

SOLAR + BATTERY STORAGE IN NEW ZEALAND

SOLAR
KING

Is it really
worth it?

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THANK YOU FROM THE AUTHORS

Kia ora and thank you for downloading our report especially designed for Kiwi homeowners.

If you have been considering a solar system with battery storage (especially if cyclone Gabrielle has got you thinking), then this information could save you a lot of time – and potentially a lot of money. Here's Why:

It's not for everyone.

That's why we've created this short report so you can decide for yourself.

We've designed and installed thousands of systems across the country from the Far North to Southland, and we've never been busier with enquiries about solar + batteries.

Many are concerned about long term power security and their emergency power options. Some just want to know if solar is financially viable or worth it, whether grid-tied or totally off the grid (we do both).

The reality is, we may not be able to help you. But if reading this information makes sense, then we'd like to help you with your options.

Our free design service costs nothing and there is absolutely no obligation.

Go ahead and scroll down to start reading, and thank you for downloading this.



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SolarKing Installation 2022

WHAT ARE YOUR GOALS, AND WHAT IS YOUR MOTIVATION?

There are different reasons why you may be considering solar with battery storage. Some of these could be:

- 1** Cyclone Gabrielle has got you thinking about **POWER INDEPENDENCE**. You may have experienced power outages this year, or are concerned that in the event of another emergency that you'll have sufficient power to get by. It's common for people to have concerns about refrigeration and preserving food, their internet connection, running a water pump (if rural), charging of cell phones and running basic appliances. Some customers see global geo-political disruption as a risk factor and want to explore self-sufficiency.
- 2** You want to **REDUCE YOUR POWER BILL** in a meaningful way and you are looking for a decent payback or ROI (Return on Investment). After X number of years you want to know that the system has paid for itself, so you can enjoy paying only a fraction for power compared to what you paid before going solar. Modern grid-tied systems are scalable and expandable. This allows you to start at a lower level if you are constrained by the budget, then grow the system later as your circumstances change.
- 3** You may be retired or thinking about retirement, and you like the idea of **REDUCING YOUR LIVING EXPENSES** and investing in solar while you still have access to funds or savings. You don't plan to move from your home any time soon and you understand that power prices may never come down. You like the idea of having a small power bill. For you it's not just about having a quick financial payback.
- 4** You are concerned about **CLIMATE CHANGE**, and want to do your small part to contribute to the health of the planet.

...or it may be something else or a combination of these reasons.

If financial 'payback' is your driving motivation, then it will take longer with battery storage compared to installing panels alone. Solar panels alone (with no batteries – but the option to add them later), has the fastest financial payback because the price is lower. Typically, without batteries you could save about 30-50% off the power component of your power bill when averaged over the year.

With hybrid battery storage, your savings *could* be as high as 70-90%, however your payback period will be longer.

Every household is different and there are a number of other factors to determine including your kWh rate you currently pay, whether your property is set up as single or 3-phase, your 'daily power use profile' and others.

WHAT CAN YOU EXPECT TO PAY?

The design, size and therefore price of a solar system with battery storage is driven by a range of different factors. Here's an example:

An 'average' household in New Zealand might typically use 25 to 30 kWh per day when averaged over the year. For some households this number could be much higher or even lower. Everyone is different.

Let's also assume:

- You have a north facing roof or roofs that are suitable for solar panels.
- You have a standard iron pitched roof and no tilt-legs (to raise the panels up) are required.
- Your house has a single phase power connection (3-phase is possible but it could add \$2,000 to the price).

At today's prices, the investment for an 'average' home could be **\$22,000 inc GST** for quality components. This would include an expandable battery bank, latest tech hybrid inverter and high-efficiency solar panels.

Again, everyone is different, but the average installation could be **\$4,500 inc GST** for a total of **\$26,000 inc GST**.

Be aware that some regions have lower sunshine hours including the Manawatu region, the West Coast of the South Island and anywhere south of Canterbury. In these regions, more panels will be required which will affect the price.

A WORD OF WARNING

It's important not to buy in to cheapest deals that you may regret down the track.

That's because any solution with battery storage needs to be designed by experts (not the sales person) to take all factors into account.

And there are many different factors. These include the kWh rate you are paying now, your 'power use profile' and a lot more.

The information on the following pages will give you an idea of what's involved.

The good news is that the latest hybrid grid-tied systems are expandable and come with a built in emergency power function. Our design service provides you with options (and different price points) based on how much you want to save (from 60% - to 90%. The more you spend, the more you save.

If your goal is purely based on financial viability (and not emergency power capability), then it will be easy to overcapitalise, in our view.

Is it worth it? It depends on what your motivations are, and how we approach the solution. Get in touch to get some advice.



WHAT IS THE SIZE OF YOUR POWER BILL?

Your current and future power usage plays a big part in designing and pricing your solar system.

Of course everyone's power bill is different. The amount you pay each month depends on a dozen different factors.

The 'average' New Zealand household might use 25-30 kWh per day when averaged over the year. What you pay per kWh will also have a lot to do with your electricity retailer, as you can see from this [Consumer Magazine article](#).

If you are a single person or couple, using gas for hot water, or are running an efficient home, it could be much less.

Winter usually means an increase in power usage for most households. Your solar system should be designed using industry software that calculates your average monthly power use which is then cross referenced with the official NIWA sunshine hours for your region.

Likewise, if you're running a spa pool, electric vehicle (EV), multiple heat pumps or other high draw appliances, then of course it will be much higher – especially in winter.

If your power bill is low compared to the average home (say under \$150 per month in winter), and you are purely focused on the financial payback (rather than having emergency backup power), then adding batteries may not make sense for you.

If your power bill typically averages over \$200 – \$250 per month or more, and good financial payback is a priority for you, then battery storage 'may' be financially viable for you.

Viability will also be determined by the kWh rate you currently pay. Some households in different areas in of the country may pay as low as 15 cents per kWh (inc. GST) and others may be paying over 30 cents per kWh inc GST.

If you decide to learn more, we can help you with the calculations.

If you are equally motivated by having backup power in an emergency, then your decision will be based on that, just as much as the payback period.

On the previous page we talked about people having different motivations that are not always about the financial payback. If that's you, even if your power bill is low, this doesn't exclude you from having battery storage. It just means the financial payback will be longer.

In summary, there are a number of factors to take into account. Our advice is not to be pushed into making a decision about solar. It requires a comprehensive understanding of your situation.

Every household is different.



SHORT-TERM OR LONG-TERM HOME?

While the answer to this question may not be the main factor in your decision to install solar and battery storage, it's worth considering.

For some homeowners it can be hard to say if they'll be living in the same house in 5, 10 or even 15 years down the track. For others who are living in their 'forever home', it's a lot simpler.

Making an investment in solar then selling up after one year may not be an issue if New Zealand property prices stay stable. But the overall value of your solar investment will be lower compared to someone who lives in their home for 15 years.

With more than 15 years design life on modern, quality battery banks (and 25 year performance guarantees on most quality solar panels) the longer your system is used, the more value you'll receive.

It's common sense.

But even if your home is a 'stepping stone' property to another in the future, this shouldn't exclude you from considering solar.

Again, it comes down to the importance you have on maximising payback vs independence and sustainability.

Very few people will do a 'return on investment' analysis when buying a car because we accept that a car is a liability, not an asset.

Although the financial benefits of solar will be important to most of us, every year there are more people starting to value the other advantages of solar over and above just the financial payback.



WHAT'S YOUR 'POWER USE PROFILE'?

Your 'power use profile' takes into account the patterns of daily life and power use in your home, from season to season. These patterns can influence how your solar system is designed. There's no 'one size fits all'.

Some of these patterns include:

- In winter, who is at home using power during the day? Do you leave for work when it's dark, and return home when it's dark?
- What is the family/occupant makeup? The ages of any children and other lifestyle factors should be considered.
- How is your hot water, cooking and heating powered?
- Are there cost-effective ways to improve your home's power efficiency right now, including reducing thermal loss in winter?

- Are there ways to 'load shift' and use appliances during the daytime when power is 'free', e.g. dishwasher and washing machine?
- Is your power use likely to reduce, stay stable or increase in the future?

And more.

Investing in battery storage will make more financial sense if a significant portion of daily power consumption is after dark.

That's because the excess portion of power generated by panels during the day can be diverted to the battery bank for night time use.



IS YOUR ROOF SUITABLE FOR SOLAR PANELS?

Without a suitable roof (or space for a suitable 'ground array'), a solar system just won't work.

It's not just a matter of whacking up some panels and hoping for the best. That's why there's a proven process including computer modelling, that we use to check the viability of your overall solar solution.

That process is not just a list of boxes to tick. Your home and power profile will be different to every other family on your street, and there are nuances and potential pitfalls to consider.

Here are just some of the factors to consider when it comes to roof suitability and system sizing. They include:

- The exact number of panels you'll need is based on your daily power use, particularly in winter. Once we know the number, we can check your roof space to see if they will fit. Usually, a system that includes battery storage will require more solar panels, so the battery bank can be filled during the day in winter.
- Can panels be oriented to the north, or as close to north as possible? While it's possible to have a 'split array' where some panels are facing east and some face west, this can add to the price and complexity of your design.
- In most regions, solar panels should ideally be racked up to 20 degrees (or maybe more) to cope with lower sunshine hours in winter. In Auckland for example, your [solar noon](#) (the highest the sun is in the sky) is only 29 degrees above the horizon on 21 June, so this needs to be taken into account. If your north-facing roof is pitched (a gable or hip roof) and there is sufficient space for panels, they can be laid flat on the roof.

- Monopitched (flat) roofs will require solar panels to be racked up with special tilt-legs. This can add to the price of your system.
- There are a wide range of roof types from corrugated iron, Coloursteel, concrete tiles and more. Different roofs require different approaches to mounting and different design strategies.

Remember, roof suitability goes hand-in-hand with the size of your system, and the size of your system always starts with your power use (your power bill).

It's tempting to guess how many solar panels you might need after watching a few YouTube videos and talking to your neighbour who has solar.

Fortunately, we don't have to rely on guesswork because we have the tools and deep experience that includes computer modelling.

We combine this with data on official sunshine hours for your region. You don't have to figure it out on your own.



WHAT ABOUT OFF GRID SOLAR?

SolarKing has an off-grid solar manufacturing division, [Power Station New Zealand](#). Most homes going off-grid are new builds, but we design for existing grid-tied homes too, if owners want total independence.

Taking your existing home off grid is not technically difficult. However, it can be two or possibly three times the price of a grid-tied hybrid system with batteries.

The reasons for this are:

- With no power grid as a backup, we need to size the system for at least one full day of battery backup for periods in winter when there is no sun.
- Although an auto-start backup generator is required, the number of panels also needs to be carefully considered to avoid generator over-use (which can be costly and inconvenient).
- The battery bank will typically need to be larger than a grid-tied system to allow for lower sunshine hours from June to August.
- The technology is completely different. Specialised components are required.

Most customers who decide to transition to off-grid solar are not motivated by financial payback. Power independence is their main objective.

If they are building new or moving a house to a new site, they are usually concerned about the cost of getting connected. Designing a house from the ground up to maximise power efficiency is easier to do when you start with a clean slate.

Usually, an existing home will not be maximised for efficiency (depending on its age) and will often have electric hot water, electric cooking and sometimes electric heating.

For example, the average grid-connected family home in New Zealand might use 25-30kWh per day compared to 9-15 kWh for a new home designed to be off-grid from day one.

At 25 kWh of power used per day, the investment to go off the grid could be \$60-\$80,000 - or more.

The alternative to off-grid solar is grid-tied hybrid solar with a battery bank.

That investment could start at \$25,000 to achieve a 60-80% savings while still allowing for some emergency power to run basic appliances during a power cut.

We can help you to decide on the best option as part of our free design service.

To learn more about off-grid solar, you can visit the [Power Station website](#), or you can [watch this short video](#) for a quick introduction.



POWER (⚡) STATION
— OFF-GRID SOLAR MADE IN NZ —

CONCLUSION & NEXT STEPS

Is it worth it? Let us help you to decide by talking to an experienced and qualified solar designer.

Everyone has different reasons for installing solar.

What we can say is that power security and the ability to function normally in a power cut (or as close as possible to normal), is becoming more and more important to people.

Right across New Zealand, homeowners are reaching out to us for information.

If your motivation is purely about financial return, then it may not stack up, sorry. There are a bunch of factors to consider to confirm this, and we can help you understand how those impact on your unique situation.

If your motivation is for power savings, access to emergency power, adding long-term value to the property and reducing your monthly outgoings, then it could be worth it.

GET IN TOUCH

We're offering a free design service without the hype or sales pitch.

Go ahead and get in touch to talk to an experienced designer who will cover all the key points to give you a list of options.

In most cases, we can give you a solution (with estimated pricing) over the phone and help you with the pros and cons.

Email info@solarking.co.nz or TXT or call 027 649 0914.

Thank you for reading to the end.



THANK YOU

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