

Queensland's clean energy future





Office of Clean Energy

Transitioning to a clean energy future is one of the core elements of the Queensland Government's response to climate change. Through our Q2 vision and *ClimateSmart 2050* strategy, the Queensland Government is actively pursuing the development of clean energy sources to ensure that our state plays its part in helping to achieve by 2050 the national target of a 60 per cent reduction in greenhouse gas emissions.

Established in November 2008, the Office of Clean Energy has been commissioned to build on existing work and create new focus on clean energy opportunities in Queensland. The Office of Clean Energy should be the first call for investors, energy companies, and other interested parties seeking to establish clean energy business in Queensland. Working as an economic and industry development initiative, the Office of Clean Energy will assist the development of the clean energy sector by:

- advising government on the appropriate policy frameworks supportive of clean energy initiatives
- identifying, mapping and sourcing potential renewable energy locations around the state
- removing regulatory barriers to renewable energy industry development
- developing partnership programs to encourage private sector investment and start-up in the clean energy industry, including research and development and demonstration of new technologies
- working with the Australian Government on the design of the mandatory renewable energy target scheme to ensure Queensland's interests are protected in the national approach
- working with the electricity industry to assist demand side innovation and energy efficiency with large-scale users
- assisting deployment of renewable energy infrastructure.

The Queensland Government is already investing in gas, renewable energy and low emission technologies to secure environmentally sustainable energy for Queensland's future. The \$50 million Queensland Renewable Energy Fund and \$15 million investment in the Geothermal Centre of Excellence are supporting the development of leading-edge renewable energy technologies in Queensland.

Global concerns over climate change and demand for cleaner, greener energy will be major drivers of strong growth in the clean energy sector in the years ahead.



Queensland Government renewable energy generation assets:

- Barron Gorge Hydro Station
- Kareeya Hydro Station
- Thursday Island Wind Farm
- Australia's first wet geothermal power station in Birdsville
- Swanbank B Power Station landfill gas supply
- Tinarro Dam Hydro
- Paradise Dam Hydro
- Somerset Dam
- Wivenhoe Small Hydro
- Koombooloomba Dam

Renewable energy sources

The increased use of renewable energy is an important component of the Queensland Government's strategy to manage climate change.

Renewable energy, or energy derived from sources that cannot be depleted, will contribute to the ongoing sustainability of Queensland's energy sector and help deliver a low-carbon future. Renewable energy sources include:

- solar (e.g. photovoltaic or solar thermal)
- wind
- geothermal (dry geothermal—heat energy extracted from hot rocks deep in the earth's crust, wet geothermal—energy derived from hot ground water or steam—artesian bores, hot springs)
- biomass (e.g. bagasse from sugar cane waste and methane from land-fill and sewerage treatment plants)
- hydroelectricity
- wave and tidal power.

These elements could all play a part in Queensland's renewable energy mix.

Currently, most of Queensland's renewable energy is provided by sugar cane waste (bagasse). It accounts for 70 per cent of renewable energy generated in Queensland. The use of biomass (bagasse) as an energy source has added value to Queensland's sugar industry.

Queensland also has plentiful solar and geothermal resources, which have the potential to produce more energy in the future than any other renewable energy source in Queensland. The Queensland Government is investing in this clean energy potential to secure environmentally sustainable energy.

Queensland Renewable Energy Fund

The Queensland Renewable Energy Fund (QREF) is a \$50 million funding program that supports the development and deployment of renewable energy generation technologies in Queensland. Funds are allocated annually as grants and loans to support proven renewable energy technologies statewide.

Geothermal Centre of Excellence

The Queensland Government is investing \$15 million over five years in the Geothermal Centre of Excellence, in partnership with the University of Queensland. The centre will be the biggest of its type in Australia and, through research and development, will make Queensland and Australia leading technology providers in the growing geothermal energy sector.

SolarGas One Project

The Queensland Government has committed \$7.5 million towards the CSIRO SolarGas One Project, which will build the world's first multi-tower solar array system deploying SolarGas technology. Developed by the CSIRO, the technology combines solar energy with natural gas to boost the energy in the gas, reducing emissions when used to produce electricity. The project will be built with joint investment from the Queensland Government, the CSIRO and private enterprise.

Birdsville geothermal power station

Australia's only geothermal (wet) power station in Birdsville, western Queensland, provides approximately one quarter of the town's energy supply, reducing diesel consumption by about 160 000 litres per year, and reducing greenhouse gas emissions by 430 tonnes, equivalent to 8.6 million black balloons. Ergon Energy is currently exploring options for a new geothermal power station that may provide all of Birdsville's power needs.

Windorah Solar Farm

Queensland Government-owned Corporation, Ergon Energy, is investing \$4 million in Queensland's first solar farm at Windorah, a remote town in Queensland's south-west. When complete, the town's existing diesel-fired power station and solar power station will be integrated to minimise the use of diesel generators. The project's goal is to power the town entirely by solar energy during peak sunshine hours in winter. Replacing diesel-generated electricity with solar power will lead to savings of up to 100 000 litres of diesel fuel and 350 tonnes of greenhouse gas emissions a year, equivalent to seven million black balloons.

Cloncurry solar thermal trial facility

Cloncurry, in north-west Queensland, is set to become the first town in Queensland to produce solar thermal power capable of supplying all of the town's electricity needs, 24-hours a day. The technology used at Cloncurry will ensure the 10 megawatt power station will continue to generate electricity when the sun is not shining. Up to 8000 mirrors will reflect sunlight onto graphite blocks. Water will be pumped through the blocks to generate steam that will operate a conventional steam turbine electricity generator. The Queensland Government has committed \$7 million towards the \$30 million initiative. This project will determine if this clean energy solution can be replicated in other rural and remote areas of Queensland.

10% Renewable and Low Emissions Target scheme

Under the 10% Renewable and Low Emissions Target scheme, electricity retailers will be required to source 10 per cent of their annual energy sales from Queensland-based renewable and low emissions generators by 2020.





Demand side innovation

Demand side innovation is an integral part of ensuring cleaner energy and a low-carbon energy future. Demand management is about finding solutions to better manage electricity demand, reduce peak electricity demand and develop local generation sources to meet local energy needs. Developing reliable local generation sources provides competitively priced energy for remote areas of Queensland, reduces transmission losses and transmission costs.

Townsville Solar City

The Queensland Government has committed \$5 million to support the delivery of the Ergon Energy led, Townsville: Queensland Solar City initiative under the Australian Government's \$94 million Solar Cities Program.

This solar energy demonstration project is investigating the best ways to integrate energy conservation and demand management initiatives, while offering customers a choice of power sources and tariffs options.

The project, based on Magnetic Island near Townsville, will ultimately involve the installation of approximately 500 solar photovoltaic (PV) systems, 2500 smart meters and conduct around 1700 energy audits. It is predicted to conserve energy and reduce greenhouse gas emissions by approximately 50 000 tonnes, equivalent to one billion black balloons by 2013.

Magnetic Island is being transformed into a Solar Suburb demonstrating an integrated approach to conserving energy to achieve a localised reduction in electricity demand. On a community level, this collaborative project shows the impact of Queenslanders working together, embracing solar energy and being more energy efficient to achieve positive energy and environmental outcomes for their community.

The findings of the program and other pilots will inform future wider-scale initiatives in Queensland and across Australia.

Solar schools project

Solar panels and energy efficient light bulbs are being installed at a further 1251 Queensland state schools over three years, under the expanded solar schools program. The \$60 million package also includes circuit-timers to turn off non-essential power at night and 'smart meters' that monitor energy use as part of the \$60 million package.

Each school system will reduce greenhouse gas emissions by more than 3.2 tonnes annually, which is the equivalent of 64 000 black balloons.

As well as growing the solar industry, this initiative provides an opportunity for young people to learn about energy conservation and what they and their school communities can do to help combat climate change.

Solar Bonus Scheme

The Queensland Government's Solar Bonus Scheme pays households and other small customers for the surplus electricity generated from roof-top solar photovoltaic (PV) panel systems, that is exported to the Queensland electricity grid. The scheme is designed to make solar power more affordable for Queenslanders, stimulate the solar power industry and encourage energy efficiency.

Energy conservation

Energy conservation saves money, helps ensure Queensland's energy security and reduces the state's carbon footprint. It can enhance industry productivity and competitiveness and contribute to energy reliability. By investing in energy efficient practices and products, all Queenslanders, including government, industry, business and households can benefit financially, socially and environmentally. The Queensland Government is supporting businesses to reduce energy use through a number of initiatives.

Smart Energy Savings Program

Queensland's Smart Energy Savings Program is a legislative initiative effective from 1 July 2009, introduced through the *Clean Energy Act 2008*. The program aims to drive energy saving improvements in Queensland businesses. The program will require participating businesses to undertake an energy audit, develop an Energy Savings Plan and publish their actions for each relevant site, on a five-yearly cycle.

The Smart Energy Savings Program seeks to:

- increase the adoption of energy efficient technologies and practices by business
- drive organisational behaviour change towards positive energy management practices
- improve business competitiveness by reducing energy costs
- reduce growth in Queensland's electricity demand
- reduce greenhouse gas emissions from Queensland's commercial and industrial sectors.

Smart Energy Savings Fund

The Smart Energy Savings Fund (SESF) is a \$50 million funding program to assist Queensland businesses to invest in commercial energy saving projects.

The fund encourages Queensland businesses to identify and implement cost-effective energy improvements to their buildings, appliances and industrial processes. The fund offers grants and loans to support businesses that may have difficulty funding the energy efficiency projects internally or by accessing traditional funding sources.

Energy efficient street lighting trial

The Queensland Energy Efficient Street Lighting Trial is testing various lighting products to identify the most efficient street lighting options in a range of environmental and network conditions. The three-year trial will involve physically monitoring an estimated 300 street lights for their performance under specific environmental conditions.

The trial will be conducted across 13 locations throughout South-East Queensland and two locations in regional Queensland. The data will be collected in purpose-built data collection units that will gather, store and download information such as power usage, light output and temperature for each of the lighting technologies.

The project is a joint initiative between the Queensland Government, local councils, electricity distribution companies and the Australian Government.

The trial is expected to lead to:

- successful lamp types being made available by electricity distribution companies for deployment within councils
- greenhouse gas reductions, as well as potential financial savings, resulting from reduced energy use by councils
- enhanced partnerships between key public lighting stakeholders (councils, Queensland Government, electricity distribution companies) as well as the Australian Government.

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