



solarworx



**Solar
Buyer's
Guide**



Start with the right questions

Solar works best when the system is designed around your roof, your electricity use and your plans. A large panel count alone does not guarantee the strongest financial result. This guide shows what to ask for and how to compare proposals on equal terms.

01 The site Roof condition, useful area, orientation, shade and access.

02 Your demand Annual use, daytime profile, hot water, heating and EVs.

03 The system Panels, inverter, phases, battery and backup requirements.

04 The value Generation, self-use, export, tariffs and lifetime costs.

05 The handover Connection approval, certification, monitoring and support.



How rooftop solar works

Sunlight becomes electricity

Solar photovoltaic (PV) cells produce direct current (DC) electricity when exposed to light. They still work on overcast days, but output is lower. A quoted panel rating is measured under laboratory conditions; real output changes with sunlight, temperature, shade and system losses.

The inverter supplies the property

The inverter converts DC into alternating current (AC) for ordinary appliances. The home uses available solar first. If demand exceeds solar output, the difference comes from the grid. If solar exceeds demand, the surplus can be exported where the network connection permits.

The meter records two directions

An import/export meter records electricity bought and exported separately. Applicable fixed and network charges remain. Export is usually paid at a separate buyback rate rather than offset one-for-one against imports.

A day in four moments

Morning: generation ramps up and may cover part of the load.
Midday: production often peaks; unused energy may be exported.
Evening: generation fades as many households use more power.
Night: a solar-only home imports from the grid.

Power and energy

Power is a rate, measured in kilowatts (kW). Energy is the amount used or generated over time, measured in kilowatt-hours (kWh). A 2 kW load running for 3 hours uses 6 kWh. An 8 kW panel array will not produce 8 kW at every moment.

A simple flow

Panels → inverter → switchboard → appliances. Surplus passes through the meter to the network. With a compatible battery, some surplus can be stored and used later.



SUN
Light



PANELS
DC



INVERTER
AC



HOME
Use



GRID
Surplus

ASK FOR

A proposal that separates annual generation, expected on-site use and expected export.



Is your property suitable?

Roof condition comes first

Check the age and condition of the roof, fixings, flashings and structure. If reroofing is likely within the next few years, coordinate it with solar installation. A structural review may be needed for older, unusual or compromised roofs. Roof access and safe working methods can affect cost.

Usable area is less than roof area

Skylights, chimneys, hips, vents, aerials, setbacks, access paths and shaded zones reduce the space available. Ask for a scaled roof layout showing actual module dimensions and clearances, rather than a count based only on a satellite image.

Orientation changes the timing

North-facing arrays often favour total annual production in New Zealand. East and west arrays spread production toward morning and afternoon. The best orientation depends on when you use electricity and the site geometry, not only the yearly kWh total.

Shade matters disproportionately

Trees, hills and neighbouring buildings may block a portion of the array at different times of year. Even limited shade can affect a string depending on layout and inverter design. Ask for a shade assessment and how it was reflected in the yield estimate.

Look beyond the roof

Locate the switchboard, main meter, inverter and possible battery location. Check cable routes, ventilation, flood exposure, communication coverage and space for safe servicing. A long or difficult cable route changes installation cost.

Future changes

Tell the designer about an EV, heat pump, electric hot water, induction cooking, a home extension or planned roof works. A system sized for today may be a poor fit after electrification.

SITE VISIT

A final design should be checked on site before installation, particularly where roof or electrical details are uncertain.



Read your electricity use

Annual total is only the start

Collect at least 12 months of bills or half-hourly interval data. Annual kWh shows scale and seasonality; the interval profile shows when energy is used. Two households with the same annual use can get very different solar savings.

Find the daytime base load

Refrigeration, home offices, pool pumps, ventilation and hot water can create a useful daytime load. Separate weekday from weekend patterns and note summer/winter changes. Identify loads that can safely be scheduled into the solar window.

Avoid assuming all generation saves the retail price

A unit consumed on site avoids the relevant marginal import charge. A unit exported earns the applicable buyback rate. Those values can differ markedly and may change over time.

Ask your installer to show

1. Your current annual kWh and representative daily profiles.
2. The forecast kWh from solar by month.
3. Estimated self-consumption and export.
4. Any planned load shifting and its assumptions.
5. The tariff and buyback rates used.

A worked household example

Suppose a system produces 7,000 kWh in a year. If the home uses 3,500 kWh directly and exports 3,500 kWh, its self-consumption is 50%. At illustrative values of 30c/kWh avoided import and 10c/kWh export, the annual energy benefit is \$1,400. That is before changes to fixed charges, maintenance, financing, degradation or future prices.

Use your actual tariff

Peak, off-peak and controlled rates can change the value of shifting a load. Compare the forecast against the retailer plan you would actually use with solar.

RULE OF THUMB

Show the arithmetic. A savings figure without the generation split and assumed rates is hard to test.



Choose a sensible system size

Match generation to the goal

For bill savings, examine how additional panels affect self-use and export. A larger array can still make sense if the roof is good, the incremental price is low, an EV is coming or export terms are attractive. The right answer needs a scenario comparison.

Separate panel and inverter ratings

Panel capacity is DC, usually stated in kW or kWp. Inverter output is AC, stated in kW. These ratings need not match. A larger DC array can improve production in weaker light; the designer should disclose any expected clipping at peak output.

Compare at least three scenarios

Ask for a modest, recommended and larger option on the same assumptions. Compare price, annual generation, on-site use, export, annual benefit and any network constraint. An estimated simple payback can help, but it is not a guarantee.

Illustrative comparison

Option A: 5 kWp array; lower cost, greater share consumed on site.
Option B: 8 kWp array; more generation, potentially more export.
Option C: 8 kWp with battery; shifts some generation to evening, adds capital and replacement risk.

What the forecast should say

The proposal should name the location, panel orientation and tilt, shade assumption, annual degradation assumption and software or method used. Monthly generation is more useful than an annual total alone. Ask whether an export cap has been included.

What size cannot tell you

A kW rating does not state the annual kWh produced or the bill savings. Likewise, a high annual kWh estimate does not prove a suitable layout or a good return. Evaluate the design and your demand together.

COMPARE LIKE WITH LIKE

Use the same consumption profile, electricity prices and analysis period for every option.



Panels, roof layout and shade

Panel selection

Compare the exact model number, module efficiency, dimensions, product warranty and performance warranty. Performance warranties describe a minimum output trajectory under stated conditions; they are different from a warranty against a product defect.

Layout quality

A clear roof plan should show module rows, obstructions, orientation, mounting zones and cable entry. A tightly packed layout can look attractive on paper but be harder to install, service or keep clear of shade.

Module-level electronics

Optimisers or microinverters may help where roof faces or shading patterns justify them. They add components and service considerations. Ask what problem they solve at your site and what happens if one unit fails.

What shade modelling should include

The sun angle changes by hour and season. A tree that misses the array in summer can shade it in winter. If partial shade is material, ask to see the annual loss estimate and the basis for any claimed mitigation.

Mounting and weatherproofing

The mounting system must suit the roof type, wind exposure and structure. Penetrations, flashings, corrosion resistance and water management matter as much as the module brand. Discuss future roof access and panel removal if repairs become necessary.

Keep the numbers grounded

A module's wattage is a laboratory rating; two 475 W panels do not guarantee a continuous 950 W in the field. Temperature, irradiance and electrical losses all matter.

ASK FOR

A module datasheet, layout drawing and a clear description of the mounting method.



Inverter and electrical design

String inverters

Panels are connected in strings to one inverter. This is common and often cost effective for a simple roof. The string design must account for electrical limits across the expected temperature range and for how different roof faces connect to MPPT inputs.

Microinverters and optimisers

Microinverters convert power at the panel; optimisers condition panel output while a central inverter still converts it to AC. Either may be useful on complicated roofs. Compare cost, monitoring detail, service access and warranty terms.

Hybrid-ready is a specific claim

Ask exactly which batteries the proposed inverter supports, whether extra hardware is required, and which circuits could be backed up. “Battery ready” on its own does not define usable battery or backup capability.

One phase or three?

A three-phase property needs an explanation of where the inverter connects, how loads are distributed, what the meter records and how export is limited. Some three-phase inverters balance output across phases; others can allocate output asymmetrically within product and network limits.

Why phase behaviour matters

Imagine a three-phase site using 4 kW on phase A and very little on B and C. A balanced 6 kW inverter delivering 2 kW per phase may leave an import on A while exporting on B and C. The bill outcome depends on the metering and retailer arrangements; ask for a site-specific explanation.

Network conditions

The local distributor sets connection requirements and an export limit may apply. The final inverter choice and settings must fit that approval. Ask who applies, who pays any fees and how a restriction affects the estimate.

CHECK THE PROPOSAL

List the exact inverter model, MPPT/string layout, phase behaviour, output rating and export setting.



Should you add a battery?

What a battery can do

A battery stores some surplus solar for later use, may charge from the grid under a suitable plan, and can provide selected backup loads if the equipment and wiring are designed for it. These are separate benefits, each needing its own specification.

Capacity versus power

Usable capacity in kWh is how much energy can be delivered under defined conditions. Output power in kW limits what appliances can run at once. A 10 kWh battery with a 5 kW output does not supply a 7 kW load continuously.

Savings need a realistic cycle

Compare the cost of the battery against the extra energy shifted from export to avoided import, allowing for losses. A high battery cycle count in a sales model needs sufficient daily surplus and evening demand to support it.

Backup is not automatic

Many grid-connected solar systems shut down during an outage. Backup requires a compatible inverter, changeover equipment, appropriate circuits and reserve settings. Confirm whether solar can recharge the battery during a prolonged outage and which loads remain powered.

Battery questions

What is the usable capacity and continuous/peak output? Which circuits are backed up? Is three-phase backup supported and at what power? What minimum charge is reserved? What is the warranty throughput or cycle limit? Where will the battery be installed?

Compare solar-only first

For many homes, load shifting and a well-sized solar-only system are strong first steps. Then assess a battery for your specific evening use, tariff, resilience needs and budget.

SEPARATE THE BENEFITS

Ask for solar-only and solar-plus-battery estimates using the same base assumptions.



Three-phase solar and batteries

The key terms

Balanced output shares power evenly across phases. Unbalanced output can allocate different amounts to each phase within equipment limits. Site netting describes how the meter and retailer account for simultaneous import and export. These are related but different questions.

An illustrative instant

Suppose the site loads are $A=4$ kW, $B=0.5$ kW, $C=0.5$ kW. A balanced 6 kW inverter delivers 2 kW per phase. Physically, phase A still imports 2 kW, while B and C each export 1.5 kW. A suitably capable unbalanced system might allocate more to A, subject to its limits.

Ask for the actual site design

Record the load distribution, inverter maximum asymmetry, battery discharge behaviour, meter configuration and approved export setting. The benefit of one topology over another depends on all of them.

Backup needs its own diagram

A three-phase grid connection does not mean the battery backs up all three phases. Some systems support a selected single-phase essential-load board; others support broader backup with equipment limits. Identify every circuit included and excluded.

Avoid a common shortcut

The phase example is an electrical illustration, not a universal billing claim. Have the installer explain how the retailer prices imports and exports at your ICP, including any applicable metering or tariff arrangements.

Good quote language

“This inverter can deliver up to X kW on one phase and Y kW total; these circuits are backed up; this meter and tariff are assumed; the distributor-approved export limit is Z kW.”

FOR COMPLEX SITES

Request a single-line diagram and a phase-by-phase operational example before signing.



Understand the financial case

Start with four quantities

Annual generation (kWh), on-site use (kWh), export (kWh) and total installed price. Then apply your import tariff and export buyback rate. Do not apply the retail tariff to every generated unit.

Simple annual benefit

Illustrative annual benefit = on-site solar kWh × avoided import rate + exported kWh × buyback rate. Add any demonstrable time-of-use or demand benefits, then subtract incremental operating costs. Fixed charges normally remain unless your plan changes.

Simple payback is limited

Installed cost divided by first-year benefit is a quick comparison, not a full investment model. A stronger analysis includes degradation, tariff changes, equipment replacement, maintenance, financing, tax where relevant and the time value of money.

Test the assumptions

Run a conservative case with lower generation or self-consumption, a lower buyback rate and an inverter replacement allowance. Ask how much the result changes. No credible proposal can guarantee decades of electricity prices.

Watch the comparison period

An inverter, panel and battery may have different warranty durations and expected service lives. If the model spans 20 to 25 years, include the likely cost of maintaining the system over that period.

Finance and contracts

If financing, compare the total repayable amount and interest with the projected bill benefit. Check ownership, early repayment, service obligations and what happens if you sell the property.

THE MOST USEFUL NUMBER

See the forecast bill with solar next to a forecast bill without solar, using the same tariff.



How to compare quotes

Require the same scope

Ask each provider for the roof layout, exact panel and inverter models, mounting method, system rating, estimated annual and monthly production, predicted self-use/export and the assumed electricity prices.

Check all included work

The price should state electrical upgrades, switchboard work, scaffolding or access, network application, meter changes, monitoring setup, commissioning, certification, rubbish removal and GST. Identify provisional or excluded items.

Read warranties by owner

Separate panel product and performance warranties, inverter and battery warranties, workmanship cover, and the installer's service response. Confirm who handles a claim in New Zealand and whether labour, freight and access are covered.

Compare on useful outcomes

A lower price per kW is not automatically a better purchase if the layout, equipment, generation estimate or service support is weaker. Compare annual benefit, quality of design and lifetime obligations.

Useful questions to ask

Who designed and who installs the system? Who checks the roof and switchboard? What is the connection approval status? Which assumptions could change the price? What monitoring access will I receive? What documents arrive at handover?

Red flags

A generic production figure with no site inputs; a promise that every solar unit saves the full retail rate; a claim of outage backup without a circuit plan; equipment substitutions without agreement; or pressure to sign before the scope is clear.

TAKE HOME

Keep the final accepted design, equipment schedule and any agreed changes with the contract.



Approvals and installation

Before the work

The installer should confirm the network connection pathway and distributor conditions, including export limits. They should check site measurements, roof structure and condition, switchboard capacity, cable routes and the agreed equipment.

During installation

The team mounts the array, installs cabling and inverter equipment, completes switchboard work and tests the system. Safety, weatherproofing and tidy accessible cable routes matter. If a site finding changes the design, agree the variation before work continues.

Commissioning and meter

The installer verifies the system's electrical and control functions, monitoring and required settings. Network and retailer processes and any import/export meter change must be complete before normal export operation, as applicable at your site.

Documents to expect

Ask for the final as-built layout, equipment serials and datasheets, warranty documents, operating instructions, network approval, electrical certification and inspection/record documents where required, plus monitoring login details.

Who does electrical work

Solar PV electrical work has specific safety and certification requirements. Use suitably qualified registered electrical workers and ask who carries out the work and signs the relevant documents.

Handover demonstration

Have the installer show normal operation, the app, how to recognise an alarm, safe user-level shutdown guidance, and whom to contact if output stops. Keep an emergency contact and the equipment location details accessible.

BEFORE FINAL PAYMENT

Confirm the system works as commissioned and that the agreed handover pack has been supplied.



Get more value from your solar

Shift flexible loads

Run suitable appliances during production hours where safe and practical: hot water heating, dishwashers, laundry, pool or irrigation pumps, EV charging and some space heating or cooling. Timers or smart controls can automate this.

Prioritise the big loads

A modest shift in a large daily load may matter more than moving several tiny loads. Track the change on your import/export data, not only on the solar generation app.

Use smart controls sensibly

An EV charger or hot water diverter can follow surplus solar if correctly configured. Confirm minimum operating power, control delays and any effect on other essential loads.

Watch seasonal variation

A summer surplus does not mean the system covers a winter evening. Judge performance over comparable weather periods and use monthly expectations rather than one sunny day.

Check your tariff periodically

Electricity plans and buyback terms change. Review the whole bill: energy rates by time period, fixed charges and export terms. A plan that is best before solar might no longer be best afterward.

Keep a baseline

Save the first full year's generation and bills. Note unusual shading, outages or changes in household use so future comparisons remain meaningful.

GOOD HABIT

Review generation, import and export together once a month.



Maintenance and fault finding

Routine checks

Review monitoring for unexpected stoppages or a sustained decline relative to similar seasons. Inspect from the ground for obvious damage, loose materials, new shade or roof issues. Do not open electrical equipment or work on the roof yourself.

Cleaning

Rain often removes ordinary dust, but bird droppings, coastal deposits or local grime may justify cleaning. Use a suitable professional process and follow the module and roof manufacturer instructions. Never assume cleaning will materially improve output without evidence.

If production stops

Check the app and any safe user-level status indicators. Record the fault message, time and recent site changes, then contact the installer. If there is damage, burning smell, water ingress or an electrical hazard, keep clear and seek qualified help promptly.

What warranties cover

A panel performance warranty is a long-term output threshold under its terms, not an annual production guarantee for your roof. Product and workmanship warranties have separate conditions. Retain invoices, serial numbers, photos and the as-built design.

Plan for replacement

An inverter or battery may need repair or replacement within a long panel lifetime. Include a reasonable allowance in investment comparisons and confirm whether monitoring and app access require subscriptions.

Changes to the site

Roof repairs, new skylights, tree growth, renovations and switchboard changes can affect the system. Tell tradespeople there is solar equipment on the property and engage a suitable specialist for alterations.

SAFETY

PV wiring can remain energised in daylight even when some switches are off. Leave diagnosis and repair to qualified workers.



Common questions

Will solar work on cloudy days?

Yes, at reduced output. Annual estimates should use long-term local weather rather than assume clear skies every day.

Will solar power my house in a blackout?

Most standard grid-connected systems disconnect during an outage. A properly designed backup system can supply specified circuits within its power and energy limits.

Do I need a battery?

No. Solar can operate without one. A battery may increase on-site use or provide resilience, but it must be justified against its cost and your load pattern.

Will I still have a power bill?

Usually yes. Nighttime or low-sun imports and applicable fixed charges remain. The amount depends on the system and your use.

Is a north roof essential?

No. East and west roofs can be useful, especially where their production matches your load. A site-specific model tells you more than a blanket rule.

Can I add panels later?

Sometimes. Roof space, inverter input and output limits, approvals and electrical design determine the scope. Discuss future expansion before buying.

What if I sell the property?

Keep the handover documents and monitoring transfer details. Any value to a buyer depends on the system condition, documentation and buyer preferences.

Can I compare two payback claims?

Only when their assumed usage, tariffs, export, maintenance, system life and cost basis are the same.

ASK EARLY

Bring your bills, interval data if available, roof plans and future electrification plans to the design conversation.



The terms worth knowing

kW

A rate of power at a given moment.

kWh

Energy over time; 1 kW for one hour is 1 kWh.

kWp

The panel array's DC rating under test conditions.

DC / AC

Direct current from panels / alternating current used by the property.

Inverter

Equipment converting solar DC to usable AC.

MPPT

Inverter tracking input that optimises a panel string's operation.

Self-consumption

Solar energy used on site rather than exported.

Export limit

Maximum power permitted to flow to the network under approval.

Buyback rate

Price a retailer pays for eligible exported energy.

Usable capacity

Energy a battery can deliver under its stated operating conditions.

Backup load

A nominated circuit supplied during an outage by compatible equipment.

Degradation

Gradual reduction in a panel's output over time.

Buyer checklist

My site

- ☐ 12 months of bills or interval data collected
- ☐ Roof condition and usable area checked
- ☐ Shade and orientation assessed
- ☐ Current and future loads identified
- ☐ Phases and switchboard reviewed

The design

- ☐ Exact module and inverter models stated
- ☐ Roof layout and mounting method shown
- ☐ Monthly and annual generation estimated
- ☐ Self-use, export and tariffs itemised
- ☐ Battery and backup scope clearly defined

The agreement

- ☐ Connection/export conditions confirmed
- ☐ All inclusions and exclusions priced
- ☐ Warranties and service contact identified
- ☐ Certification and handover listed
- ☐ Changes and payment terms understood

Keep a copy of the final proposal and this checklist. An installer should be able to explain every item in plain language.

Sources and further reading

This guide is general buyer education. Site design, pricing, network conditions and technical compliance must be checked for the property and the equipment selected. Worked numbers are illustrative, not a savings promise.

Electricity Authority

Distributed generation connection rules and distributor application processes

<https://www.ea.govt.nz/industry/distribution/distributed-generation/>

Electricity Authority

Export limits and current Code changes

<https://www.ea.govt.nz/code-and-compliance/code-amendments/export-limits/>

WorkSafe New Zealand

Solar PV installation and electrical safety

<https://www.worksafe.govt.nz/about-us/news-and-media/diy-solar-installation/>

WorkSafe New Zealand

Electrical work, certification and consumer guidance

<https://www.worksafe.govt.nz/managing-health-and-safety/consumers/safe-living-with-electricity/getting-electrical-work-done/>

Consumer NZ

Are solar panels right for your home? (updated March 2026)

<https://www.consumer.org.nz/home-and-living/home-energy/are-solar-panels-right-for-your-home/>

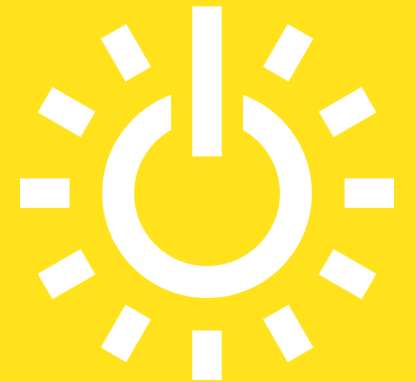
Reference documents

Solarworx Buyer's Guide (2022) for visual direction; Eastland Network Spotlight on Solar (2020) for topic depth and buyer structure. This is new Solarworx copy; trial data and dated price claims have not been reproduced.



Ready to plan your system?

A good design begins with your site and your electricity use. Bring us your bills, tell us what may change, and ask us to show the numbers behind the recommendation.



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