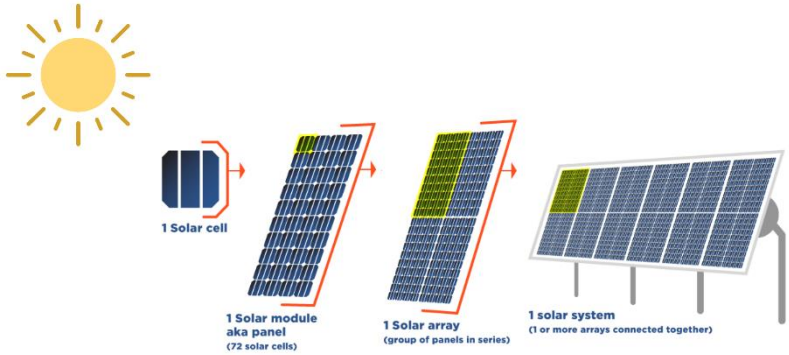
The most obvious part of any source of solar energy is the photovoltaic (PV) panels. You see them everywhere – the tiny cell on a simple calculator or watch, on top of garden light fittings, powering temporary road signs, through to complex industrial uses. We're pretty much used to seeing solar panels on roof tops providing power for single homes and farms: what's different about a solar

farm?

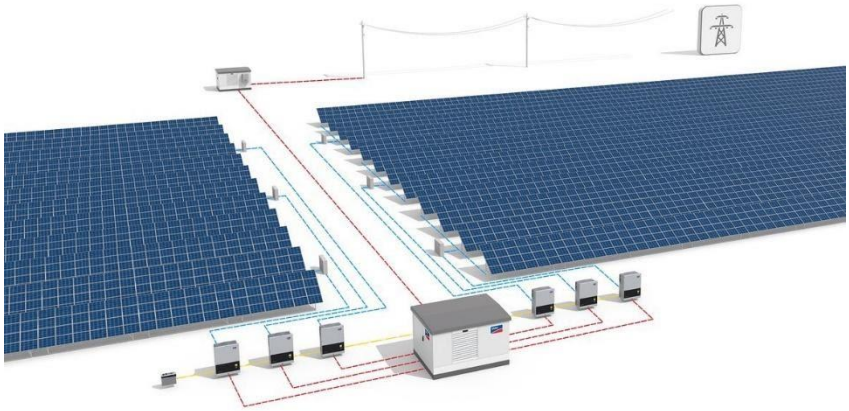
What will be built on the site?

A solar farm uses solar panels which contains crystalline cells as shown in the picture below, the array (string of solar modules), which convert sunlight into electricity, generating a direct current (DC).



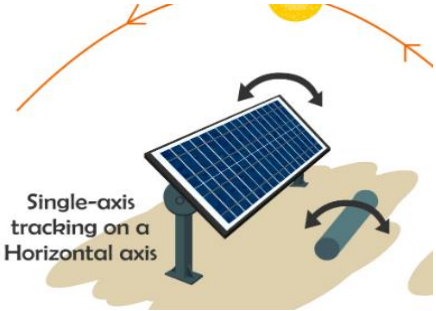
It has extra components you don't see in household situations:

- The inverter system that transforms direct current into alternating current (AC)
- A monitoring system racks the sun from morning to evening and rotates the solar panel from
- east to west on a north/south axis.
- Transformers change the AC power from 33 thousand volts (33kV) to 220 thousand volts
- (220kV) so it can connect to the transmission network.
- Our solar farm has a battery system that stores excess energy during the day and supports
- the electricity grid at night when the sun is not shining.
- The external power grid to which the plant is connected.



The solar panels

Solar panels are made of lead-free, optically transparent, anti-reflective glass. For the Corop farm they will be mounted on steel supporting structures which are attached to pylons driven straight into the ground. This avoids contaminating the soil and means they can be easily removed if the plant is ever decommissioned.



The panels are equipped with **trackers** so they can follow the movement of the sun from east to west during the day to maximise the farm's energy output.

The inverter system

The solar panels are connected in groups to inverters. The inverters are the 'brain' of the whole PV plant. They efficiently convert direct current (DC) from the solar panels into alternate current (AC).

Inverters have combiner boxes to connect the successive chains of the solar panels. The power then feeds from an on site substation Victoria's external grid. Usually this involves some underground medium voltage cabling which connects to the high voltage system.

What makes a good site for a solar farm in Victoria?

The Victorian Department of Environment, Land, Water and Planning (DELWP) Solar Energy Facilities Design and Development Guideline (2019) provided the following information on siting of solar farms

DELWP guidelines	How the Corop farm measures up	
• *On land with topographical conditions that avoids the need for unnecessary or excessive earthworks or changes to the natural landscape.*	✓	The land is very flat so installing the solar panels and other fittings doesn't require earthworks.
• *To avoid the loss of native vegetation and biodiversity and if losses cannot be avoided, they are minimised and can be offset.*	✓	We are not removing any native vegetation.
• *Close to the electricity grid network, to minimise the need for additional infrastructure and associated impacts.*	✓	The site is very close to the xxx substation and requires no additional infrastructure.
• *A sufficient distance from existing urban areas or designated urban growth areas.*	✓	The site is 4 km from Rushworth and 6 km from Stanhope, the nearest towns.
• *Where there can be adequate space between facilities within an area to avoid cumulative impacts of built form concentration.*	✓	There are no other large facilities of any type nearby.
• *Away from the floodplain of a major water course or wetland.*	✓	The site is not near a major waterway course or wetland. It does have a flood overlay and steps will be taken to manage any impacts.
• *Where it has ready access to main roads.*	✓	Old Corop Road leads directly to the Bendigo Murchison Rd, a designated arterial road.