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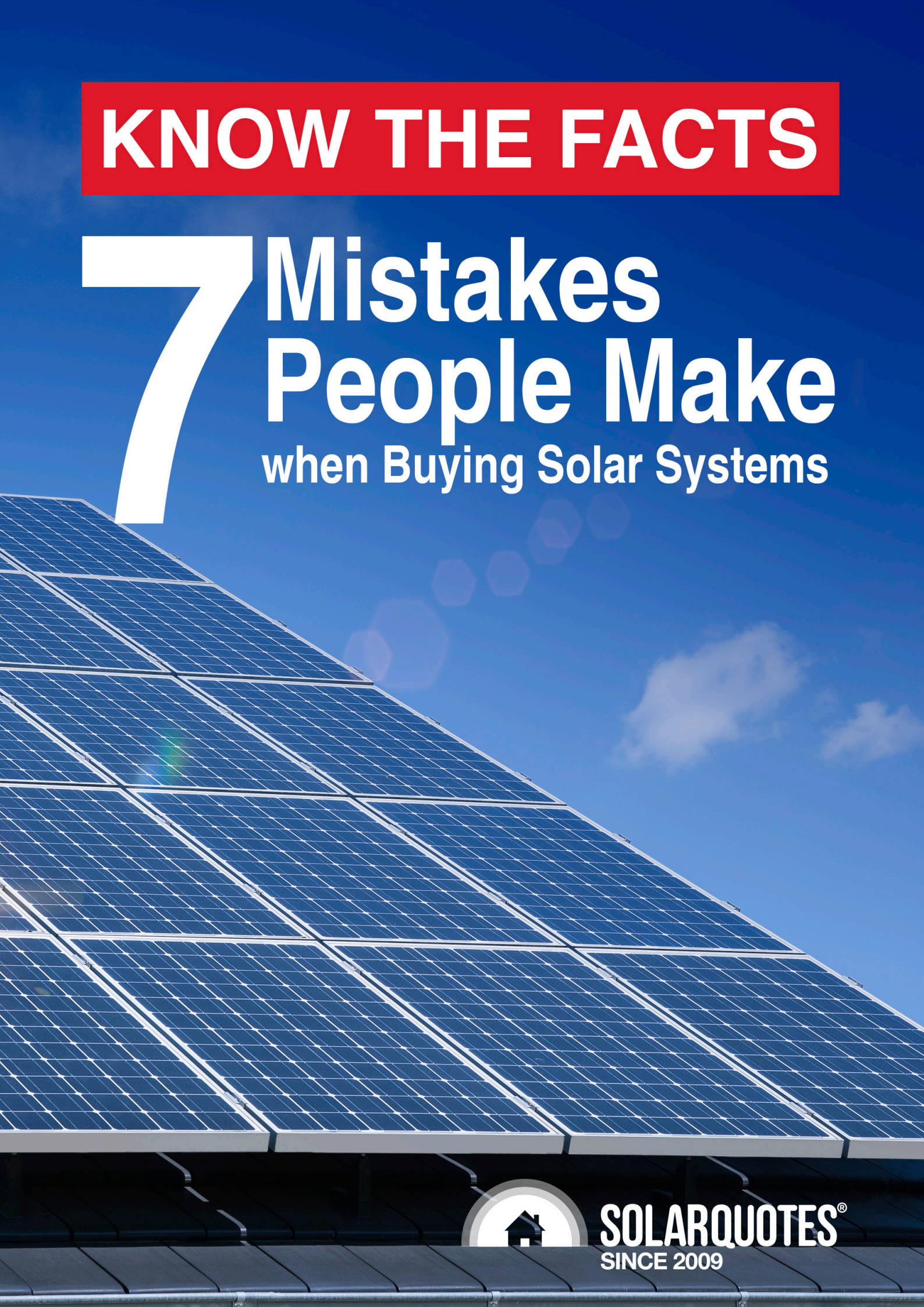
7 Mistakes People Make when Buying Solar Systems



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7 Mistakes People Make When Buying Solar Systems

By Finn Peacock

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Mistake #1: You don't know what size solar power system is right for your home

"What size system should I buy?" is probably one of the most common questions I'm asked through SolarQuotes.

Over the 10 years I've been advising people about solar, my advice has changed dramatically.

10 years ago solar cost about $2,500 per panel. Today it is closer to $200 per panel.

10 years ago I would have told you to carefully look at your home's energy usage, then I'd show you how to buy just enough of those expensive panels to cover that use. It would take half an hour or so to work it all out.

Today my advice is a little less sophisticated:

"Fill your north, east and west facing roof with panels!"

I can appreciate that I now sound like a sleazy solar salesman who simply wants you to spend as much money as possible, but please bear with me and I'll explain why I honestly believe this is the best advice I can give you.

The biggest regret I hear from solar owners who have experienced the bill busting value of solar is that they wish they had bought more panels.

In 2018 solar panels are cheap. And as anyone who's got a bill will know, electricity is expensive.

When I run the numbers, I find that in many situations, when people buy a bigger solar system they get a better financial return. There are 2 reasons for this:

- Even when you generate more solar energy than your house can use – most postcodes can get a good price for selling this surplus solar back to the grid (despite what you may have heard!)
- Bigger solar systems are much cheaper per panel than smaller systems.

Getting paid for your surplus solar

When you have a solar system, the solar electricity generated will always try to satisfy your home's demand first. This saves you the full cost of buying that electricity from the grid. Any excess solar you generate above your home's demand is exported to the grid and you get paid for it.

In Australia, the price you get for excess solar energy exported to the grid is called a 'feed-in tariff'.

The minimum feed-in tariff in each state at the time of writing is shown in Table 1.

State/Territory	Mandated minimum feed-in tariff per kWh
NSW	No mandated minimum
ACT	No mandated minimum
VIC	9.9c
QLD (regional)	10.102c
QLD (south-eastern)	No mandated minimum
WA	Varies from 0c to 48c depending on location
NT	25.67c
TAS	8.929c
SA	6.8c

Now you probably aren't getting too excited by those numbers, so the good news is that, if you have electricity retailer competition (i.e. everywhere except the Northern Territory, Western Australia, Tasmania, and rural Queensland), you can get a better feed-in tariff by shopping around.

For example, in South Australia, at the time of writing (July 2018), you can get up to 18c per kWh fed into the grid – more than double the mandatory minimum. Table 2 shows the best feed-in tariffs in each part of Australia at time of writing.

TABLE 2: Best feed-in tariffs by state

State/Territory	Best retailer feed-in tariff per kWh
NSW	17c
ACT	15c
VIC	12c
QLD (regional)	10.102c
QLD (south-eastern)	16c
WA	Varies from 0c to 48c depending on location
NT	25.67c
TAS	8.929c
SA	18c

The cost of generating this solar electricity (known as 'Levelised Cost Of Energy'), taking into account the cost of buying the system, should come to under 5c per kWh. This means most Australians can make a healthy profit even if they export most of their electricity.

Don't make the mistake of thinking that exported energy is wasted – it can be a nice little earner.

In fact if you run the numbers, these feed in tariffs make it worthwhile for most people to simply fill their roof with solar.

Especially when you consider, as mentioned already, that the more solar panels you install the cheaper they become per kW.

How solar gets much cheaper if you go big.

At the time of writing, a typical price for a high quality 3 kW, 12-panel system is about $4,500. That's $1,500 per kW for the first 3 kW of panels.

Online resource: An up-to-date list of ballpark pricing is available here: solarquotes.com.au/cost

But for most people the optimal size will be 6.6kW. As I'll explain later, 6.6 is the magic number that optimises your solar 'rebate'.

A typical price for a 6.6 kW, 24-panel system is $6,500. That means you're getting an extra 3.6 kW for $2,000. That's just $550 per kW for the last 3.6 kW of panels. This means that the last 3.6 kW of panels comes at close to a third of the price of the first 3 kW.

Sizing secret: The last 3.6 kW of panels can be a third of the price of the first 3 kW.

In terms of sizing your solar system, this means that, as long as you are getting a reasonable feed-in tariff in your area, you have the space on your roof and you can find an extra $2,000, you're almost certainly better off getting a 6.6 kW system because it should provide a better return.

The only parts of Australia where the feed-in tariff is unreasonably low, in my opinion, are some parts of Western Australia where you have no retailer competition. Here, the feed-in tariff, at the time of writing, is about 7c per kWh.

But I suggest that even you folks in Western Australia should go large because:

- an important benefit of a larger system is increasing self- consumption on cloudy days, and early and late in the day
- you'll thank me when you get batteries and an electric car in a few years, and
- Western Australia is one of the cheapest places in the country to get solar, so you'll probably pay less than your non-Westie countrymen and women for your solar system to start with

Key point: If you have a big enough roof, my advice is to go for at least 6.6 kW of panels, no matter where you are in Australia and no matter how small your daytime consumption. It will almost certainly will give you a better return than a smaller system.

If you are a heavy user of electricity (more than $1000 quarterly bills), you should go larger than 6.6 kW if your roof and your electricity network allow.

When good installers come out to give you a quote, they should analyse your energy bill for you and project your savings based on the system size that they recommend – so you can then decide if you think solar is right for you. They'll also know all the local rules – so can advise how big you can go in practice.

So I gave you a really long answer to the question: “how big should I go?”. The short answer is simply:

If you have a common single phase supply, get a 6.6kW system.

If you have high usage (more than $1000 per quarter) go bigger, generally as big as you can. Most roofs will fit about 10kW.

Mistake #2: You don’t know what panels deliver on quality

There’s a minefield of crap solar panels out there (my favourites are ones that sound vaguely German but are 100% made in China) – so rather than tell you each and every brand to avoid, I’ve put together the following chart that has all of the brands I’m familiar enough with to be able to recommend, along with where they sit on a scale of price and quality.

(This means that if you ask me about any brand that isn’t on this chart, my reply will most likely be “I’m not familiar with that brand, so to be on the safe side, stick with one on my chart”)

How to read this chart: We consider all of these brands to be reputable and well supported in Australia.

For a 6.6kW system, expect there to be about $2,000 difference between a system that uses entry-level brands and one that uses top-end brands.

I also have a chart for solar inverter brands that I trust **here**.

Mistake #3: You don't know if you need a single inverter, or multiple inverters

This comes down to two things:

1) Whether you want or need what is known as "panel level optimisation"
2) Whether your house is single-phase or three-phase

There's two core types of solar inverter technology – "string" inverters (with or without panel optimisers), and "micro" inverters:

String inverter
(1 per solar system)

Micro-inverter
(1 per solar panel)

A string inverter is about the size of a briefcase and goes on your wall. The panels all feed into this one big inverter.

String inverters are commonplace and the cheapest type of inverter technology, but they run into problems if your roof has shading issues (and when I say shading issues, I mean "in the winter a tree shades one corner of your roof", not "your neighbours three story house blocks out the sun 9 months of the year").

This is because with a standard string inverter, shading one solar panel results in performance drop in all of the panels (kind of like standing on a hose).

This is where "micro" inverters or "power optimisers" come in. They go on the back of each individual panel (instead of the wall), and optimise the output of each panel independent of the rest. So if one panel is shaded – only the output of that panel will drop.

The downside is that micro inverters/power optimisers on every panel cost about 20% more than a good quality string inverter – so you are paying a premium for the benefits they provide.

If that was all clear as mud, I've made a video **here** that is much easier to understand.

Top tip: If you have shading issues then the cheapest way to optimise your panels is a regular string inverter with optimisers on only the panels affected by shade. This adds about $100 per shade affected panel to the price of the install. The best optimisers to do this are known as 'Tigo' optimisers. This is a great way to mitigate shade from a lone TV aerial or stink pipe.

With regards to single-phase and three-phase households:

(If you don't know if your house is single phase or 3 phase, then it is super important that you engage good installers for quotes who will give good advice based on your configuration)

If your house is single-phase, then you can either use

- a single-phase inverter
- or microinverters,
- or a single phase inverter with optimisers.

If your house is three-phase, then you can either:

a) use one single-phase inverter,
b) use multiple single-phase inverters,
c) use one three-phase inverter (with individual optimisers where required) or
d) use microinverters/power optimisers spread across the three phases.

All of these options are valid – but I personally recommend using a single 3-phase inverter on a 3 phase house. In my experience they make for a more reliable system due to a common problem called "voltage-rise' which I won't bore you with the details of here. If you have shading issues, then you can add optimisers to only the panels that are affected.

Mistake #4: You don't know how to find a verified installer

A fact that you might not know is that to claim the solar "rebate", you need to have a system that uses panels and inverters that are approved by the Clean Energy Council (CEC) and installed by a CEC accredited installer.

Note that the CEC accredits individual solar installers, not solar companies themselves.

In my opinion, the quickest and easiest way to get quotes from reputable solar companies that use approved hardware and installers is to use the free 'get quotes' service that my website, SolarQuotes.com.au, provides.

I've spent the last 9 years vetting companies (with a 14-point vetting checklist!) and only recommend companies that pass my "grandmother" test – meaning if I wouldn't recommend a solar installer to my grandmother, I won't recommend them to you!

However, I understand that you might want to look for these companies yourself and not rely on my fancy installer-referral algorithm. Let me just wipe away a tear and I'll show you the best way I think you can manually find CEC accredited installers:

1) Go to the official CEC "Find an installer" page: solarquotes.com.au/findcec

2) Click on "Search by location" and enter your suburb.

3) The map will refresh with a red pin for every local electrician who is qualified to install solar. It will give you their individual name and their company name (unless they are a sole trader) and a contact phone number.

This is a great way to find your nearest CEC-accredited electrician. The only problem is determining how good they are at installing solar, as well as what solar equipment brands they use.

Google is your friend here – search "(their name/company name) reviews" and see what comes up.

And you can always search their name on my website, which has over 30,000 reviews of solar installers.

Mistake #5: You don't know how to save thousands off your energy bill

A big solar system will greatly reduce your energy bills. But there are simple things you can do to get it as low as possible. I do these things and my bills are practically zero with a 6kW system (and an energy efficient house).

First you want to 'self-consume' as much solar as possible in your home, because solar is the cheapest form of energy you can use.

You do this by shifting as much of your energy usage as possible to daylight hours – So, putting appliances like washing machines and dishwashers on timers is a great way to shift energy loads to daylight hours.

But there's also a big way to save a lot of money off of your energy bill that doesn't involve solar at all – energy efficiency!

Before you groan and think I'm going to recommend you live as a hippy in a tent in your backyard to get your energy usage down, instead I'll tell you about these simple energy efficiency measures that can seriously reduce your overall consumption:

- Swap out all light bulbs with LED's, which are way more efficient than halogen bulbs/downlights
- Replace that old fridge/freezer with a new, more energy efficient one (look for the "star rating" that's prominently displayed on appliances)
- If you use a clothes dryer frequently, look into replacing it with a newer "heat pump" model.

- Seal up any gaps in your doors/windows – you'd be amazed how much heat you lose through these.
- Insulate your house – either by replacing old insulation or by installing the highest "R"-rating possible in a new home.

I'll also point out that installing battery storage is not a good way to save money right now. At the moment, installing a decent amount of battery storage (around 10kWh) will set you back about $12,000, take around 15 years to pay off, and will have a warranty for only 10 years (or less!). You do the maths.

Instead of getting batteries, my recommendation is simply to install as much solar as you can fit on your roof – the returns you'll get will beat any bank term deposit, and when batteries drop enough in price to be worth investing in, I'll be shouting it from the rooftops.

Mistake #6: You don't know how to maximise your solar rebate

Another little-known fact about the solar "rebate" is that it is awarded based on the number of panels you install – it has nothing to do with the installation itself or even the inverter.

So – the more panels you install, the more rebate you're entitled to. At the time of writing (July 2018), the 'rebate' is worth about $630 per kW installed – so a 5kW system would attract around $3,150 in rebates.

I'll also point out that the solar installer claims the rebate on your behalf – so leave the paperwork to them.

Note that the rebate is applied as a 'point of sale' discount, not as a cheque you get in the mail – so if you see an ad in the paper, on the telly or online, there's a 99.9% chance that the price mentioned already includes the discount from the rebate.

You can install 33% more panels than your inverter is rated for and still claim the rebate (this is known as "oversizing") – so a 5kW inverter can have 6.6kW of panels installed on it and still be eligible. This is why I talked about 6.6kW as the optimum size for most homes earlier.

The price difference between a system that uses a 5kW inverter with 5kW of panels and one that uses a 5kW inverter with 6.65kW of panels will be quite small – because the cost of the extra panels will be offset by the additional rebate – and will generate about 30% more energy overall.

Don't worry about "overloading" your inverter with extra panels – oversizing is very common and doesn't harm the inverter at all. And don't worry about losing energy to a smaller inverter – for lots of technical reasons any energy loss from a small inverter is negligible.

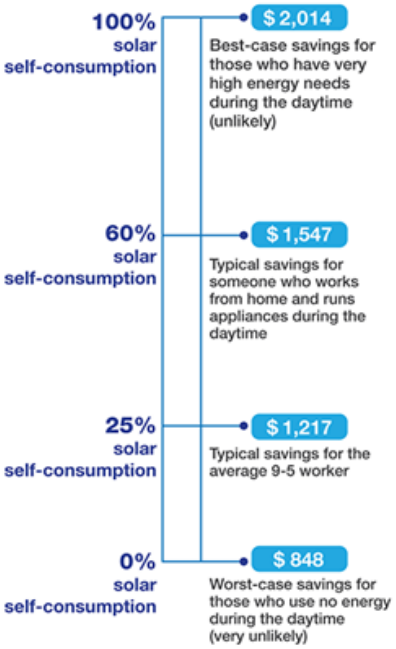
For further reading, I have an in-depth blog post on oversizing **here**. Most good installers will recommend oversizing as a great way to maximise that solar 'rebate'.

Mistake #7: You don't know how to calculate your solar paybacks

Say you pay $6,500 for a 5kW system – how long will it take for you to save enough off your energy bills to break-even on that purchase?

This all comes down to how much you pay for grid electricity, as well as what you're paid for feeding excess electricity back into the grid (aka the "Feed in tariff").

Using Sydney as an example – which has electricity costs of around 28c per kWh and a feed-in tariff average of about 12 cents per kWh – you can see that if you exported *all* of your generation to the grid, you'd save around $848 per year, meaning it would take about 7 ½ years to break even on that $6,500 system.



But – if you self-consumed about 25% of your solar generation and exported the other 75% (which is a pretty reasonable assumption to make for the average 9-5 worker), then you'd save around $1,217 per year off your electricity bill, reducing your break-even point to 5.3 years.

The typical lifespan of a good quality solar system is at least 25 years – so once you recoup the initial price of the system, you've got another ~20 years of savings to collect from that system, putting you firmly in the black. Try getting that kind of return from the bank!

So – in conclusion:

- Fill your roof with solar if your budget allows it.
- Shop around to get the best "feed in tariff" on the excess solar you sell to the grid
- Use my chart linked above to choose a reputable solar panel and inverter brand
- Consider microinverters or optimisers if your roof has shade issues

- Take simple energy efficiency steps in your home to reduce your energy bills before you even put solar on.
- Oversize your system to maximise your solar rebate
- Use my website, www.solarquotes.com.au, to request quotes for solar and be put in touch with pre-vetted installers that I trust.

BONUS SECTION: Should you buy batteries with your solar?

Despite the hype about solar battery storage, any honest solar installer will give you the same advice: Batteries will not pay for themselves in 2018.

At the moment, something like a Tesla Powerwall battery system will cost you around $12,000 to install, and will take about 15 years to pay back, with a warranty of 10 years.

You do the maths.

Unfortunately, all the hype in the mainstream media about batteries has made people question the viability of solar without batteries - to the extent that people are waiting for ‘affordable batteries’ before they invest in solar.

But even though the cost of solar battery storage is projected to decline year-over-year, it makes no sense to wait to get solar.

Every day you don’t have solar is another day you do have to pay high electricity bills. A well designed solar system without batteries can give you tiny bills.

Waiting 2, 3 or 4 years for batteries to become affordable means another 2, 3 or 4 years of high bills.

One day, batteries will make lots of sense - and when that day comes they can easily be added to any existing solar system using a method called AC coupling.

So don’t lose years of savings waiting for cheap batteries to arrive.

Consider going solar now - with the knowledge that you can easily retrofit batteries later when they will pay for themselves - not before.

If you’re considering installing solar panels for your home or business, SolarQuotes can help you get quotes from high-quality, pre-vetted installers quickly and easily - visit www.solarquotes.com.au/quote/

About Finn Peacock

I'm a Chartered Electrical Engineer, Solar and Energy Efficiency nut, dad, and founder of SolarQuotes.com.au. My last "real job" was working for the CSIRO in their renewable energy division. Since 2009 over 350,000 Australians have used my site to get quotes for high quality solar from pre-vetted solar installers.