

How does wind power work  
and  
what form does it take?



# About Origin

- Origin is an energy company
- Provides energy in the forms of:
  - Piped Gas/Natural
  - Liquid Petroleum Gas (LPG)
  - Wind
  - Geothermal

# Forms of energy

- Non-renewable

- Oil

- Coal

- Natural gas

- Nuclear

- Renewable

- Wind

- Solar

- Geothermal

- Hydro

# Parts of a wind turbine

- Turbine blades
- Tower
- Gear box
- Controller
- Brake
- Wind speed
- Wind vane
- Pitch
- Generator
- High speed rotor

# How is the energy created?

- Find a windy hill to place the wind farm
- Build wind farms
- Wind blows blades in circular formation
- Blades turn rotor
- Turns generator inside wind mill
- Electricity made from generator

# Turbines at sea

In Europe some turbines are out at sea!

Why?

- More wind at sea
- Sometimes may rust

To prevent rusting:

- -Grind rust away often
- -repaint with protective paint often

# Turbine facts

- Blades made of fibreglass
- Tower made of steel
- Blades can go from 11revs to 20revs per minute
- Windmills have red lights at night to warn planes
- Turbine farms got going early last century
- Maximum wind speed before windmill is shut down is 27 meters per second

# Wind energy today

- Only 5% of Australian power is renewable
- Our main source of energy is coal
- Government wants 20% of Australian energy to be renewable by 2020
- Build more wind and solar stations
- Our closest hydro plant is the Snowy Mountain Hydro Scheme

# Hawaii turbine

- The largest turbine is in Hawaii
  - 126m tall
  - blade 60m
- Cullerin turbine
  - 80m tall
  - 46m blades

# Did you know?

- Blades are hollow
- When putting a windmill together it is split into four pieces – not including blades
- Rattle gun is used to do put bolts
- Weighs 170 tonnes
- Each windmill costs about \$4,000,000
- Boral and another company merged to create Origin
- Origin means original

# Questions and answers

- What is a wind farm?
  - Where they keep the wind turbines
- How much electricity can one turbine create?
  - One windmill could power 850 homes
- How far do windmills go into the ground?
  - 5m deep with 300 tones of cement
- How long does it take to put pieces together on the work site?
  - About a day

# More quick facts about wind power

- Originally used for pumping water on farms
- Started BC
- Used for sailing ships/convicts
- All the energy used creating the windmills is saved within about 3-4 months of using the windmill
- The wind rate of an area has to be measured for two years before building a wind farm