

Wind Power

Harnessing Tasmania's Wind Energy Resource

Frequently Asked Questions



F R E Q U E N T L Y A S K E D Q U E S T I O N S

How is wind power generated?

Wind turbines have been pumping water and powering machinery for over 4000 years – but generating electricity from the wind is recent technology. In a modern wind turbine, spinning rotor blades turn a shaft running into the generator. Gearboxes and control systems protect the generator from damage in high winds.

How much space do wind turbines require?

A typical wind farm of 20 turbines might extend over an area of a square kilometre, but only 1% of the land area would be taken out of use – the rest can be used for agriculture or as natural habitat. If the technology becomes redundant it can be removed without leaving a footprint on the land.

How much electricity does one wind turbine produce?

One 600 kilowatt wind turbine at a reasonable site could produce enough electricity to meet the annual needs of 375 households.

What other countries generate wind power?

The first large-scale wind farms were established in Europe about 20 years ago. Today, millions of people in Denmark, United Kingdom, Ireland, USA, Canada, Germany, India, Netherlands, New Zealand, France, South Africa, Japan, Hungary and now Australia use electricity generated from the wind. Worldwide over 31,000MW of wind turbines have now been installed (2003), producing enough electricity for about 20 million households.

What makes Tasmania a favourable site?

Lying south of the 40th parallel in the path of prevailing westerly winds, Tasmania has excellent resources for the generation of wind power. Hydro Tasmania's research shows that harnessing the potential of the Roaring Forties on mainland Tasmania could see up to 1000MW of wind turbines installed.

What are the benefits of wind generation?

Wind energy has become the least expensive large-scale renewable energy generation technology. Wind is a clean, renewable resource, unlike the non-renewable fossil fuels of coal, oil and natural gas. Australia is committed to meeting targets for renewable energy generation – every megawatt-hour of wind power we generate helps us meet our national goal to reduce the emission of greenhouse gases that are contributing to global climate change.

Other benefits of wind energy include shorter construction times than other types of power stations and 'modularity' – the ability to add more turbines if the electricity load grows.

Are there any drawbacks?

Wind turbines can only generate power in winds between about 25-97 kilometres per hour. Batteries can only store a limited amount of electricity, so wind systems need a back up. In Tasmania, this is provided by our clean, renewable hydro-electric system.

Wind farms have a visual impact and produce some noise. In Tasmania, Hydro Tasmania's existing and proposed developments are sited in remote areas, well away from population centres.



Hydro Tasmania
the renewable energy business

Where does Basslink fit?

The introduction of Basslink will see Tasmania become Australia's green energy powerhouse with wind and hydro-electric generation helping to meet the nation's commitment to increase electricity generated from renewable resources and reduce greenhouse gas emissions.

Tasmania already produces 60 percent of Australia's renewable energy. With Hydro Tasmania's planned wind farms and a 10-year program of efficiency upgrades and refurbishments of its hydro-electric plant, Tasmania's contribution is set to increase.

With the introduction of Basslink, our clean, green energy will be exported interstate for the benefit of the entire nation.

What steps are taken to develop a wind farm?

Detailed feasibility studies are made to assess the potential wind resource available at a chosen site. Wind monitoring equipment mounted on towers measures wind strength, direction and frequency over an extended period. At the same time, a thorough environmental impact assessment is made to study the effects of any development on the site – this covers a range of disciplines including studies on flora and fauna, archaeology, landforms and land use, noise and electromagnetic interference with communications.

What approvals are required?

Before a wind farm development project can proceed, appropriate approvals are sought from local, State and Federal governments.

Careful and thorough consultation with the local community and other stakeholders is a key feature of Hydro Tasmania's wind power developments.

What are wind turbines made of?

Most towers are tubular and made of steel or concrete. The blades are made of glass-fibre reinforced polyester or wood epoxy. The turbines are generally painted an inconspicuous light matt grey.

A wind turbine usually lasts around 20-25 years. The first mass-produced turbine celebrated its 20th birthday in May 2000.



What progress is being made in Tasmania?

Several staged developments are under way to harness Tasmania's wind energy resources. On King Island, the Huxley Hill Wind Farm has been generating electricity since 1998, and now provides up to 20 percent of the island's needs and reducing CO₂ emissions by about 1900 tonnes.

On the north-west tip of mainland Tasmania, the Woolnorth Wind Farm is under construction. Stage 1, which was completed in August 2002 has a generating capacity of 10.5MW from six 1.75MW wind turbines. Construction will begin on the 54MW stage two later in 2002. The completed wind farm will have a total capacity of 130MW.

Feasibility studies are well advanced for wind farm sites at Musselroe in the north-east and Heemskirk on the West Coast.

Who is Vestas?

The Danish company is a world leader in wind technology and a driving force in the development of the wind power industry. Its core business comprises of the development, manufacture, sale, marketing and maintenance of installations that use wind energy to generate electricity. Vestas has constructed and installed over 12,000 turbines worldwide since 1979, including the wind turbines at the Woolnorth Wind Farm.

For more information about wind farms visit
www.hydro.com.au, www.auswea.com.au or
www.vestas.com.

