

**INDUSTRY SECRETS
REVEALED**

**PRE-PURCHASE CHECKLIST
TICK BEFORE YOU BUY**

TAKE THE POWER BACK

ULTIMATE INSIDERS GUIDE TO BUYING SOLAR



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**INSIDE: SOLAR INDUSTRY SECRETS, TIPS AND TRICKS
REVEALED SO YOU CAN GET THE BEST DEAL!**

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Introduction

Downloading this guide will probably end up being the most valuable thing you've done today, this week, this year, maybe even this century! (we could be exaggerating the last one).

We began writing this guide after years of watching hard core closing sales people sell cheap crappy solar systems off the shelf or worse, expensive crappy solar systems off the shelf.

We believe there is a place for everyone. However, we wanted people to have a better understanding of what they were buying before signing on the dotted line.

In this guide we are going to cover off, what we believe are the top 10 things you need to know before buying a solar system.

From the basics and fundamentals on how a system works so you can be more confident when discussing systems to the sales tactics used so you can sniff out who is who in the zoo.

Plus at the end, we have built a pre-purchase checklist to help you make a good decision when the time comes to join the renewable revolution!

We hope you enjoy the guide and it gives you the knowledge and confidence to get a great solar system for your home.

Chapter 1

Why are the prices for solar systems so different?

So, you have googled solar once in your life and next minute, you are getting a million ads for 6.6kW solar systems for stupidly low prices?

Then, when you get another quote for the “same” 6.6kW solar system it is 4 times the price.

This is one of the biggest challenges when navigating the world of solar.

The wild price variability.

These low prices are driven by a few key factors.

There aren't heaps of moving parts when selling solar systems. They key components are:

- The quality of gear being installed
- The quality of the workmanship
- The cost of running their solar business

The cheaper the system, usually means one, some or, all of the above have been impacted to achieve this.

The quality of the gear being installed

The quality of the gear being installed can have a huge impact on the cost of the system. With the growth of renewable energy there has been a lot of new manufacturers into the industry to try and get a slice of the pie. This can make it hard to work out what is good and what isn't.

We thought about putting brands in this guide we like and brands we don't however with the market changing so much we thought it wasn't the right thing to do.

Instead, do some research on the brands you have been quoted. Consider things like:

- Who actually owns them?
- Where are they based?
- Do they have an office (an actual office not just a virtual address) in Australia?

- How long have they been around?
- How long have they been around in Australia?
- What is their performance warranty?
- How long is their product warranty?

Once you have considered the above, you will be in a position to make a much more informed decision on the quality of the company behind the gear being quoted.

Industry secret! Watch out for “substitution”.

Substitution occurs in business all the time. A lot of the time, rightfully so.

What happens is, a part quoted is not available so another option that is a fair and reasonable equivalent is installed. Seems fair right? That is because it is.

HOWEVER! Sometimes, less reputable companies will use substitution to take you from a high quality quoted product and switch you into crappy low grade panels or inverters that are cheaper for them and not a fair and reasonable substitute for you. That is how that super cheap price existed in the first place.

It is called “bait and switch”.

So, how does it actually happen?

The day of installation comes, you get a call telling you the panels aren't available but they have worked hard and sourced you these other ones that are just as good. All is well and they want to wrap the conversation up as quickly as possible.

The best thing to do is say no, you aren't comfortable with the new substitute until you can confirm it is a fair and reasonable option. With a bit of research you will quickly be able to work out if you are getting a fair option or not.

Don't let substitution scare you, just be aware of it.

The quality of the workmanship

Workmanship is vital when getting a good solar system. This thing is going to sit on your roof for years and years to come generating energy for your home to use. The last thing you want is someone who isn't skilled slapping it up without the care and attention it deserves.

Given the cost of quality tradespeople can be significantly higher than that of unskilled workers, lots of companies will cut corners on workmanship anywhere they can.

When you see super cheap system prices, chances are they are using super cheap workers to complete the job. The question is not what is the cost of this now, but what could this cost you in the future?

The cost of running their solar business

Running a business isn't cheap. Everyone usually knows that, but what is the TRUE cost of running a high quality solar business.

The answer is a lot. Just some the costs required to run and install a solar business are:

- Rent
- Licensing fees
- Staff and salaries (think administration, sales, operations, electricians etc)
- Insurance
- International freight and logistics
- After sales service (this is a big one!)
- Engineering
- Connection fees and charges

When we read the above, we wouldn't want a solar company going cheap on any of these. They will have a massive knock on impact on the work they do and the systems they sell which will only end up costing you.

So, the question you need to ask yourself is. "If my system is so cheap, what of the above are they skimping out on?"

The problem is, you will probably never know until it is too late and you find out the hard way.

What should a system cost?

There is no golden rule for what a system should cost. However, we like to use a rule of thumb that a decent system should cost around \$750 - \$1250 per kW of installed solar AFTER STC's (we cover this off later) have been applied.

All of the above we have covered will impact that price coupled with your negotiation skills. Anything cheaper starts to head into scary cheap territory and anything more expensive could start to be considered overkill.

Chapter 2

What is the solar rebate and how do you get it?

Firstly, at a National level technically there is no rebate. BUT! There is a thing called STC's or Small-scale technology certificates.

STC's are financial incentives that you receive when you install solar on your roof.

Most people will call them the Solar Rebate and we understand why. You spend some money on something and you get some money back from the Government it sure sounds like a rebate...

Introduced in 2011 STC's are a part of Australia's Renewable Energy Target. This incentive or "rebate" serves the purpose of reducing the cost of installing solar on your home or business through the creation of these so-called certificates.

The amount of STC's which are applicable to your solar system depends on the size of the system being installed.

An average 6.6kW solar system in 2021 is entitled to around 91 STC's with the value of an STC being approximately \$38.

STC's are great for obvious reasons. They massively help people afford solar for their home.

How do you get them?

This is the easy part. You generally don't have to do anything. Nearly all solar retailers in Australia will factor them into the quote. In most cases your quotes will have a line that includes you signing the STC's over to the retailer to claim.

In the end, you pay the net difference and it is up to the solar retailer to claim the financial value of the STC's themselves.

It is that easy.

Just make sure before you sign up they have definitely been factored into the quote.

Chapter 3

How much does solar save you?

Saving money with solar comes in 2 forms.

- Offsetting your consumption tariff
- Solar Feed in Tariff

Offsetting your consumption tariff:

Homes in Australia which are connected to the grid get charged per kilowatt they consume. How much per kilowatt ranges dramatically from where you are located in Australia and which retailer you are with.

Offsetting your consumption tariff will deliver the best savings, this is because the rate of which you purchase electricity from the grid is up to 3 times higher than what you get for sending it back to the grid.

To increase your savings by offsetting your consumption tariff, you should run all the big ticket appliances during the day, such as

- Dishwasher
- Washing machine
- Dryer
- Electric hot water system
- Pool pumps
- Air Conditioning

The average home in Australia will consume around 20%-30% of the solar they generate, increasing this figure will drive much more aggressive savings and increase your return of investment.

Solar Feed in tariffs explained:

A Solar Feed in Tariff is provided by an Energy retailer for excess power the premises exports to the grid.

The average Australian home will consume around 30% of energy created from the solar system. This means from a 6.6kW solar system generating approximately 26 kWh per day, there is an excess of 18kWh's being fed back into the grid.

Energy Retailers will provide a credit for every kWh from excess solar, this ranges from around 3c/kWh – 20 c/kWh.

The energy meter on the premises will calculate how much solar has been sent back into the grid and will apply the credit to your next energy bill.

Once you have installed solar on your home, you will need to notify your energy retailer so they are aware of your new solar system.

Chapter 4

How do solar panels work?

The solar panels that are installed on people's roofs today are known as solar photovoltaic or PV for short.

It's not often seen this way but our beautiful sun is actually just one massive ball of energy. It is constantly releasing photons which are tiny particles of electromagnetic radiation. This is known as Solar Radiation or often, solar for short. Solar panels are made to harness this energy and turn it into electricity for us to use.

While your solar panels are just taking it easy up on your roof, minding their own business the minute the sun comes out, they are ready to rock and roll. These panels are made from silicon photovoltaic (PV) cells. When sunlight hits the panels it razzes these cells up, exciting them which then in turn creates electricity. This is known as the Photovoltaic Effect.

The Photovoltaic Effect is the generation of electricity when something is exposed to sunlight.

That is what your panels do every day. They have sunlight hit them, then the cells they are made of get excited and the by product is electricity.

However, at this stage you have useless electricity. The electricity created by your panels is known as DC or direct current. The electricity everything needs to work in your home is AC or alternating current, so in steps the solar inverter.

The solar inverter attached to your panel takes in DC current and converts it into AC current that can then power your home and feed back into the grid. We cover off everything about inverters below.

And That's it. The simple beauty of Renewable energy.

Chapter 5

What is an inverter and how do you pick the right one?

The Solar inverter is generally the first part to fail in the solar system, this is why we believe the solar inverter is a crucial decision when it comes to installing solar on your roof.

If you are trying to work within a budget or you don't want to pay a premium price for the entire system, we strongly recommend you pay more to get a good quality inverter.

So, why is purchasing a good inverter so important?

The solar inverter is the brains of the operating system, the engine room if you like. It works by carrying DC current from your solar panels and converting it into the AC current we use in our homes. Without the solar inverter the panels on your roof are useless.

If one of your solar panels fails, not a big deal and an easy fix. Depending on the configuration most of your solar system can still work. But if your inverter fails, that's kind of a big deal. There are a whole bunch of panels on your roof staring into the sun with no benefit.

There are currently 4 types of inverters available in Australia:

- String Inverter
- Hybrid Inverter
- Micro Inverters
- Inverter with DC Panel Optimisers

String Inverters

A string inverter is the most common inverter in the world. It's a centralised inverter with panels placed in series or a "string". A string inverter is a simple installation and doesn't come with a lot of parts, which means it's not too expensive.

A string inverter is great for those with panels facing in directions of two or less, a site without any shade and a simple installation. In most cases a string inverter will be quoted by a solar retailer or installer.

Hybrid Inverter

A Hybrid Inverter is a string inverter with the capability of also charging a DC Coupled Battery.

Micro Inverters

Micro inverters are exactly how they sound, they are little tiny inverters which sit on the back of each individual solar panel. You cannot have 1 micro inverter, you must have the whole system set up with micro inverters.

Their main benefit is individual panel optimisation in which each panel works as an individual, which you don't get with a string inverter. If where you are installing solar has many different roof aspects or if it suffers from shade, micro inverters are a great choice.

An added benefit of micro inverters is the individual panel monitoring, allowing you to monitor the performance and output of each individual solar panel, making it easy to pick up on a panel fault or something of that nature.

A downside of micro inverters is the cost. With more parts and more labour you will be paying a lot more to have micro inverters installed.

Inverter with DC Panel Optimisers

Much like micro inverters, an inverter with DC panel optimisers allow you to optimise each individual solar panel.

This solution is best for those who have many different roof aspects or suffer from shade.

Inverters with DC panel optimisers do the change from DC to AC power in one centralised location just like a string inverter, while Micro Inverters do this at the panel.

The most common type of Inverter with DC Panel Optimisers is made by SolarEdge, where the inverter and the optimisers are all made by SolarEdge.

Much like Micro inverters DC panel optimisers have individual panel monitoring and they come with the same downside, which is cost.

If you have shade or you have a complex installation which worries you or your solar installer or retailer - there is another option!

TIGO

The best example of this option is TIGO.

As an example, a site may have shade in the afternoon on some West facing panels from a neighbouring tree, this shade happens at about 3pm in Winter and doesn't affect the panels too much in summer.

You don't want to spend huge amounts of money on a small problem and so you don't want SolarEdge or Enphase Microinverters. TIGO will allow you to install a string inverter of your choice and then add TIGO Optimisers on a select few panels.

Which inverter size is best?

Choosing the best inverter size for your home is another important decision when it comes to installing solar. The most obvious thing to do is install an inverter with the same capacity as the solar array, while this is true, a common practice in the Australian solar industry is oversizing your solar array against your inverter.

Why would I oversize my solar array? Most networks across Australia have limitations when it comes to inverter capacity, it's normally 5kW's per phase. If you have a single phase property the maximum inverter capacity you can install with no limitations is a 5kW inverter. If you want to install a larger inverter, that's easy too, you add something called an export limiter - the only downside is the cost.

The STC scheme allows a solar inverter to be oversized by 133%. This is why you will see 6.6kW quotes with a 5kW inverter or a 13.2kW quote with a 10kW inverter.

The concern for most is that their inverter being smaller than their solar array will affect their overall generation, this is untrue. It's very unlikely that the solar panels will produce their maximum capacity, it would need to be the perfect day. It can be very much the opposite because simply put solar inverters like to operate at higher ranges, this improves their efficiency.

In short, oversizing your solar array against your inverter is a good idea.

Single Phase and Three Phase - What do I have and is it important?

Some homes in Australia are single phase and some are three phase. The best way to tell if you are single phase or three phase is to pop open your meter box and have a look if you have one main switch or 3 main switches. Another way to tell is how many wires are connected to your home from the street, one wire or three.

If you have a single phase home you can only have a single phase inverter installed. If you have a three phase home you can either install a single phase inverter or a three phase inverter.

It's extremely common in Australia to have a single phase inverter on a three phase home. We know what you're thinking..... What about all my three phase appliances? Don't stress too much about it, you won't be penalised for it.

The energy meter installed at the site will net off the difference between what you consumed and what you generated at all times when it comes to solar. For example, your solar system generated 5kWh's on one of the phases. On that same phase you consume 1kWh while the other 2 phases consume 2 kWhs' from the grid. The energy meter will calculate the difference between the consumption and the generation of electricity from the solar and charge you accordingly - in this case the site owes nothing.

Financially it's clear it won't make a difference, the value in installing a three phase solar inverter on a three phase home is spreading the load of electricity being exported to the grid from your solar system across all three power lines not just one.

Chapter 6

Are new solar systems battery ready?

The short answer is, yes. New solar systems are battery ready.

Newer batteries on the market are known as AC coupled batteries. What this means is, they can connect and use the energy your system is generating after the inverter has converted from DC to AC current.

In the past, they were DC powered (some still are) and required independent inverters and to be honest, it was a bit of a mess.

Like most emerging technologies, they have gotten exponentially better.

Insiders tip: Get black out protection!

A common misconception in solar is that if there is a black out and the sun is still shining, you will still have power. Unfortunately, this is not the case.

Your solar system is connected to the grid. Sometimes known as “grid connect solar”. That means your system still needs the support of the grid to operate. Plus, if someone wants to work on the lines and your solar system is still pumping power back in, that can be very dangerous.

The solution is to get a solar battery with “black out protection”. Black out protection helps your battery isolate itself from the grid and work independently meaning you can use your power from the battery! Plus, if the sun is still shining you can continue to use your solar system and battery at the same time.

The solar will also still charge your battery for use when the sun goes down.

Double insider tip:

Make sure you mention this early on! Not every battery is capable of black out protection. When you are looking at a battery with your solar system, make sure you mention you want it up front so you get a compatible battery.

Chapter 7

What payment options are available?

Firstly, we don't want to give anyone any financial advice here. We will just talk about how to pay, and the products available. Given everyone's situations being so different and so many people reading this guide, it would be irresponsible to do so. Plus, we don't have a credit licence!

The three key ways to pay for solar in Australia are:

Cash

If you have got the money in the bank, happy days! You can pay what you need in cash, EFTPOS, EFT or bank transfer. It is that simple. All retailers will accept this.

Credit Card

All good retailers SHOULD accept all types of cards. Depending on how you like to pay for things and how you like to manage your money, putting it on a credit card can be an easy and simple way to go.

Note, like nearly everywhere most retailers will slap you with a merchant fee for your troubles.

Finance

This is where it can get tricky! There are a few different finance offerings in the solar space right now.

Interest bearing finance

This is the most simple of them all. It is just a regular loan, specifically put together to buy solar. There are a few different finance companies offering them and range features, benefits and costs. They are all considered consumer loans so you are also protected by the NCCP (the law protecting consumers when they borrow money) so that is a bonus too!

It basically means the finance company needs to do the necessary checks to make sure you are in a good position to get a loan. Credit check, prove your earnings, that sort of basic stuff.

These can be great as they are easy, transparent and most people are quite comfortable with this type of loan.

Interest Free Loan

Interest Free Loans of BNPL(Buy Now Pay later) have exploded in popularity. It is easy, accessible money people can get to pay for stuff. What a great world we live in!

Only catch is, they still cost you money.

Now, just for the record, we are straight up fence sitters on BNPL. We think you should assess all options and then make the right decision for you.

However, the way they work is, they charge you an upfront fee generally called a merchant fee to use the product.

For example, a \$10,000.00 solar system might cost \$12,000.00 with an interest free option. It's basically like paying all of the interest up front and then the BNPL provider collects it in even amounts of the term you have agreed.

Sometimes, BNPL can actually be a really good option! When you compare the cost of taking it out over the same period as traditional finance it can even be cheaper. That's why we say you need to approach finance on the fence and just crunch the numbers for yourself.

Something to consider.

Due to the fee's being loaded up front, there is no benefit in paying out early. A normal loan, the interest gets added on while you owe the money. The more you pay off the less interest you pay. However, with BNPL that isn't the case.

Government Backed, Interest Free Loan

Depending on when you read this guide, there will always be some different offers floating around the solar industry. The government has many times used interest free loans as a way to stimulate growth in solar.

The great thing with government backed interest free loans is that, **THEY ARE INTEREST FREE!**

Unlike some other options, these loans are provided by a financial institution appointed by the government and instead of charging you the interest, they charge the government. Pretty cool!

Have a google before you commit and check if it is available in your area. Generally, they are location driven (E.G. NSW only or customers in the following postcodes etc.) and they change often. It would be crazy not to look!

Chapter 8

Are there any hidden costs and can you avoid them?

Who likes hidden costs? You nailed it, no one. Ever.

In solar, generally speaking there aren't any "hidden" costs or charges. The big thing you need to watch out for are "variations".

Variations in many aspects of business and especially trade industries are common. They occur when something that was originally planned can no longer happen and thus a variation to the plans need to be made.

Often, no one's fault at all and just the nature of business. Due to this it is commonplace the customer foots the bill.

Due to the nature of variations they can quite easily feel like hidden or secret costs.

In solar, variations can happen. No one is perfect and things change between quoting and installing. However, they are much more common when you buy and over the phone off the shelf solar system.

This is because your specific site requirements won't have been considered when quoting the job. Things that will easily impact the cost of a job when quoted properly are:

- Where will the inverter go?
- Is there room in the meter box or will there need to be an upgraded metre box put in?
- How long will the cable runs be from each array?
- What condition is the roof in?
- What is access like to the property? (solar panels are big and heavy!)
- Are there any site specific requirements that need to be factored in?

Chapter 9

Once it's installed, what happens next?

Once the system is installed, you're super excited, the shiny new panels are on your roof and for the first time in your life you can't wait to get your first electricity bill.

WAIT..... it's not that easy, the next part of your solar journey is extremely important and you hear terrible stories about it all the time. We are talking about ensuring the correct electricity meter is installed so your solar can be turned on and be able to send electricity back to the grid.

Once the solar system is installed, the solar installer will need to complete a compliance form. This form will be sent back to the solar retailer who will then send it to you. Before you get to this stage and just after your purchase of the solar system, your solar retailer will apply for a Permission to Connect (PTC) with your distributor, the people who put up the poles and wires.

Each electricity retailer will have their own form you need to fill out stating some information about who installed the solar, what size system it is and other details.

Once you've sent the compliance form, PTC and the electricity retailers form, expect a new meter to be installed in 10-20 days.

The new electricity meter installed is a bio-directional electricity meter, also known as an import and export meter. This meter will allow you to consume electricity from the grid and also send your excess electricity to the grid to earn a credit.

Chapter 10

Who do you call if something goes wrong?

A good solar system, installed by a good installer is meant to last on your roof for 25 years but it's not uncommon for something to go wrong every now and again. As an example across Australia the NBN was rolled out, those who have got new modems lost connection to their solar inverters wifi, which is important for tracking and monitoring the system.

The big question is, with all these warranties in solar, who do I call if there's a problem?

The first person you should contact is your solar retailer. The retailer who you purchased the system from is the one who is meant to service the installation, they warrant the parts and installation of the system.

If your solar retailer is no longer around, you should contact the electrician who installed the system.

If you can't get a hold of the retailer or the installer, you're left to contact the manufacturer of the stock. Many manufacturers use wholesalers in Australia to service their warranty claims, you may get referred to a wholesaler in Australia to help with the warranty claim process.

If you can't get a hold of the solar retailer, the solar installer or the manufacturer of the goods, it's like you've run out of options to have the issue fixed for free. The next person to get in touch with is a solar installer or electrician to help you with the issues, who will charge based on the job.

Conclusion

That's it!

Did we cover off every single detail? No. There is just too much to take and we don't think you would get as much value out of it. However, you should now be in a great position to go out and a great deal on a great system, confidently!

In the meantime, if you need anything at all, we have an active [YouTube Channel](#) (make sure you subscribe for updates!) that we update regularly with educational videos plus we are only ever a phone call or email way.

Give us a call on 1300 22 92 92 or email us at hello@teho.com.au



About The Products

These are questions and details you need to know before buying. Fill in the answers so you can refer back as you go.

1. What brand are the solar panels?	
2. What is the solar panels product warranty?	
3. Is the solar panel performance warranty and output at 25 years? (minimum)	
4. What brand is the inverter?	
5. What is the inverters warranty ?	
6. What brand is the racking?	
7. What is the warranty on the racking?	

About The Solar Company

These questions and the answers that follow are fundamental to know you are dealing with a good, reputable solar company.

1. Was a full site design provided (panel layout and quote)?	
2. Is the solar company 100% Australian owned?	
3. Does the solar company have a physical office address NOT a virtual office address?	
4. What is the installation warranty?	
5. What is the installation time frame ?	
6. Will they take care of all pre approval paperwork?	
7. What deposit is required?	
8. When is the balance of the final payment due?	
9. Is there any costs outside of the final price quoted?	

About The Site (your home)

Make sure you know the answer to these questions to ensure best performance and no install day "variations" are required.

1. Was a site assessment undertaken?	
2. Was an shade analyses undertaken?	
3. Does the meter box require an upgrade?	

Batteries

If you are getting a battery, make sure you have covered these points and answered these questions to get the best battery for your home.

1. What size is the battery in kWh?	
2. Is that enough based on your usage?	
3. Does the battery include black out protection?	
4. If so, what appliances will be backed up?	
5. What is a manufacture warranty ?	
6. What is the degradation warranty?	
7. What is the depth of discharge?	

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THANKS FOR READING!



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