



SOLARQUOTES[®]
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SOLAR FOR YOUR BUSINESS '101': A BEGINNER'S GUIDE



Image credit: MC Electrical

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This guide is for you if you are considering investing in solar power for your business.

Here's the bottom line: If your business can afford to pay its power bills, it can afford commercial solar.

Unlike households, which tend to use more energy before 9am and after 5pm, most businesses operate (and therefore use the vast majority of their electricity) between 9am-5pm.

This makes commercial enterprises an ideal fit for solar.

Our [residential solar 101 guide](#), which only takes about 10 minutes to read, has all the information we think you need to know about the basics of solar, such as which solar panel brands and inverter models to consider, and if batteries are worth it.

However, commercial-sized solar systems (10 kW and up) carry some unique design challenges and considerations, which we've summarised in the following short guide.

If you're feeling pretty confident about PV systems already and you're just looking to get prices from quality pre-vetted installers that I trust, [click here for a commercial solar quote](#).

Otherwise, here's what you should know before you get quotes for solar for your business:

- 1) [The three distinct size breaks for commercial solar systems.](#)
- 2) [Issues with connecting larger systems to the grid](#)
- 3) [Typical costs and paybacks](#)
- 4) [Monitoring and maintenance](#)
- 5) [The "commercial solar rebate", aka STC's versus LGC's](#)
- 6) [Why commercial solar doesn't always need a roof.](#)
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If, after reading this short guide, you have any unanswered questions feel free to contact me directly:

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#1 The three distinct size breaks for commercial-sized systems

(To put commercial-sized solar systems into perspective, the average residential solar power system size in 2018 is 5kW, or around 20 panels)

Less than 30 kW (Up to about 100 panels)

These systems use the same hardware and fall under the same grid connection rules as residential systems - meaning that installers who do residential-sized installations can usually handle these installs without needing any 'specialist' commercial solar power knowledge.

A 30 kW system will generate about 120 kWh of electricity a day on average over a year, which will save approximately \$2000 per month if 100% self consumed (which is possible in commercial situations).

30-100 kW

Solar arrays of this size require special systems to protect the grid from all the electricity they can generate, and need special permission from your local electricity network (DNSP) to connect to the grid. A commercial solar specialist is recommended for systems this size (and larger).

Systems in this size range are typically installed on medium sized offices, local clubs and small retail businesses.

Over 100 kW

If you go over 100 kW, you are no longer eligible to claim the STC "rebate". But don't panic! You still get a subsidy known as 'LGCs' (covered in point #5 below in more detail). This is paid every year and is based on how much energy the system actually generates. This adds some complexity and paperwork, as you have to install a special meter and report your generation every year to claim your 'rebate'.

These are typically installed on hotels, large offices, wineries and small to medium factories.

Over 250kW

These systems are very large, and I recommend a specialist installer who understands the specific engineering requirements of such big systems. They generally go on large shopping centres or solar farms. [Email me](#) for a referral.

#2 Connecting larger solar power systems to the grid

When installing systems 30 kW and up, it is very important to see, in writing, the network's approval for the system. Every solar power system connected to the grid must be approved.

For larger commercial size systems, most (if not all) approvals come back with conditions. For example, "This 55 kW system has been approved, subject to the system having an export limiting device set to 10 kW".

Knowing this is extremely important, as it involves a substantial amount of cost and equipment to meet these conditions - and export limiting your system may affect its projected savings.

Some less than reputable commercial solar installers may not disclose this, as they may not have factored it into their costings to begin with.

Their logic is that if they have to revise their quote upwards after factoring in additional network compliance work, they may lose your business - but if they ignore it and continue on, they can hope that the system won't be inspected by the network or its associates.

For this reason - obtain a formal copy of the approval and seek an opinion from an independent consultant, if possible. Investing in a large solar panel array involves a lot of capital, and you want to avoid any nasty surprises.

To throw in another layer of bureaucracy - most councils require their approval to install systems greater than 10 kW in size.

Be sure to cover this with the solar company of choice, and also confirm with your local council. Most good commercial solar companies will have an architect and private certifier ready to go to expedite the approval process.

#3 Typical solar costs and paybacks

Good quality commercial solar will, as a ballpark figure, cost around \$1,000 - \$1,300 per kW installed. Using [microinverters or power optimisers](#) will add around 15-20% to the overall final cost, compared to using a string (or central) inverter system.

An important point to note is some commercial premises have signed long term tariff contracts with their electricity retailer. This will affect future paybacks/savings from going solar. You need to dig up the terms you agreed to and understand them. Of particular importance is when your contract will expire and the projected increase in tariff charges.

Be diligent in chasing this up, as you may be passed on from department to department. A lot of commercial solar companies will be able to educate you with their own knowledge of how installing solar panels will affect your tariff.

It is important to note that with electricity bills for businesses, the cost of "raw consumption" tends to be low. Most of the electricity usage cost is in other fees and charges, which you need to confirm can be reduced or offset by installing a solar power system.

Do some research yourself to ensure "the pitch" is as good as it seems. You will be surprised!

To summarise:

- Verify your contract duration with your energy retailer.
- Confirm what charges on the bill will be reduced when solar panels are installed, and by how much.
- Verify what the companies quoting you claim in relation to the above points. Do your own research!

#4 Monitoring and maintenance

Do not buy a commercial solar system that does not monitor both solar energy generation and electricity consumption.

Without combined generation and consumption monitoring, you will not have the information you need to keep your post-solar bills as low as possible.

It's a good idea for a business to task someone within their organisation to be responsible for monitoring a system's weekly generation.

In the commercial solar space, it is not uncommon to see a business that has only been sold simple solar generation monitoring (the cheap salesman's version of "monitoring") and believes the building is consuming a fair bit of this energy generation they are seeing, convinced by the cowboy salesman that "analysed their load profile".

The salesman's logic is "Well, the system will generate 200 kWh per day conservatively, your consumption is approximately 150 kWhs during the day, meaning that this would be more than enough to cover most of your loads".

However, solar is a form of power factor correction, so this generation could go "into the abyss" and you would not see the kinds of electricity bill reductions that were promised.

Any good monitoring solution will provide you with the ability to check your gross consumption - meaning you will be able to view, for any particular hour, the 'before and after' of solar's contribution to your business. One brand that I can recommend is [Solar Analytics](#).

A maintenance schedule is important to adopt. As per requirements by the CEC, an installer must provide a maintenance schedule to the customer. For larger commercial systems, installers will offer a very comprehensive and tailor-made schedule to either conduct themselves, or for the customer to arrange from a third party.

Typically, an installer will offer a check every 6 months for the first 2 years, and would have their own preferred pressure washing company that they can recommend when dirt and other materials start to affect the performance of the system.

Panel cleaning should be undertaken on a case by case basis and not scheduled.

Note: Some installers will attempt to not honour a warranty if the maintenance is completed by a third party - which is a sneaky way for them to make more \$. Avoid these guys.

#5 The "commercial solar rebate" - aka STC's versus LGC's

Solar systems 99 kW in size and under are eligible for a financial incentive known as the "STC program". A simple explanation of this is that you are paid based on the expected generation of a system over the next 13 years, to the tune of approximately \$630 per kW of solar installed (this varies according to market conditions and installation location).

This 'rebate' is almost always applied as a point of sale discount to a solar quote - so if you were quoted a 30 kW system for \$30,000, this would already have the ~\$19,000 STC 'rebate' applied.

However, once your system is 100 kW and over, you are no longer eligible to claim STC's (Small-scale Technology Certificates), and must instead claim LGC's (Large-scale Generation Certificates).

The key difference is that while the STC 'rebate' is paid in advance and essentially works as an upfront discount of the cost of a system, the LGC 'rebate' is something that must be accurately tracked, reported and claimed each year.

To claim LGC's, you first need to register to become an "accredited power station" with the Clean Energy Regulator. Your solar installer will assist you with this process. They then need to ensure that your metering is up to the National Electricity Market standards, so you can properly track your generation.

Ultimately, this means that large-scale (over 100 kW) commercial solar installations do not attract an up-front discount like sub-100 kW installations do - which is an important consideration when calculating the rate of return from a solar installation, as well as cashflow-related issues for your business.

#6 Commercial solar designs and layouts - or why commercial solar doesn't always require a roof

Weight is one of the biggest factors when it comes to installing a commercial-sized solar array on a roof.

It is vitally important that a structural engineering certificate is produced and an engineer has physically inspected the site.

Be sure that a detailed roof plan is shown to you well before installation.

Flat panel arrays are generally more common compared to tilt-frame installations. They are cost effective (tilt frames add additional cost) and can be altered to suit last minute variations easily.

Ground mount systems are an option if a roof is unsuitable for solar, but they represent a niche type of commercial installation and require a lot more planning (and cost!) compared to a roof-mount installation.

#7 Financing a commercial solar system

There are four main ways commercial systems can be financed:

1) Cash/CapEx

Technically not finance - but still a common way to purchase a system.

The cash price for a solar system will always be the lowest (leading to the shortest possible payback time), as fees and charges involved with finance or leasing increase the overall cost of a system.

As a potential downside, larger commercial solar systems represent a significant expenditure, which could potentially be used elsewhere in the business.

2) Power Purchasing Agreement (PPA)

PPA's are a type of solar leasing arrangement.

The core idea is that a third party retailer installs a system on your property (meaning it legally owns it, and is obligated to maintain it), and enters an agreement with your business to sell you a set amount of electricity over a long term agreement.

The main benefits are that your electricity costs overall are lower, because the price for electricity under a PPA will be cheaper than what you are currently paying the retailer, and that there is no upfront cost for installing the system.

The downside is that you will be obligated to buy all of the electricity generated by the system, regardless of whether this energy is self-consumed by your business or sent to the grid for a feed in tariff.

As self-consumed solar energy is far more valuable than solar that is exported to the grid for a feed in tariff, if you are considering a PPA it is very important to have the system optimally sized for maximum self-consumption.

PPA's set out the price of solar energy for the duration of the PPA. While a low price for year one is obviously a good start, it's very important to read the fine print on how the prices will be adjusted over time.

The best PPA is one that, over its term, increases its prices at a lower rate (or not at all), rather than the one with the lowest starting price and then inflates by 5% p.a. (compound indexing is devious!)

3) Loan

A business/green loan will allow you to negotiate pricing with a solar installer as if you were a cash buyer. If the savings from a new commercial solar system are more than what you pay on interest for the loan - you can see why this would be a no-brainer option to avoid taking a big cashflow hit by using cash/capex to buy a solar system.

4) Building Upgrade Finance (SA, VIC and NSW only)

Some states now offer what's known as "building upgrade finance" To quote the SA Government's [website](#):

"Building Upgrade Finance (formerly referred to as Environmental Upgrade Finance) is a mechanism which helps building owners to access loans to improve the energy, water and environmental efficiency of existing commercial buildings.

These initiatives help address barriers to building upgrades, such as access to capital and issues relating to building owners outlaying for the cost of upgrade while tenants receive the benefits, such as lower electricity bills.

As these are a relatively new offering, it's best to check with your state government (if you are in SA, VIC or NSW) for further details about eligibility.

#8 What to expect from your initial installer visit/consultation

Any commercial solar installer worth their salt will conduct an energy profile analysis on your property.

The main things they will look for are:

- The billing structure - what [kind of tariff](#) are you on?
- The charges that cannot be avoided. Ancillary charges, AEMO charges, service availability charges, etc.
- The energy consumption during daylight hours - especially in winter. This will allow them to determine what's more important - roof space or what you, as the customer, actually need. For example, you may need a 100kW system, but only be able fit 50kW on your roof - an energy profile analysis will be able to definitively tell you if it's still worth it to go ahead.
- Arranging of site visit/inspection
- Understanding your needs and goals
- Analysis of power bills and interval data (to be able to accurately project paybacks)

#9 The importance of IRR and discount cashflow analysis as part of your quote

IRR (internal rate of return) is a better metric than ROI because the capital invested in a solar power system is essentially gone after its 25 year lifetime.

Good commercial solar installers should present a pretty thorough cash flow model as part of their quote. Since this is coming from a salesperson, it's a very good idea to get your accountant to check over it.

It's exceedingly rare for even total shonks to put false numbers into an analysis (numbers don't lie, and even a total cowboy will realise that if they put false numbers on paper it can come back to haunt them) but the devil is in the assumptions (PPAs and leases put different emphasis on assumptions about future interest rates and electricity price rises, but these are both underpinning the calculations that they present to you).

#10 The difference between commercial-sized solar panels and residential-sized solar panels.

Because residential roofs, in general, are much more restricted in terms of usable roof space (compared to say, a factory), residential sized solar panels are typically '60 cell' panels.

Commercial sized roofs do not typically need to worry about space anywhere near as much, and therefore larger, more powerful 72-cell solar panels are used. This also results in lower installation costs, as you need less panels overall.

#11 Inverters in a commercial-sized solar system.

Broadly speaking, there are three options when it comes to choosing a solar inverter setup for a commercial scale job

1. Microinverters or optimisers
2. Chained string inverters
3. Large central inverters

Cost is key in a commercial system. [Microinverters and optimisers](#) generally carry a 20% premium in price over conventional string inverters, but offer a variety of safety and performance benefits.

When dealing with solar installations on the commercial scale, it can be hard to justify an additional \$50k expense for microinverters (for example) compared to a string inverter system that will effectively almost produce the same power.

String (or central) inverters represent a more cost-effective option - but the vast majority of commercial installers, in our experience, tend to lean towards chaining residential-sized inverters together instead of using one large central inverter.

This industry preference is for a variety of reasons:

- Few roofs suit a huge single array, and multiple smaller inverters gives design flexibility with different strings ([MPPT's](#))
- Access. It's much easier to move and install briefcase-sized inverters compared to a central inverter that is the size of a small room - especially if you need to use heavy machinery to lift and position it.
- Redundancy. One failure doesn't cripple the entire system.

Ultimately, it is up to the solar installer to make their recommendation based on your unique situation, and for you to decide whether you want a 'no frills' system or a work of electrical engineering art on your roof.

#12 Commercial solar contracts, and when Australian Consumer Law applies to commercial solar.

[Australian consumer law](#) gives consumers an arsenal of legal protection and recourse (whether they're aware of it or not) against shonky solar installations.

However, it only applies to goods and services that are worth less than \$40,000.

Generally speaking, this means that only systems that are roughly 40kW and under will be covered by Australian Consumer Law.

However, Australian Contract Law would, presumably (we are not lawyers!), cover larger systems \$40,000 and over.

Meaning that it's extremely important that you understand the contract you're signing, and both parties are clear on their responsibilities.

The bottom line is this - commercial-sized solar systems are a big investment. We'd strongly recommend getting a lawyer to look over any contracts before you sign them.

#13 Batteries - are they worth it?

While it always depends on the unique needs of a business, given the amount of consumption a commercial building will have, battery storage is even more unattractive for commercial installations than it is for [residential installs](#).

Unless your business has some kind of critical need for energy storage and backup power, it's better to save your money (or funnel into into an even larger solar array) than to buy battery storage.

The next step

So there you have it, my '101' guide to solar power for your business.

If you have any burning commercial solar questions, my contact details are:

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If you're considering installing solar panels for your business, SolarQuotes® can help you get quotes from high-quality, pre-vetted installers quickly and easily:



- Paul, South Melbourne, VIC

Happy Solar Power Hunting!

Finn Peacock

Finn Peacock, founder of SolarQuotes.com.au

Thanks to [SunSeeker Electrical](#) and [SunTenants](#) for their help with this guide.



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 339,000 Australians have used my site to get quotes for high quality solar from pre-vetted solar installers.