

Learning Centre

# Buyers Guide



Welcome to the Learning Centre Buyer's Guide brought to you by Penrith Solar Centre!

There are so many pieces of equipment that need careful consideration before your installation. Don't worry, our Buyer's Guides are meant to guide a buyer like you through every component of a solar system.

We aim to answer all your questions on your solar journey, so you can feel confident in your solar investment.

# How does the solar rebate work?

What people often call a “solar rebate” is actually a federal program that gives households a financial boost to install rooftop solar systems. Basically, when you purchase a solar system, it earns something called Small-scale Technology Certificates (STCs), which are like virtual units based on how many megawatt hours your system is estimated to produce in its lifespan.

Here’s how they calculate STCs:

- **Size of your system:** Bigger systems produce more megawatts, so they earn more STCs. The bigger the system, the bigger the rebate.
- **Location:** Australia is split into four zones that affect how many STCs you get. The sunnier your area, the more you’ll receive.
- **Year of installation:** The government is slowly phasing out STCs. Each year, the value drops by 1/15 until 2030, when it hits zero. So, the earlier you install, the better your rebate.

The STC system is basically the government’s sneaky way of making big polluting companies pay you to go solar. It’s not the government handing over cash – it’s the corporations.

Here’s how it works:

01.

The government tells these big polluting companies, “You’ve got two choices: build your own renewable energy infrastructure, or invest in other peoples’ like solar systems.” The companies quickly realise it’s cheaper to support others’ solar setups, so they choose that option.

02.

The government then hands out STCs for your system based on its size, location, and when you installed it.

03.

Your installer sells those STCs to the corporations, which helps lower the upfront cost of your solar system.

Most solar system prices already factor in the STC incentive, but not always. It’s worth double-checking to see if the price you’re quoted includes it.



# How Much Do Solar Panels Cost?

The payback period for a solar system isn't set in stone. Electricity prices keep going up, while the cost of solar tech is dropping. Plus, your energy needs can change over time as your lifestyle evolves. All these factors (and a few others) play a role in how long it'll take for your solar system to pay for itself.

**It's different for everyone.** It really depends on your energy needs, your current bills, and the kind of solar system you decide to go with.

The best way to get an accurate idea of what your home needs and what your solar setup can deliver is by thinking in terms of watts. You can kind of think of wattage as a speedometer for electricity.

There are two types of solar systems, and they have different values. When you're looking at costs, a system with microinverters is going to be more expensive per watt than one with a central (string) inverter.

Microinverter systems run about \$1.30 – 1.60 per watt, while central inverter systems come in at around \$0.60 – 1.00 per watt.

Microinverters might cost more upfront, but they're more efficient, which means they save you more money in the long run.

Central inverters are cheaper to start with, but you'll likely have to replace them a few times over the lifespan of your solar panels.



# How much do solar panels save on energy bills?

A solar system is like a huge coupon for energy. It saves anywhere from 40 – 60%, sometimes more depending on various factors. One of the biggest ones is the payback period.

The payback period for a solar system depends on how much you spend upfront and how much you're saving each year by cutting down your electricity bills.

**Let's break it down:** Say your electricity rate is \$0.32 per kilowatt hour (kWh). And let's assume your household uses 1,000 kWh a month. That's quite a bit, but round numbers make this easier to follow.

So, your monthly electricity bill would be:  $1,000 \text{ kWh} \times \$0.32 = \$320$  per month (or \$960 per quarter).

Now, let's estimate how much electricity your solar system will provide once it's set up. We'll assume you're able to use 40% of your total energy needs directly from your solar system.

**40% of 1,000 kWh = 400 kWh of solar energy self-consumed per month.**

This means you're still drawing 600 kWh of electricity from the grid, which will cost:  $600 \text{ kWh} \times \$0.32 = \$192$  per month.

How does that look annually?  $\$192 \times 12 = \$2,304$  per year.

So, with a solar system supplying 400 kWh a month, you'd still be spending \$2,304 a year on grid electricity.

But what about your savings from the solar system?  **$400 \text{ kWh} \times \$0.32 = \$128$  per month.** Multiply that by 12, and you're looking at \$1,536 per year in savings.

Now, let's say your household needs around 33.3 kWh per day, and your solar system contributes 13.3 kWh of that, with the rest (20 kWh) coming from the grid. To produce those 13.3 kWh a day, your solar setup needs to generate a bit over 5.0 kW.

At Penrith Solar Centre, a microinverter system that can do this would need about 12 solar panels, costing roughly \$10,300 upfront.

To figure out the payback period, it's just a simple formula: **Initial cost of system / annual cost of electricity savings = solar payback period**

**$\$10,300 / \$2,304 = 4.5$  years.**

Of course, this is assuming quite a few things that might differ for everyone. Your electricity rates could change, and so might how much power your household uses.

Plus, these calculations are based on the idea that electricity will stay at \$0.32 per kWh for the next few years, which may not be the case.

# What causes price variations in solar quotes?

It varies from person to person. It all comes down to your energy needs, your current bills, and the type of solar system you decide to go with.

Plus, different installers have their own pricing for products and services, and your home might have its own set of challenges. All of these factors can impact the upfront cost and payback period of your solar setup.



# How do I choose the right solar installer?

Once you've decided to go solar, one of the biggest choices is figuring out who will install your system. You want your setup to run smoothly, look great, and fit seamlessly into your lifestyle.

You've got two main options: in-house installers or subcontractors.

**In-house installers** offer a full-service experience, handling everything from your first inquiry to the final setup. They're certified by the Clean Energy Council, and they'll take care of all your questions and the installation process, right down to setting up the consumption monitoring app on your phone.

**Subcontractors**, or "subbies," are independent electricians who are also Clean Energy Council certified to install solar. They don't sell solar systems themselves but work for companies that do, taking on installations as needed.

Whats The Difference:

# In-house Installers vs Sub-contractors



In-house installers handle everything from start to finish when it comes to getting your solar system set up. They'll answer all your questions, take care of the installation, and even set up the consumption monitoring app on your phone. Plus, they're around to help with warranties later on. Penrith Solar Centre is a good example of this type of company.

Then there are subcontractors, who are independent electricians hired by solar sales companies to handle installations. They don't sell the systems themselves—they just do the install work. You'll see this setup more often with string inverter systems, which are popular in Australia because they're more budget-friendly.

The advantage of in-house teams is that they're laser-focused on what they do, so they're highly skilled with specific products and processes. This means they can offer top-notch expertise and quality assurance, but that peace of mind can come with a higher price tag. In-house companies invest in recruiting, training, and retaining skilled installers, and those costs are reflected in the final price.

On the other hand, having a subcontractor install your solar tends to be cheaper. Since they're paid per panel, they usually get the job done quickly, which can be great if you're trying to squeeze an install into a busy schedule.

However, there's a bit of a downside. Because subcontractors work for solar sales companies, you might have to jump through some hoops if you need repairs or warranty service.

You'll find yourself going back and forth between the subcontractor and the sales company, with each pointing fingers at the other. This isn't always the case, but it happens enough that it's worth keeping in mind.



# What is solar panel monitoring (consumption monitoring)?

Solar energy use monitoring, called consumption monitoring in the solar industry, is a mix of software and hardware in your solar system that keeps track of how much electricity you're using at home.

You download an app on your phone to keep track of how your system performs. It shows you when you're using power, how much, and how much you're sending back to the grid or pulling from it.

It's a powerful tool that puts you in control of your energy. Here's how:

Your energy provider usually charges more during peak hours, which are typically in the evening when everyone's home from work.

With consumption monitoring, you can plan around this and program your system to use more electricity earlier in the day when your solar panels are producing the most power. Of course, you could also invest in a solar battery.

Monitoring is also extremely helpful for maintaining your system. A good monitoring setup will alert you if something in your solar system isn't working properly.

Plus, it adds an extra layer of safety. The system can detect when equipment is close to failing or isn't running at full capacity, which prevents potential electrical issues before they happen.



# What solar panel should you choose?

These days, there's not much difference in efficiency between cheaper and pricier solar panels. The gap has really closed.

When helping customers pick out solar panels, we focus on a few key things:

- Efficiency.
- Upfront cost.
- Warranty.

Because solar panels are getting more and more efficient, and prices keep dropping as the technology gets cheaper. What you'll want to focus on is the warranty. What type of warranty does the manufacturer offer for its product?

Ideally, you'll want a product warranty that lasts. It's become common in the solar industry to see a 25 year product warranty and a 30 year performance warranty for solar panels.

The product warranty covers the hardware. Things like manufacturing defects or the impact of weather over time.

The performance warranty guarantees a certain level of efficiency after 30 years. It's perfectly normal for solar panels to degrade, they all do it. Many panels still operate at around 90% efficiency after 30 years.

It's also a good idea to go with brands that have offices in Australia. That way, if you or (most likely) your solar installer ever needs to fulfill the warranty, it's much easier than trying to deal with an overseas company.



# Which solar inverter should you choose?

## Central Inverter vs. Hybrid Inverter vs. Microinverters.

Solar panels can only produce direct current (DC) electricity, but everything in your home runs on alternating current (AC) electricity. That's where inverters come in.

Think of your inverter as a translator. Your solar panels speak one language, and your home understands another one. The inverter converts the DC power from your panels into AC power that your home can actually use. There are a few types of inverters out there.

In a **microinverter system**, each panel has its own small inverter mounted right underneath. It converts the electricity on the spot before sending it down to your home.

**Central (string) inverters** work a bit differently. Instead of having one under each panel, a string inverter is a central device that converts DC energy from a group of panels (a "string") into AC power. They do the same thing that microinverters do but are usually installed on the side of the house near the main switchboard.

The **hybrid inverter** was created to solve a compatibility issue between string inverters and solar batteries. A string inverter can only convert the DC power from your panels into AC for your home. It can't send AC power to a battery unless it gets converted back to DC first, and that's where the hybrid inverter steps in.



# How many solar panels should you buy?

What are your energy habits? What are your goals with solar? What's your budget? How big is your roof? How big is your quarterly electricity bill? What direction does your roof face? Where do you live in relation to the Equator? Are you going to add a solar battery? Is your home single-phase or three-phase? Who is your energy retailer? Your DNSP? What are the rules they have around export limits?

Unclench your shoulders and take a deep breath. A good solar installer will walk you through those questions and help you work on a customised quote.

Once you and your installer figure out the answers to these questions, you'll know how many solar panels you'll need. Our recommendation is to ask lots of questions and keep an open mind. There's a lot to learn if you want to maximise your savings.

How much solar energy will you actually use?

Every home is unique, and everyone's energy needs are different. Some people have big spaces with large families, while others live alone in smaller spaces. It depends.

The more energy you use, the larger the system you'll need. Otherwise, your system will struggle to save you money and reduce your reliance on the electric grid.

Similarly, the less energy you use, the smaller the system you'll need. However, we do recommend installing a system that is easily expandable because your electricity needs might change in the future – drastically even – as the current energy crisis we're in unfolds.

**When** you use electricity can also inform how much solar you can actually use.

In the Sydney metro area, most people use electricity in the morning and then again in the late afternoon or evening, since they're often out at work or school during the day. This is one of the reasons we recommend placing solar on the east and west roof faces to capture more light in the morning and evening.

Take some time to think about when you're usually home and how much electricity you use during those hours. What's your typical routine? Are you home during the day when the sun's out, or does your energy use spike in the evening? For most folks, it's the evening.

Consider the appliances you use and when you run them. Are you powering up energy-hungry devices during the day, or mostly in the evening?

Also, think about the time of year. Your heating and cooling needs change with the weather, so you might use the air conditioning more in the summer or need extra light after 5 pm in winter.

All of these variables combined will inform how much solar you will actually use.



# What is the ideal roof direction for solar panels?

The sun is north of Sydney most of the year as it makes its journey from the eastern horizon to the western horizon daily. Since the sun's position changes with the seasons, the angle of sunlight hitting your solar panels will vary throughout the year.

Where your home is located in relation to the Equator plays a role in deciding how to position your solar panels. Remember, the sun shifts seasonally from north to south. In summer, when Sydney is closer to the sun due to the Earth's tilt, the sun sits higher in the sky. During winter, it's closer to the northern horizon.

The sun ranges from being low on the northern horizon in winter to almost directly overhead in summer, which helps your panels absorb maximum sunlight no matter the season. Even if the panels are facing south.

But the sun doesn't just stay north and above us. It's also out to the east in the morning and west in the afternoon. That's why we often recommend placing panels on both east and west sides, along with some facing north, to catch as much sunlight as possible throughout the day.



# What Is The Ideal Solar Panel Angle?

The pitch of solar panels is basically the angle they're set at compared to a flat, horizontal surface, like the ground. When we install panels, we pay close attention to how the sun's rays hit the roof and the angle of the panels. Getting the right pitch and placement is key for maximum efficiency.

Most of the roofs we work on have a pitch around 20°, and we usually install the panels flush with that, so the panels end up with a 20° angle too.

If the roof has a steeper pitch, like 30°, it can be a bit of a challenge for solar panels because their productivity drops a bit. If your roof is steep, you might need to investigate ground mounted solar.

Keep in mind that the sun's position changes with the seasons. In summer, the sun is higher in the sky, so it hits your panels more directly, giving you more energy. But in winter, the sun is lower, and its rays hit at a less direct angle, which means your panels won't be quite as productive.

## What do you do about shade on solar panels?

Microinverters have an advantage over string and hybrid inverters when it comes to dealing with shade. They optimise power production for each individual panel, so you get the most energy possible from your whole setup. If one panel ends up shaded, it only affects that specific panel, unlike central inverters where shade on one panel can drag down the efficiency of the entire system.

Shading isn't just about a tall tree casting shadows. Don't forget that they can change during the year as the sun moves. You might deal with something like a telephone pole hitting your panels in the morning during winter when the sun is lower.

Even cloud cover can be an issue, and it's a pretty common one. Without microinverters working at full tilt, a bit of cloud cover could seriously cut into your energy production.



## Wrapping Things Up

Choosing the right solar system can feel overwhelming, but it doesn't have to be. We've covered the key points you need to know – from understanding different types of inverters to picking panels with solid warranties. Taking the time to review your energy needs, your home's layout, and your budget will help you make a well-informed decision.

Remember, the best system for you is one that fits your unique energy needs and goals. Whether it's microinverters for shaded areas, or a north-facing panel setup to maximise sunlight, there are options for every home. Keep an eye out for reliable brands and consider future needs too, like possible expansions or battery add-ons.

Most importantly, feel confident in knowing that there's a perfect solar solution out there for you. Investing in solar is a smart way to cut down on electricity costs, boost your home's value, and reduce your carbon footprint. With the right information and a trusted installer by your side, you're set up for success.





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