

# HOW DOES SOLAR ENERGY WORK?



At ACCIONA Energía, we are proud to be supporting the transition to renewables across Australia. We have been working on this for over 20 years!

We develop, own and operate solar facilities in Australia. Are you familiar with the principles behind solar energy? We have put together this quick guide to give you a handy overview.

## What is Solar Photovoltaic (PV) Energy?

Solar Energy is a form of renewable energy that is generated from the sun during the day. It is a renewable source of energy and is non-polluting, meaning it does not emit polluting gasses or loud sounds. When used as an alternative to non-renewable energy sources, solar energy plays an important role in reducing CO<sub>2</sub> emissions and mitigating climate change.



### Small and Medium-Scale Solar

Small and medium-scale solar refers to PV panels on or close to buildings, including homes, offices and industrial properties. The panels are often used as a power source for these buildings. Small and medium-scale solar farms can also be plugged into distribution grid networks.



### Large-Scale Solar

Large-scale solar refers to 'solar farms' which can contain many solar PV panels and can generate hundreds of megawatts of power. The power generated at these solar farms is distributed into Australia's energy grid for use by Australian households.

## How does solar energy work?

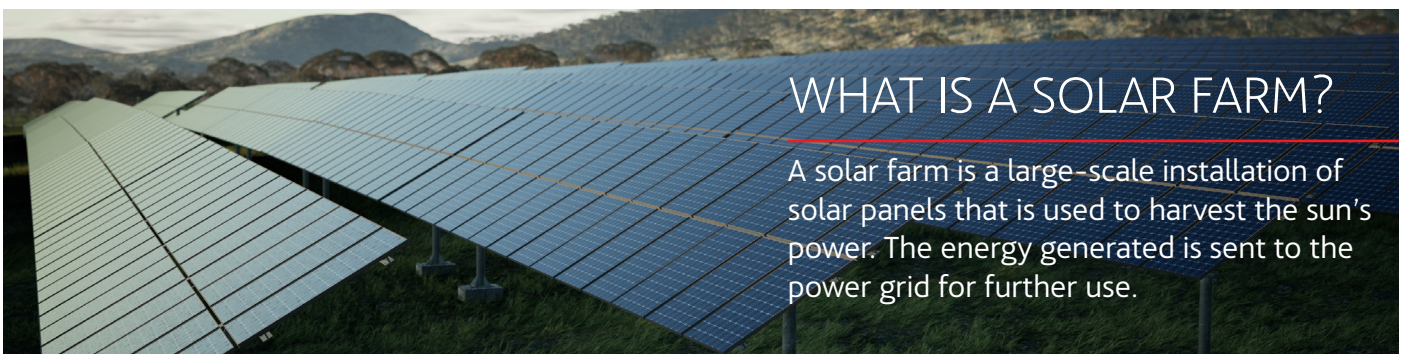
Currently, solar energy comprises two main types of technology:



**Solar photovoltaic (PV)** - solar PV converts the sun's energy into direct current electricity using solar panels. These panels are made up of PV cells that contain specially fabricated materials that absorb light particles.



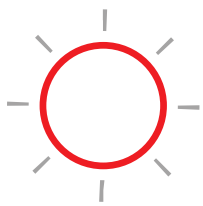
**Solar thermal** - solar thermal uses the sun's energy to produce heat which is then used to drive a conventional steam turbine to produce electricity.



## WHAT IS A SOLAR FARM?

A solar farm is a large-scale installation of solar panels that is used to harvest the sun's power. The energy generated is sent to the power grid for further use.





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## ACCIONA Energía's solar capacity

ACCIONA Energía is a world leader in building large-scale solar assets, with an installed global capacity of almost 2,000 MW. In Australia, the company has built the Royalla Solar Farm (20 MW) in the ACT, and is beginning construction on the Aldoga Solar Farm (380 MW, the equivalent of powering 185,000 households) in Queensland.

## HOW IS A SOLAR FARM CONSTRUCTED?



### Building access roads

Each solar farm site starts by building access roads for the transportation of equipment and the connection routes.



### Preparing piling foundations and panel tracks

Piling foundations are punched into the ground and panel tracks are suspended from these foundations. The panel tracks allow the solar system to follow the sun and direct the panels towards it.



### Assembling the panels

Solar systems consist of solar panels (modules), a mounting system and a solar inverter. Once the foundation is built, the panels will be mounted on it.



### Connecting the panels

An underground electrical system will be installed to connect the panels to an on-site substation. An overhead transmission line will connect the on-site substation to the transmission network to supply energy to the grid.



### Operations and Maintenance (O&M) Building

An O&M building will be constructed as a base to monitor performance on site and store spare parts for ongoing maintenance. This ensures proper functioning of the farm and optimal performance. It helps to make sure that the energy production targets are being met over the lifecycle of the solar system.



### Commissioning

Once all the solar panels are installed, the project needs to be commissioned and tested to be connected to the grid. This process can take some time as we work with the Australian Energy Market Operator to successfully connect.



### Operations

Once all assets are connected to the grid and able to supply energy to Australia's energy market, the construction phase is deemed complete and commissioned and the solar farm will then enter the operational and maintenance phase. During this period, operational staff will work in the operations and maintenance building.

## WANT TO LEARN MORE ABOUT OUR ALDOGA SOLAR FARM?

You can at our online community hub: [community.acciona.com.au/aldoga](https://community.acciona.com.au/aldoga)

### CONTACT US:



Community Hotline – 1800 283 550



Website – [acciona.com.au](https://acciona.com.au)