



# UQ SOLAR

## THE FACTS

### Quick UQ Solar facts

#### system

photovoltaic solar  
array and solar dish  
(tracking array)

#### size

1.22 megawatt  
5000+ polycrystalline  
silicon solar panels  
**= 1.5 rugby fields**  
6 x 7 metre 8.4  
kilowatt tracking array

#### supply

5-6% peak UQ St  
Lucia electricity

#### savings

1750 tonnes less  
greenhouse gas  
emissions  
**= 335 cars off the  
road**

#### study

internet streaming of  
performance data  
feeding greenhouse-  
friendly power into  
electricity grids

*The “sunshine state” takes on a whole new meaning at The University of Queensland with the installation of Australia’s largest solar energy generating system at UQ St Lucia. The \$7.75 million project, which includes a \$4.825 million 1.22 megawatt photovoltaic solar array, will not only save on UQ’s electricity costs but will also be a research test-site for future environmental sustainability scientists. And its success may inspire others to do the same.*

#### Why go solar?

With an ever-increasing demand for electricity, now is the right time for Queensland to take advantage of its abundant natural resource: 2700 hours of sunshine a year. The new flat-panel solar power system, facilitated by Professor Paul Meredith from the School of Mathematics and Physics, not only demonstrates UQ’s commitment to clean energy, but will also pave the way for other greenhouse-friendly power generating plants to feed into the electricity grid in the future.

#### How will a solar power system help other renewable energy initiatives?

One part of the system has been set up with two identical grids – one feeding into a zinc-bromine storage battery and one directly into the general power grid – to allow experiments to be conducted on how best to feed electricity into grids from stand-alone generating plants. As well as solar, this could include other intermittent sources such as wind, wave, or biomass (plant-based material such as sugar cane).

#### What other benefits does the system have?

The system generates its own performance data streamed directly on the Internet and can be viewed by anyone with an interest in solar power. This data will be particularly useful for UQ’s many different researchers and will be an interesting “live” display for visitors to the university.

#### How much greenhouse gas emissions will the system save?

Around 1750 tonnes annually – about the same as taking 335 cars off the road each year. The system will generate around six percent of UQ St Lucia’s average peak demand annual electricity usage.

#### How big is the system?

UQ has installed more than 5000 polycrystalline silicon solar panels across four building roofs: on two multi-storey carparks, the UQ Centre and the Sir Llew Edwards building. In total, they cover a space equivalent to one-and-a-half rugby fields. A 6 x 7 metre 8.4 kilowatt CPV tracking array has also been placed near the carparks to research another form of solar power technology.

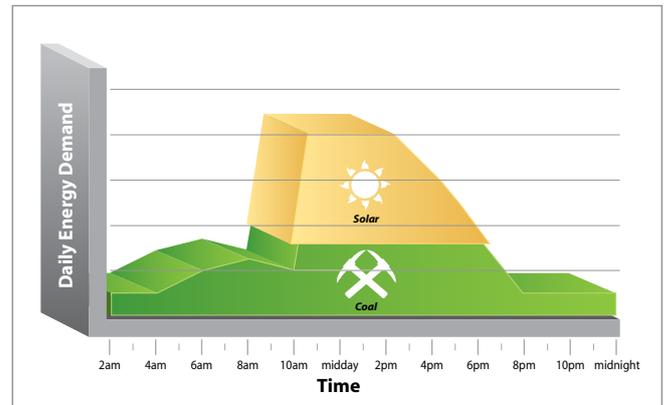
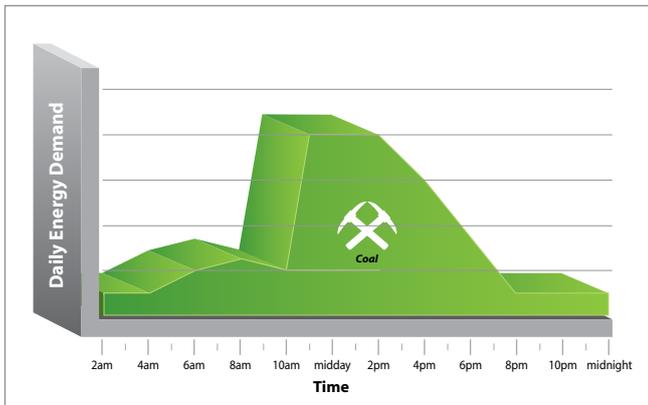
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## Why is this project so important?

Any developments in managing energy will have enormous impacts on the power industry. At present the industry has to be capable of providing enough energy to meet peak demand, meaning more cost and more infrastructure. If the peaks can be lowered through alternative energy provision, significant savings will result for everyone. As the first project of its kind in Australia, the UQ Solar St Lucia array represents a major piece of infrastructure nationally and places UQ at the forefront of solar research internationally. Its renewable energy is also a boon for reducing Australia's carbon emissions.



Above left: UQ St Lucia's current energy demands from the electricity grid showing peak periods in the middle of the day; and right: How UQ Solar will lower the peak demand levels by generating its own alternative energy.

## What are the future plans?

More photovoltaic panels are scheduled to be installed across the university, to complement the smaller arrays already located at Heron Island and Gatton. UQ will continue to work with the State Government's Office of Clean Energy on sustainable energy projects. Energex will also be working with UQ to plan how electricity storage can best be utilised within the distribution network.

## And what of other renewable energy solutions?

UQ Gatton scientists are currently investigating how animal waste can be converted into energy; and major research is being undertaken by UQ Centres on other future energy sources such as geothermal (Queensland Geothermal Centre of Excellence), solar PV technology (Centre for Organic Photonics and Electronics), biofuels (Institute of Molecular Biology), and hydrogen (ARC Centre of Excellence in Nanomaterials).



Professor Paul Meredith