lightforce
solar

Solar Buyers Guide

Welcome to your Lightforce solar buyers guide

This Solar Buyers Guide is designed to give you an understanding of how solar works as well as the key benefits of powering your home with the sun's energy.

It will also help you make an informed decision on what sort of solar solution is right for you, and why it's important to choose the right partner on your solar journey - someone who understands what you are wanting to achieve by installing a solar system at home.

Power from the sun

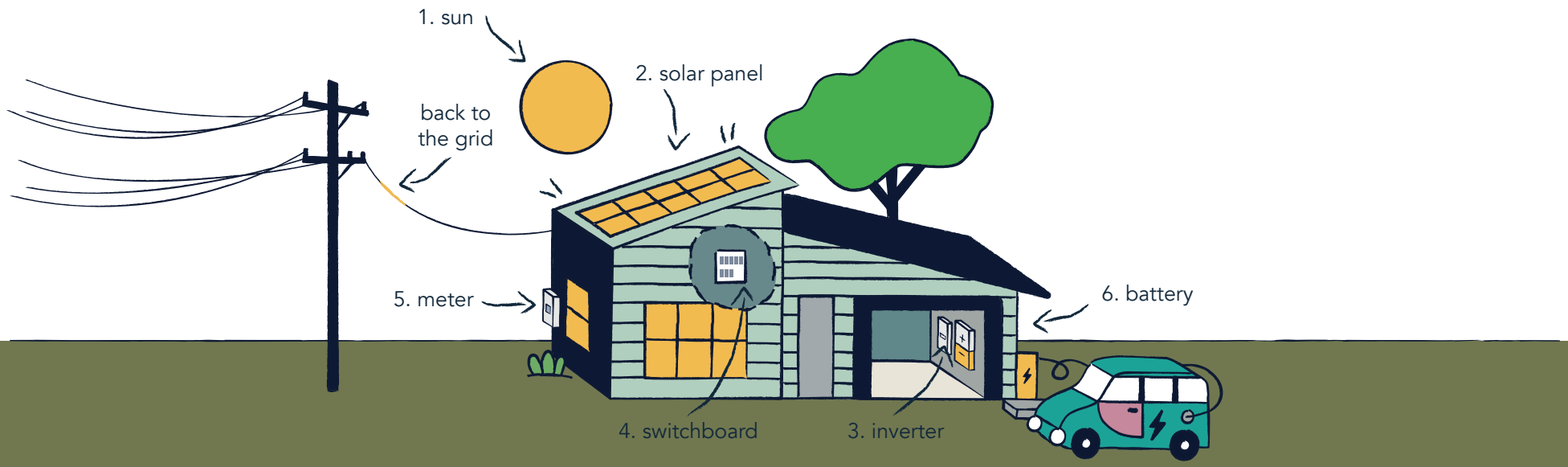
When the sun shines, PV (photovoltaic) cells in the solar panels convert sunlight into DC (direct current) electricity.

This energy is converted into AC (alternating current) power, by an inverter, for use in your home.

Your home appliances (fridge, lights, TV, etc.) use this solar power before drawing any additional power needed from the electricity grid.

Excess energy created can be stored in a battery to be used when the sun goes down or exported back to the electricity grid.

How solar works



1

When **the sun** is up, there's an abundance of energy available to power your home!

2

Solar panels convert this sunlight into DC electricity.

3

Your **inverter** converts the DC electricity into usable 240V AC electricity to power your home appliances.

4

This power comes into your **switchboard** which directs the electricity to different circuits in your home.

5

Your new *import/export* **meter** will measure your excess solar being fed back to the grid (export) as well as the additional power you import from the grid.

6

Adding a **battery** allows you to store your excess solar energy for use when you need it i.e. when the sun goes down.

Energy trends

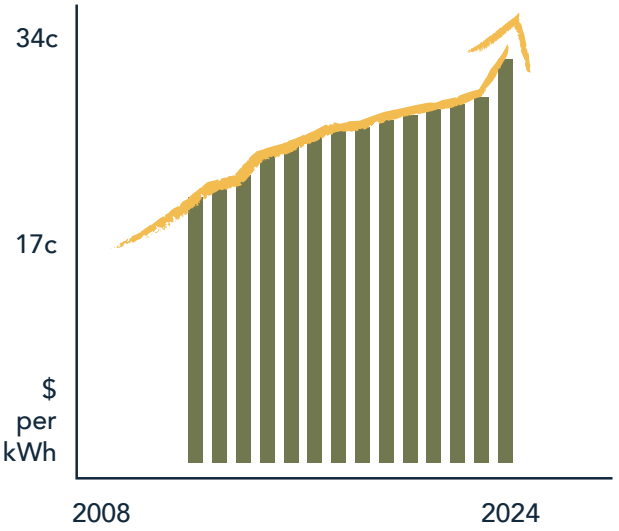
The cost of power in NZ has increased around 7 percent per year, meaning an average power bill of $250 will be $515 in 10 years.

Over the next 10 years, the forecast demand on the national grid is set to increase by 75%, even though the national grid is already struggling to handle NZ's current energy demands.

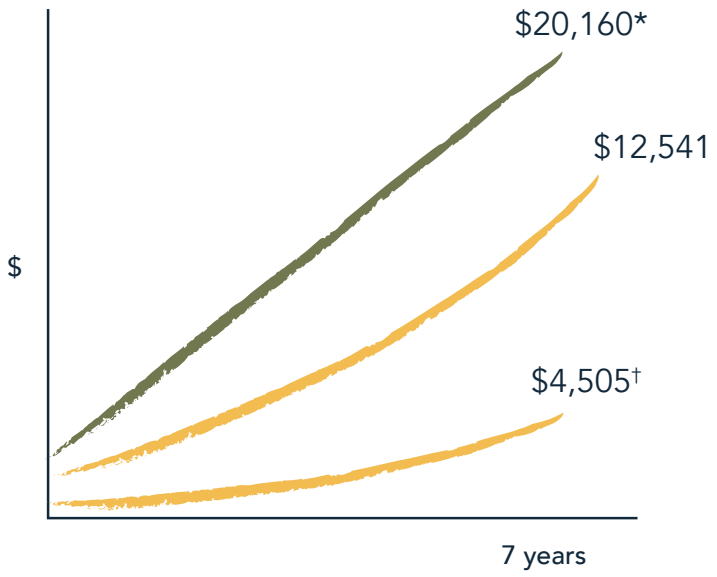
The cost of solar and batteries has come down significantly and is now a viable option for many families and businesses. When homes, businesses, and farms produce, store, and use their energy internally, it will take the pressure off the already stretched national grid.

There’s no better time to go solar and start enjoying the benefits of being powered by the sun!

The cost of power has doubled in 10 years



Investing in solar vs the bank



solar savings*

interest earned on $30k invested †

Savings

The economics of installing your own solar system now makes sense.

Payback on a solar system can be as quick as 5 years, depending on your energy demands, usage profile, and current power company charges.

Investing your money in a solar system can mean a return on investment of up to 6x what you could achieve by putting that money in the bank. (see graph)

If you decide to put the upfront cost of the system onto your mortgage, you save money from day 1, as long as your power bill is over $180 per month on average.

Take the example of an 8kWh system with a battery, which could reduce your bill by 80%. With a $300 a month average power bill, the mortgage repayment would be around $170 per month. This means each month you have gained $130 of money you otherwise would have spent.

Whichever way you decide to pay for your system, the savings are real and immediate.

* based on 80% reduction of a $300 per month power bill. As an asset, studies show that installing a solar PV system at your home adds value to your property price, as well as appealing to potential buyers

† based on 5% on compounding interest

† based on 2% compounding interest

How the grid works

99% of the power in NZ is generated at large-scale power stations in locations across NZ by a combination of hydroelectric, gas, geothermal, wind, and coal.

This power is sent around the nation via Transpower's large power pylons. It is then sent down local power lines to your home by your lines company. Power companies/retailers then sell that power to you to use in your home.

generation → **transmission** → **distribution** → **consumption**

power stations → transpower national grid → lines companies + power retailers → homes + businesses

The relationship between solar and the grid

Without solar

Most NZ homes have a one-way connection to the national grid.

All the power used in these homes is generated by power stations and supplied via electricity retailers.

You pay for the energy that you use.

With solar - (grid tied)

A common misconception is that if you have solar panels on your roof, you are "off-grid".

In reality, most solar-powered homes are still connected to the main grid (grid-tied) in fact, they have a two-way connection.

The difference with solar is that you have your own ‘power station’ on your roof generating free power for your home.

If you need more power than your panels provide, you'll automatically draw power from the grid which you buy from your electricity retailer.

If your panels generate more than you need, that energy can be sold back to the grid (or stored if you have a battery).

With solar - off grid

Some systems (mostly in remote areas) can be completely off-grid.

These systems are not connected to the grid and therefore won’t have the security of the grid supply if you are unable to generate and store enough power from your off-grid system.

For that reason, these systems are generally sized much bigger than a grid-tied system with large amounts of battery storage, and often a backup generator too.

Because of this, off-grid systems can be very expensive.

Most people that choose to go off-grid do so because they are in remote locations where a grid connection is not available.

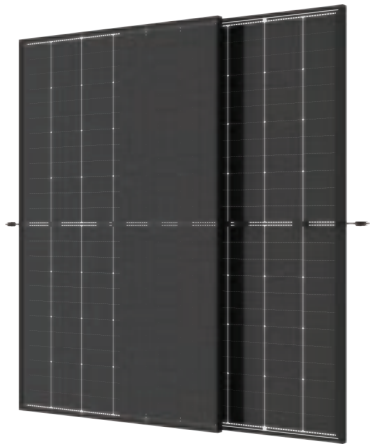
Solar System Basics

Solar panels only

The simplest solar system is a panel-only system. Depending on a range of factors, the panels can potentially provide a significant proportion of your power needs.

Solar panels produce energy when the sun is up and, without a battery to store it, you need to use the energy produced when it is being produced.

If you are not at home during the day, that energy will be exported to the grid. At night time, when the sun is down, you will need to get all your power from the grid.



With solar & battery

If you have a battery installed with your solar system, you can store the excess energy your panels generate for use when the sun goes down.

The majority of solar systems installed over the past 10 years have been panel-only systems. However, over the past few years, battery storage technology and pricing has improved significantly, making solar panel + battery systems a much more common solution.

A battery is a great way to maximise the potential of your solar panels, and utilise the electricity generated when it suits your energy needs, not simply when it is generated.

Energy Security

Reducing your reliance on the national grid is a great way to future-proof your family home against power price increases for years to come.

NZ's electricity grid is under immense strain, unable to handle our current, let alone future, energy demands. Our network of transmission lines and substations throughout the country are becoming increasingly overloaded.

Localised and regional blackouts are happening more regularly because of a lack of investment in upgrading the grid, towns, and cities increasing energy demands, combined with reduced generation capacity when weather events become more extreme.

The fast-paced move to the electrification of our lifestyles, including the uptake of electric vehicles, will continue to put even more pressure on the already struggling grid.

There’s no one size fits all with solar

Choosing the right system is about understanding how you use your energy, knowing certain details about your home and your roof while considering what you are wanting to achieve by going solar.

Your Home

Understanding the physical aspects of your home is a major part of designing a solar system that will work for you.

Getting to know your roof

We'll need to get a clear understanding of your roof and its potential to power your home from the sun. Its construction and material type, size of the roof faces, as well as the condition it's in.

Which way is the sun?

Different roof orientations require different solutions. We use LiDAR (light detection and ranging) software to analyse the sun’s intensity on your roof throughout the year, to maximise the solar potential of your roof.

Getting the pitch angle right

Decisions need to be made on mounting flat or on raised stands called tilts, also ensuring a minimum of 10 degrees for water run-off. Setting the angle right to capture the daily and seasonal variations.

Minimising shading, maximising the sun’s energy

The other consideration is around shading - nearby trees, buildings, chimneys, and other obstructions need to be factored into the system design and components.

What makes Lightforce Solar different

At Lightforce Solar, making the most of the sun to lighten your power bill (and your footprint) has never been easier.

Maximum savings, minimum effort

From the design right through to installation and compliance, we take care of everything to deliver a cost-effective system that's right for you. So you can maximise your savings from the sun with minimum effort.

100% NZ Owned & operated

Lightforce Solar is proudly owned and operated in New Zealand. Our local team provides high-quality solar solutions tailored to the unique needs of Kiwis. We help New Zealanders achieve energy independence and reduce their carbon footprint.

Always here, always helpful

With a 10-year workmanship warranty, a 30-year panels warranty and a 10-year battery warranty, we've got you covered. And because we know your system inside out, our after-care team are just a phone call away if you need help once you're up and running.

Letting the sun in is easy

With seven solar hubs, covering 70% of New Zealand homes. We have teams on the ground within a few hours of where you live. So you can start saving sooner than you

The next steps

Talk through your options

One of our consultants will talk to you to understand your house and your energy needs - as well as answer any questions you may have.

Review your roof eligibility

Using our Solar design software we can check your roof pitch, sun direction, and intensity as well as any shading that might impact your roof. Our experienced team has designed and installed enough systems (over 6,000!) on all types of roofs to know the best approach.

Design your system

We want to make sure you end up with the system that is right for you, your family, and your home, now and into the future. We are with you for the life of your system, so we only ever present a system that will deliver for you and meet your needs and expectations.

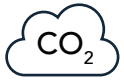
“Our home is powered by the sun”

“I wanted to get solar to help with the environmental effects of producing electricity. My kids are solar kids, they love it. They love the fact that we are not contributing to climate change.”

Elke Chillwell - Grey Lynn, Auckland
mother of three and eco-warrior
21 panels (6.3kW) + 2 batteries (16.4kWh)

Supporting a lighter, bright future

It's an incredible feeling to have your home running on sunlight. With solar, a typical family can be proud to see the equivalent environmental impact of...



Reduction of 900kgs in carbon a year

Driving 4,000km less every year

Planting 40 trees every year

A Lighter Future

Solar is now the most cost-effective form of renewable energy.

While NZ's electricity production is predominantly from renewable sources, we still burn a considerable amount of coal to keep our national grid functioning.

Most renewable energy is also not sustainable, especially if it is being consumed hundreds of kilometers away from where it is being generated.

Building more mass renewable generation, like hydro or wind, is good for reducing carbon, but it will only put more pressure on the already stretched national grid. When homes, businesses, and farms are producing, using, and storing their energy internally, that provides a seriously effective solution for our broken power model – tiny power plants on the roofs of NZ homes, businesses, and farms.

Going solar means you are supporting a greener energy future.

It's time to let the sun in.

Solar install checklist

- ◯ Does the company specialise specifically in solar?
- ◯ Do they offer monitoring?
- ◯ Do you own the system after it's installed?
- ◯ Is their service delivered by a fully in-house team or do they use subcontractors?
- ◯ Do they only use top quality products with full warranties?
- ◯ Are their batteries cobalt-free?
- ◯ Do they have in-house engineers?
- ◯ Have they asked for your power bill or new build plans?
- ◯ Do they have good reviews and customer testimonials?
- ◯ Do they have ongoing in-house customer support well beyond your install?

Common FAQ's

What happens when its not sunny (eg. cloudy, winter, nigh-time)?

In bad weather, or in winter, your solar output will reduce anywhere from 25-50%.
During the night time, your solar panels are not producing energy. If you have a battery, any excess energy generated during the day can be stored and used at night. Effectively giving you access to solar power 24hrs a day.

What happens in a blackout?

As above this is where batteries come in handy, storing energy created in excess during the day, the battery can supply this stored energy during a blackout.
However, whether the battery still charges from the solar panels and whether your panels will still produce power during a blackout, depends on the system you have purchased. Please talk to your solar consultant about your options and have them explain the difference between Storage, and Backup (or Emergency Power Supplies - EPS).

How does selling back to the grid work?

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How long does my solar system last?

Solar systems are designed to last for over 25 years, as all top-tier panels provide warranties for this period. Lightforce provides workmanship warranties of 10 years, while battery and inverter solutions offer similar warranties of around 10 years - although they last much longer. Quality battery solutions, such as the Energizer Homepower solar battery, lose little efficiency over this time.

Are there any government subsidies?

No, there are no government subsidies or incentives for residential solar in New Zealand.

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Sustainable Energy Association New Zealand

Sustainable Business Network

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