Land Rights Act 1983 (NSW)*

Landowners should seek advice to determine how development of wind power sites can interact with the *Aboriginal Land Rights Act 1983 (NSW)* (ALRA) and prevailing land rights. In particular, it is important to determine:

- Whether the development of a wind power project is a land dealing requiring NSWALC approval under Part 2 Division 4 of the ALRA; and
- Whether changing land use (to use for a commercial or residential purpose) will result in a change in any rates, levies or charges payable in relation to the land as described in Part 2 Division 5 of the ALRA and clause 7 of the *Aboriginal Land Rights Regulation 2002*. NSWALC can assist with these considerations.

Further Information

Information on installation of small wind power systems can be found at:

<http://www.environment.nsw.gov.au/resources/communities/110449-small-wind-turbine.pdf>

The NSW Wind Atlas poster provides a snapshot of the state's wind resource. The atlas can be found at:

http://www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/wind/sustain_renew_wind_atlas_poster.pdf

The NSW Government has developed the NSW Wind Farm Greenhouse Gas Savings tool as part of the Renewable Energy Precincts initiative. This tool allows the projected greenhouse gas savings from new wind farm precincts across NSW to be calculated: <http://www.environment.nsw.gov.au/ggecapp/>

Available Grants

Grant	Purpose	Contacts and Information
Small Grants for Small Rural Communities Program	A small grants program for small rural Australian communities will offer grants to benefit people in rural and remote communities	http://www.frrr.org.au/programsDetail.asp?ProgramID=4 Phone: (free call) 1800 170 020 Email info@frrr.org.au
Small-scale Renewable Energy Scheme (SRES)	Designed to assist households, small business and community groups with the upfront cost of installing small scale renewable energy systems through certificates which may be created for eligible installations.	http://www.climatechange.gov.au/government/initiatives/renewable-target/fs-small-scale-renewable-energy.aspx Phone: 1300 553 542 Email enquiries@cleanenergyregulator.gov.au
Regional Clean Energy Program	Creates opportunities for communities to participate in renewable energy initiatives, including providing funding to develop community-based projects.	http://www.environment.nsw.gov.au/communities/clean-energy.htm Email clean.energy@environment.nsw.gov.au

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