

# Solar in Ireland

## Solar Energy

*“In 90 minutes, enough sunlight strikes the earth to provide the entire planet’s energy needs for one year.” - IEA*

Solar power is radiant energy emitted by the sun. In order to reduce our consumption of conventional fuels and minimise our carbon footprint, we can harness this energy and rely on it as a power source into the future.

This is mainly achieved through **Photovoltaics (Solar PV)** and **Solar Thermal** for heating.

- **Solar PV** converts the sun’s radiation into electricity to help move away from carbon based generation
- **Solar Thermal** converts the sun’s radiation into heat, to use for residential and commercial space heating and hot water.



### How do solar cells produce electricity from light?

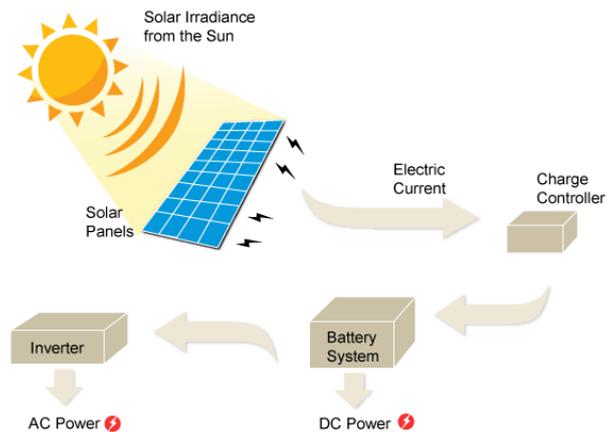
When light shines on the cell it creates an electric field across the layers causing electricity to flow. The more intense the light is, the greater the flow of electricity. Solar cells can be wired together to form a module (a solar panel) and these can then be connected together to form an array.

### Solar Resource in Ireland

Although Ireland is not known for long hours of sunshine, it is actually the visible light that drives PV cells. The level of light and brightness of the day is the key thing. We typically think that when the sun is not out, there wouldn’t be much solar energy, however, this is not the case. Cloudy days have very good visible light levels and the resource is substantial.

The other big advantage that Ireland has is that when seasonal intensity of visible light is at its peak, we have long hours of

daylight. These long hours of daylight also overlap with the daily national electricity peak demand times – morning time and 5.30pm onwards.



Source: Battery Storage, Total Solar Solutions<sup>ii</sup>

### Benefits of Solar PV:

#### Reduced carbon footprint

A typical 2.5 kWp system could provide up to 50% of a household’s annual electricity, saving around 1200kg of CO<sub>2</sub> per year and around 30 tonnes over its lifetime.

#### Lower energy bills

Solar is capable of producing up to 50% of the annual electricity consumed in a typical house, electricity bills could be reduced significantly. This would also provide protection against rising energy bills.

#### Energy storage options

Solar PV systems can provide flexible use of energy when coupled with the latest battery storage systems or with an electric car in charging mode. Storage can also be utilised where a home is not connected to the national grid.

### How much power can a Solar PV system generate?

If a solar PV system faces due south and is installed at an angle of 30° and is unshaded, each installed kWp can be expected to produce in the order of 850kWh (units) of electricity per year in Ireland. A 4kWp system would thus produce approximately 3,400kWh / year for consumption.

<sup>i</sup> <http://www.iea.org/publications/freepublications/publication/name-34725-en.html>

<sup>ii</sup> <http://www.totalsolarsolutions.com.au/wp-content/uploads/2013/02/solar-panel-diagram1.png>