

Take a journey with us

So we can save you money

CRONIN
solar

We at Cronin Electrical are constantly trying to bring our customers value for money daily.
We have carried out a lot of time in making sure that Solar Photovoltaic Systems will continue this trend.



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No Salesmen, Just Engineers

You will be talking directly to the people who will install your solar panels. Many companies use sales people to sell their systems and then sub-contract teams to carry out the installations. Once you have signed up you may never see the salesperson again and your system could be installed by an unfamiliar sub-contractor from another area. We're just down the road, and just like the systems we fit, we're here to stay.

We are local and we care. We are trained in QQI level 6 Micro Solar Photovoltaic System Implementation and QQI level 6 Electrical Installation and Commissioning of Micro Generators Award.

We are a registered Safe Electric Contractor. We are registered contractors with SEAI (Sustainable Energy Authority of Ireland).

WHY CRONIN ELECTRICAL AND SOLAR

-  Local Office, local staff, local installation
-  Tradesmen not salesmen, no sales targets to meet, just honest advice
-  Fully qualified Solar Photovoltaic installers, electricians and roofers, no sub-contractors required
-  High standards of workmanship. We take pride in all our Solar Photovoltaic projects
-  Well known makes of Solar Photovoltaic panels and inverters to suit all requirements.
-  Very competitive prices

There are 6 key factors that influence this:

1 Location

Where your house is located will determine both the intensity and number of hours of sunshine your roof will receive. This is known as "solar irradiation".

2 Orientation

Your roof orientation has a big impact on the number of hours of direct sunlight it receives. A roof facing South will yield the best overall performance, but installations facing anywhere to the South-East and South-West are also feasible. Installations using panels facing East and West are also possible. North-facing installations are not recommended.

3 Roof Pitch

You can't change the pitch of your roof, but the optimum angle for achieving the maximum yield from your solar installation is between 30° and 40°, depending on your location.

4 Shade

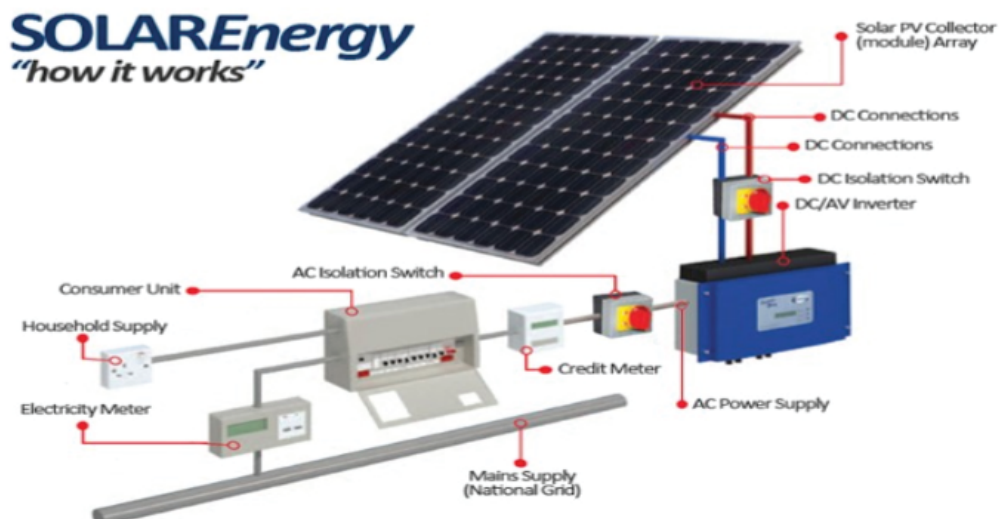
Any shade will reduce the overall performance of a solar array. Whilst shading cannot always be avoided, the solar panels should not be shaded between 10am and 4pm. Your installer should assess the estimated impact of obstacles like chimneys, aerials, satellite dishes, dormer windows etc in their survey.

5 Size of Your Roof

Quite simply, the number of solar panels you have installed will determine how much electricity you can generate.

6 Product Choice

Solar panels are not that different to many other products like a TV or mobile phone, where we decide how much we want to pay in return for the number and quality of features we want. Different brands of solar panel will generate different amounts of electricity, plus panels and the inverters will vary in how efficient they are in converting the daylight that hits the panels into electricity for your home.



What is happening in the Solar Photovoltaic Market?



The price of Solar Photovoltaic (PV) systems – solar systems generating electricity – has fallen by 75% since 2009 (FT.com)



Solar PV has overtaken Solar Thermal as the rooftop technology of choice



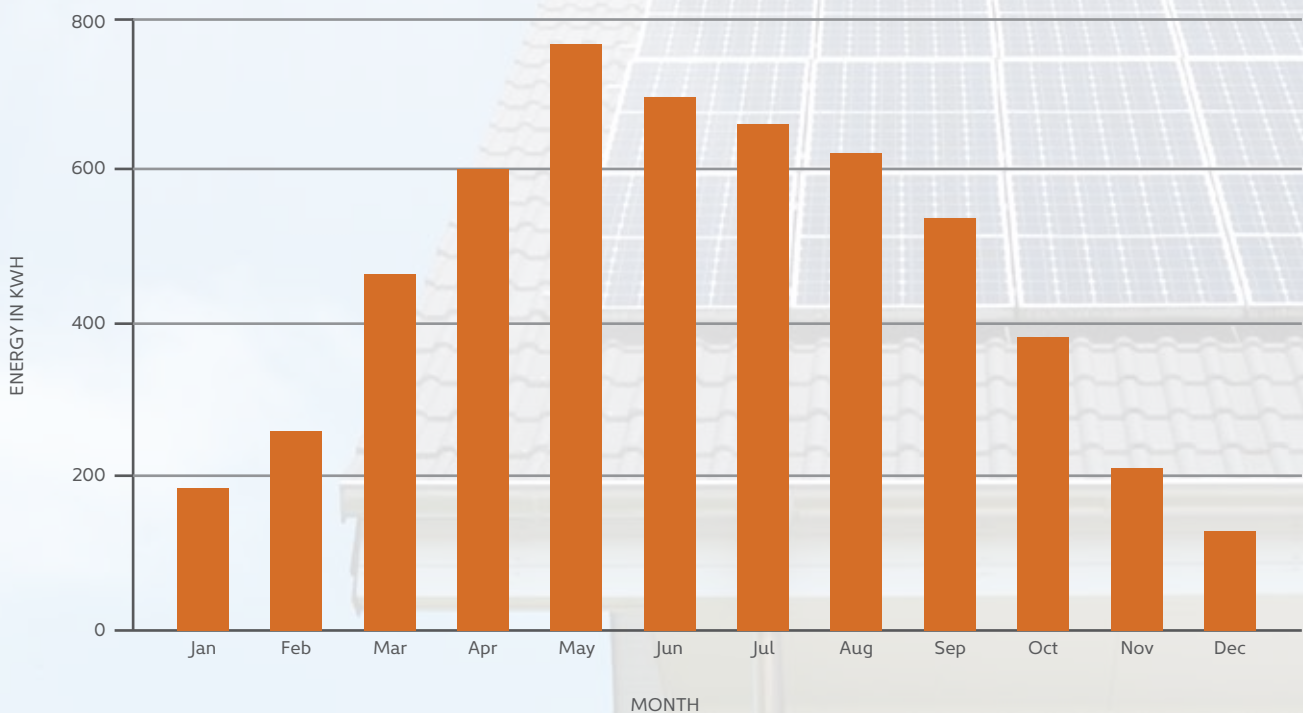
Irish government committed to domestic, commercial and agricultural support of the market



Ireland has committed to produce 16% of its energy from renewable sources by 2020 – currently off target, and fines could cost €68m to €315m



Battery storage systems – prices falling and government support is available for the first time



6kW system installed in Ireland – on a south facing roof



70% of power April to end of September



Not a good match for space heating



Relatively predictable annual output



Using 30+ years climate data

How, Why & Maintenance

Cronin Electrical stocks a variety of high quality solar modules for commercial, industrial or domestic use. We stock everything to install and commission your photovoltaic modules, including roofing installation kits, DC to AC inverters, and performance monitors.

We can design and pack kits to help your new-build project comply with Part L building regulations, and because we can supply PV modules from 250w to 360w, you can achieve Part L compliance with fewer panels when you use Cronin Electrical.

We back our quality with strong business partners and leading manufacturers such as LG, Winaico and Trinasolar.

Our varying solar modules offer you a choice between different types of photovoltaic solar panels, including polycrystalline modules, monocrystalline modules and hybrid modules. Your choice of solar module may depend on budget, space and preference.

All Solar PV modules go through our own rigorous diligence checks to ensure correct agreement certification, accreditation and approvals, and country of origin checks.

HOW DOES SOLAR POWER WORK?

Energy from the sun

The sun provides an abundant, free source of clean energy in the form of natural light and warmth. It is possible to capture some of this free energy directly to convert sunlight into electricity using solar photovoltaic (PV) panels.

How does Solar Power work?

Solar PV systems convert light into electrical power. They range in size from a few square centimetres, for example on calculators and watches, to systems of hundreds of square metres made from interconnected modules that form an array. Photons in sunlight hit the solar panel and are absorbed by semiconducting materials, such as silicon. Electrons (negatively charged) are knocked loose from their atoms, allowing them to flow through the material to produce electricity. Due to the special composition of solar cells, the electrons are only allowed to move in a single direction. An array of solar cells converts solar energy into a usable amount of direct current (DC). The DC is carried through wiring to an inverter, which converts the current to mains AC (alternating current) which is connected to the property's main electricity supply.

Versatility

Solar PV systems are made up of modules, each typically around 1m x 1.7m. Solar PV systems can be designed to fit virtually any size and shape of roof or can be mounted on frames at ground level. Solar PV can also be mounted vertically and horizontally allowing the system to form part of the wall and roof structures in new properties, although performance will be reduced with these tilts.

Orientation and tilt

The ideal installation for PV Modules is facing due south at a pitched angle of between 30° and 40° from the horizontal. This yields the best overall annual performance. Installations facing anywhere to the south of due east and due west are feasible, although output will be reduced. Installation is not recommended on roofs facing north.

Build your own PV Kit... with a little help from us

Design your bespoke kit including everything you need for portrait or landscape installation.

PANELS | MOUNTING | INVERTERS | METERS | SAFETY ISOLATION | DELIVERY

From 500W to 6kW single phase, our kits help you comply with Building Regs Part L.

What do kWp and kWh mean?

Solar electricity systems and modules are given a power rating in kilowatts peak (kWp). This is the electrical power which is generated at standard test conditions (Irradiance 1000W/m², Air Mass 1.5, Cell Temperature 25 degrees). The total amount of electrical energy the system actually generates in a year is measured in kilowatt hours (kWh). This will depend on the system's orientation, shading and location, as well as the size of the system (in kWp) that you have installed. A system which is un-shaded, south facing and with a tilt of around 30-40° will generate around 850kWh/kWp per year. The average home uses 4800kWh of electricity per year on lights and appliances. However, an energy efficient home using A rated appliances could use considerably less than this.

Site Location

The amount of electricity generated by a Solar PV system can also vary depending on where you live in Ireland.

Shape of roof area

Solar PV arrays are made up of modules of about 1.65m² area which allows most available roof shapes to be accommodated. For example a 3kWp system could comprise 12 modules taking up an area of 20m² and will generate roughly 2550kWh per annum.

Shading

Any shadows on a single module may reduce the performance of the whole array as all the modules are connected. A system can tolerate some shading early or late in the day without much reduction of overall output but it should not be shaded between 10am and 4pm. Trees, chimneys, TV aerials/dishes and vent pipes are all common causes of shading and should be accounted for before any installation. Micro-Inverters and Optimisers are products which can help reduce the effect of shading on a system. PV systems do not require direct sunlight and generate some electricity on cloudy days. Typically in December systems may generate around 25% of the energy they yield in July.

Connecting to the grid

The vast majority of systems are installed in properties with an existing mains electricity supply. The Solar PV supply feeds into your existing system and the electricity generated is either used in your house or is exported to the grid, depending on how much you are using at the time. In the event of a power cut grid-connected inverters automatically switch off to protect any engineers working on the lines to repair them. Before connecting a PV system the installer will inform ESB Networks, they are responsible for managing the electricity grid in your area.

Panel Cleaning & Maintenance

Very little maintenance is required if a well-designed Solar PV system is installed properly. Modules should be checked periodically for obstructions such as leaves, excessive dust/dirt or bird droppings. Build up can generally be cleared by using a water hose or by a heavy rain shower. Use of a pressure washer or detergents is NOT recommended and most build up is cleared naturally by rainfall. Specialist solar panel cleaning companies may be available. Trees and vegetation may grow and cause shade to fall on the module array. This will adversely impact system performance and periodic pruning may be required to ensure that system performance remains optimal. You can expect them to operate for 25 years or more, although the inverter may need replacing during the lifetime of the modules. Once fitted, your installer should leave written details of any maintenance checks that you should carry out from time to time to ensure everything is working properly. This should include documentation covering the main inverter fault signals and key troubleshooting guidance.

Guarantees

System guarantees may vary: manufacturers' performance guarantees on modern solar PV modules typically last up to 25 years. Standard inverter warranties are up to 10 years but extensions to this are often available. Installers may also offer their own warranties to cover their work.

Advising your customers on government supports

Domestic

- ☀ Up to €3,800 to support the installation of Solar PV panels and battery energy storage systems
- ☀ Support is available to all owners of dwellings built and occupied before 2011
- ☀ Only for Solar PV systems installed after 31st July 2018
- ☀ €700 for every kWp up to max 4kWp. Any installation over 2kWp must install a battery
- ☀ A Battery Storage System has a grant of €1,000
- ☀ Battery minimum storage of 2kWh, connected to a minimum of 2kWp of Solar PV
- ☀ Grant is a one-off payment
- ☀ There are no payments (currently) for exported electricity
- ☀ Existing homeowners with PV, qualify for the battery grant
- ☀ Only an installer who is on SEAI's Renewable Installers Register for Solar PV can certify the installation

Agricultural

- ☀ Targeted Agricultural Modernisation Scheme (TAMS) on-farm investment scheme
- ☀ €10 million worth of grants
- ☀ First tranche opened on 5th April
- ☀ Solar Photovoltaic Installation on farms - to extend current availability under the scheme to all sectors. Grant aid in this initial pilot phase of up to €9,300 or up to 60% of the overall cost will be available to fund 6kWp solar system
- ☀ Grant aid in this initial period phase will be to fund a 6kWp solar system with battery

Commercial

- ☀ Accelerated capital allowance (ACA) scheme – capital investment in Solar PV can qualify for tax savings in year one, instead of being written off over 8 years
- ☀ ACA reduces a firm's taxable profit
- ☀ Other sources via SEAI:
- ☀ Project assistance grants (for businesses spending €250k+ on energy p.a.)
- ☀ EXEED Grant scheme (for major investment in energy efficient design)
- ☀ Better Energy Communities (for businesses seeking funding as part of an overall community orientated programme)



Immersions

Immersion heater controllers take excess electricity from a Solar PV system and automatically diverts the free electricity to the immersion on the hot water storage tank, where it stores the energy as hot water

SOLiC 200

FREE HOT WATER FROM THE SUN



Battery Storage

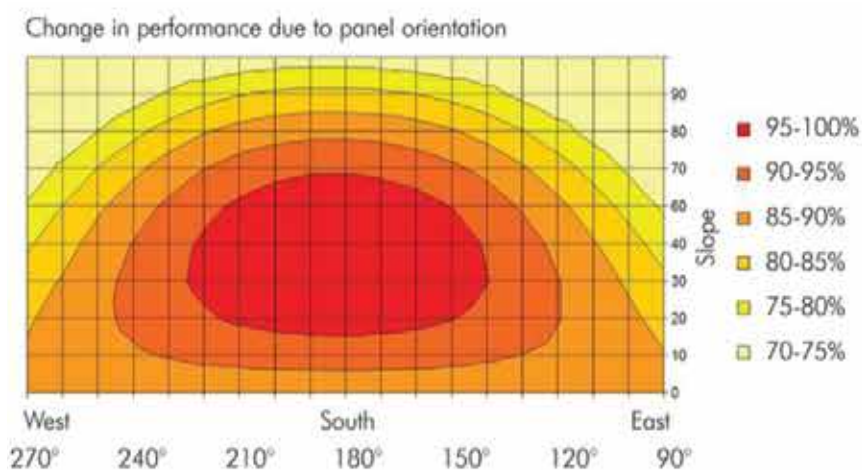


Solax Hybrid System

- Can work off-grid or as an Emergency Power Supply
- Can charge FROM the grid
- Intelligent Energy Management System
- Remote monitoring
- Scalable from 4.5kWh to 25.2kWh

Solar PV Performance

- ☀️ *Solar Irradiation plays a big part in the performance of any Solar PV system.*
- ☀️ *South Facing modules (systems will work anywhere between East and West but the closer to South facing the higher the system performance).*
- ☀️ *30 degree pitch (again, systems will work between 90 degrees to 0 degrees but the optimum output will be achieved at around 30-35 degrees)*



A system in the RED ZONE can typically expect to generate 850-950 kWh per year for each kW installed. Output will depend on geographical location.



String Inverters

Solar Inverters are used to convert the Direct Current (DC) energy produced by solar panels into usable Alternate Current (AC) energy to help power homes and commercial buildings. Our full solar inverter range of single phase inverters, three phase inverters and spares and accessories consists of stock from leading, innovative manufacturers including Fronius, Trannergy, SolaX and more.



Micro Inverters

Micro inverters work on a modular level, one inverter per module, so should one module/inverter fail, the remaining modules will still perform.

Microinverter Systems can improve energy harvest, and simplifies design, installation and management of solar power systems. Microinverters maximise energy production by reducing the impact of shading, dust and debris. They also allow you to monitor your solar PV panels, at a panel level, as opposed to a system level, via 24/7 monitoring and analysis. Microinverters are safe, as they remove the requirement for high voltage DC cabling within a building, and you can have rapid shutdown on the roof.

Using Solar PV to comply with Part L

Solar Photovoltaic systems are one of the best ways to achieve Part L of the building regulations in Ireland. Under Part L of the building regulations, a new home must generate a certain amount of its energy from renewable sources. Solar PV is economical, easy to install, has no moving parts, has minimal ongoing servicing requirements and comes with a long warranty.

To achieve the minimum Part L standard using Solar PV, a home must generate 4 kWh of electricity for every m² of floor space, per year. To calculate this there is a standardised “DEAP” Part L calculation:

$$0.80 \times kWp \times S \times ZPV$$






-  The 0.8 figure is a constant
-  kWp (kilowatt peak) is the total kw rating of the system, the theoretical ‘peak’ output of the system. e.g. If the system has 4 x 270 watt panels, then it is 4 x 0.27kWp = 1.08kWp
-  S is the annual solar radiation from Table H2 (depending on orientation and pitch)
-  ZPV is the over shading factor from Table H3
-  DEAP is the Dwellings Energy Assessment Procedure

Table H2: Annual solar radiation, kWh/m²***

Tilt of Collector	Orientation				
	South	SE/SW	E/W	NE/NW	North
Horizontal	963				
15°	1036	1005	1005	848	813
30°	1074	102	102	736	676
45°	1072	1005	1005	644	556
60°	1027	956	956	574	463
75°	942	879	879	515	416
Vertical	822	773	773	461	380

Table H3: Overshading factor

Overshading	% of sky blocked by obstacles	Overshading factor
Heavy	> 80%	0.5
Significant	> 60% - 80%	0.65
Modest	20% - 60%	0.8
None or very little	< 20%	1.0

*** Where solar collectors have multiple tilts and orientations, the annual solar radiation should be calculated from Table H2 based on an area weighed average of solar collector area. If the collectors are all of the same orientation and tilt, then an annual solar radiation figure from Table H2 must be selected without interpolation. The values in Table H2 are not specific to the installed solar collector type. Table H2 is based on solar radiation figures from national climate data.

Using Solar PV to comply with Part L

Example Part L calculation

A new home is 200m², and requires 4kWh per m² to achieve Part L of the building regulations – therefore it needs to generate at least 800kWh of solar electricity per year.

A rough rule of thumb, in Ireland, on a south facing roof at average roof slope (30°-40°), is that each kW of Solar PV installed will generate around 850kWh per year. Use this rule of thumb to estimate the amount of kW needed and use the DEAP calculation to verify it.

In the example we will use 4 x 270 watt panels, which is 1080 watts or 1.08kWp. The roof is south facing, and has a 30° pitch, so 'S' from table H2 is 1074. There is no shading. The calculation would be:

$$0.8 \times 1.08\text{kWp} \times 1074 \times 1 = 927 \text{ kWh}$$

Therefore, 4 panels is more than enough to meet the regulations.

Using 3 x 270w panels in this instance would only generate 696 kWh, so not enough to meet Part L.

Full tables and details here:

<https://www.seai.ie/energy-in-business/ber-assessor-support/deap/>

We can help you with your calculations, and because we stock panels of various wattage and type, we can come up with a solution that most suits your project.

Part L is a minimum requirement and in many instances it is prudent and cost effective to install more PV panels than the regulations insist on. When the scaffolding is up and the PV installation team is on site, that is the most economical time to put the right size of PV system on your roof.







Installation of Solar PV is sometimes not required for Part L, when other renewable technologies are used – this can commonly be the case when efficient heat pumps are used to heat the property. Although Solar PV may not be required, Heat Pumps and Solar PV can be very complementary technologies, and Solar PV can help reduce the costs of running a heat pump.

Part L in Apartment Blocks

Solar PV can also be used on apartment blocks to achieve the Part L requirement for each individual apartment. As the rooftop is common to an apartment block, it is not always easy or practical to run cables back to each individual apartment from this common rooftop. A Solar PV system can be sized, by adding together the m² of each apartment within the block and using the Part L calculation, and this single PV system is then connected to the landlord/communal area supply.

Electric Car Chargers

We at Cronin Solar are suppliers and installers of electric vehicle charging equipment across Munster. We cover the following:

-  Domestic Houses
-  Businesses
-  Car Parks
-  Apartment Blocks
-  Factories
-  Hotels

Our electricians are all qualified to the highest standard and collectively have decades of experience in commercial and domestic installations of all kinds.

We stock a wide range of domestic electric vehicle chargers. These wall mounted chargers are available from 3.6KW to 22KW (16A to 32A). These units qualify for the SEAI grant of €600 (<http://www.seai.ie/grants/electric-vehicle-grants/electric-vehicle-home-charger-grant/>).

Our specialists can help advise you (or your electrician) on the right charger, and ensure you do not exceed the maximum load available for your home.

Our electrical vehicle chargers are available with a socket only, or with a tethered lead. Warranties range from 1 year to 3 years as standard and some can be extended to 5 years.





CRONIN solar

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You can also check out our website www.croninsolar.ie for an idea of what we do