

FREE BUYER GUIDE

The Kenya Solar Buyer Guide

A practical, numbers-first guide to choosing a home or small-business solar system without overspending, undersizing or accepting a vague quotation.

Designed for: Kenyan homeowners, landlords, renters, small businesses and first-time solar buyers

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START HERE

Make the decision before choosing the equipment

The best solar system is not the largest or the cheapest. It is the one that solves a clearly defined problem, supports the right appliances and can be safely expanded.

Choose your primary objective

Tick one primary objective before comparing products. Trying to solve every energy problem in the first phase usually creates an expensive and poorly prioritised system.

- ☐ Backup: keep selected appliances running during KPLC outages.
- ☐ Bill reduction: use solar energy during the day to reduce grid purchases.
- ☐ Hybrid solution: combine bill reduction with battery backup.
- ☐ Off-grid supply: serve a site without a reliable grid connection.
- ☐ Productive use: water pumping, irrigation, cold storage, workshop or business loads.

Your decision statement: "I need solar to _____ for approximately _____ hours, while powering _____."

Budget reality: A quote should be evaluated against the problem it solves, not only against the total price. A smaller correctly designed system can outperform a larger package built around optimistic assumptions.

STEP 1

Read your KPLC bill and operating pattern

Your monthly bill is useful, but it does not show which appliances must run at the same time or which loads should remain on during an outage.

Record	What to capture	Why it matters
12 recent bills	kWh used, amount paid, billing period and unusual months	Shows seasonality and provides a credible energy baseline
Daytime use	Loads running roughly 8:00 a.m.-5:00 p.m.	Daytime loads can use solar directly and may need less battery storage
Outage priorities	Lights, Wi-Fi, TV, fridge, computers, medical or security equipment	Determines the essential-load circuit and required backup energy
High-power loads	Kettle, iron, cooker, geyser, pump, microwave, air conditioner	Can dominate inverter size and battery discharge

Kenyan-home tip

Do not describe the requirement only as “a three-bedroom house.” Two similar houses can have very different loads because of water pumps, electric cooking, freezers, home offices, staff quarters or rental units.

STEP 2

Understand the three sizing numbers

Number	Meaning	Common mistake
Peak running load (W)	The total power of appliances likely to run at the same time.	Sizing from monthly kWh alone and ignoring simultaneous loads.
Start-up or surge load (W/VA)	Temporary extra power required by motors and compressors such as pumps, fridges and freezers.	Selecting an inverter that can run a pump after it starts but cannot start it.
Daily or backup energy (Wh/kWh)	Power multiplied by operating hours. This drives battery and panel sizing.	Quoting a battery by Ah only without stating voltage, usable energy and depth of discharge.

Simple preliminary relationships

Running load = quantity × appliance watts. Daily energy = running watts × hours used. Battery energy must be adjusted for usable depth of discharge and system losses. Solar-array size must be adjusted for local peak-sun hours, temperature, dust, wiring and conversion losses.

Use estimates as screening tools

Online calculators help you prepare questions. They do not replace a site assessment, cable sizing, protection design, roof review or appliance verification.

STEP 3

Choose the right system architecture

System	Best suited to	Watch-outs
Grid-tied	Daytime bill reduction where grid supply is available and outages are not the main concern.	A conventional grid-tied inverter normally shuts down during an outage unless backup capability is specifically provided.
Hybrid	Homes and businesses needing solar generation plus batteries and grid interaction.	Clarify which circuits are backed up, transfer behaviour, battery compatibility and export settings.
Off-grid	Sites without a dependable grid connection.	Requires disciplined load management, adequate storage and provision for low-sun periods.
Portable power station	Renters, small offices and selected plug-in loads.	Check continuous output, surge capacity, battery Wh, charging time and solar-input limits.

Ask the supplier to mark the backed-up circuits. “Whole house” is not a technical specification. A valid proposal should identify the essential-load distribution arrangement and any loads that must remain isolated.

STEP 4

Compare components by specification, not brand name alone

Solar modules

Rated power, efficiency, product warranty, performance warranty, temperature coefficient, genuine serial numbers and mounting compatibility.

Inverter

Continuous output, surge rating, phase, MPPT range, maximum PV input, battery voltage, backup output, monitoring, warranty and local technical support.

Battery

Chemistry, nominal voltage, nominal kWh, usable kWh, recommended depth of discharge, cycle warranty, current limits, communication compatibility and enclosure rating.

Protection

DC isolators, DC/AC breakers, surge-protection devices, earthing, correct cable sizes, labelled distribution boards and safe battery isolation.

Mounting

Roof type, corrosion resistance, wind loading, waterproofing method, access for cleaning and safe cable management.

Battery comparison rule

Compare batteries in usable kWh, not Ah alone. A 100 Ah battery at 12 V stores about one-quarter of the nominal energy of a 100 Ah battery at 48 V.

STEP 5

What a credible solar quotation should contain

- ☐ Customer name, site and clearly stated design objective.
- ☐ Load schedule or assumptions used for sizing.
- ☐ Inverter make, exact model, continuous output and surge capability.
- ☐ Battery make, exact model, chemistry, voltage, nominal and usable energy.
- ☐ Panel make, model, quantity and total array capacity in kWp.
- ☐ Mounting structure, cable sizes, isolators, breakers, surge protection and earthing.
- ☐ Essential-load distribution-board work and changeover arrangement.
- ☐ Installation labour, transport, testing, commissioning and user training.
- ☐ Product warranties, workmanship warranty and after-sales process.
- ☐ Delivery timeline, payment milestones, exclusions and validity period.
- ☐ Installer and technician licensing details applicable to the work.
- ☐ Handover documents, manuals, as-built information and completion records.

Price comparison rule

Do not compare totals until you normalise scope. One quote may exclude protections, rewiring, roof works, transport, monitoring or essential-load separation.

STEP 6

Compliance, installation quality and handover

- ☐ Verify that the people and businesses undertaking regulated solar work hold the licences required for the proposed scope.
- ☐ Request safe isolation, earthing, surge protection, circuit labelling and cable-routing details.
- ☐ Confirm whether roof penetrations are required and who carries responsibility for waterproofing.
- ☐ Ensure batteries are installed in a suitable, ventilated and secure location in accordance with manufacturer requirements.
- ☐ Ask for commissioning tests, monitoring setup and a practical user demonstration.
- ☐ Keep serial numbers, invoices, warranties, manuals, settings and installation records.
- ☐ Confirm the process for warranty claims, call-outs, remote support and preventive maintenance.

Kenya reference note: Regulatory requirements, licensing categories, tariffs and utility processes may change. Confirm current requirements through EPRA (<https://www.epra.go.ke/>), Kenya Law (<https://new.kenyalaw.org/>), Kenya Power (<https://www.kplc.co.ke/>) and KEBS (<https://www.kebs.org/>) before making a final technical or investment decision.

STEP 7

Payment, financing and procurement controls

Before paying a deposit

- ☐ Confirm the legal business name, contacts, physical address and payment account.
- ☐ Ensure the invoice and quotation describe the same equipment and scope.
- ☐ Avoid paying the full amount before equipment verification and agreed milestones.
- ☐ Record model numbers and serial numbers before or during delivery.
- ☐ Agree how substitutions will be approved and priced.
- ☐ Retain a commissioning or defects-retention amount where appropriate.
- ☐ For financed systems, compare total repayment, fees, insurance, ownership and repossession terms - not only the monthly instalment.

Useful milestone structure

A practical contract may separate payment for mobilisation/equipment, delivery verification, installation, and final commissioning. The correct structure depends on project size and supplier risk.

Fraud and substitution risk

Be cautious when a supplier refuses to provide exact model numbers, insists on payment to an unrelated personal account or changes equipment after deposit without written approval.

FINAL CHECK

Twelve questions to ask before you say yes

1. What exact appliances and circuits will this system power?
2. What is the assumed peak running load and largest start-up surge?
3. How many usable battery kWh are provided at the stated operating limits?
4. How many backup hours are expected, under what load and battery condition?
5. What total PV capacity is installed, and what daily generation range is assumed?
6. What happens during a KPLC outage and how quickly does the system transfer?
7. Which loads are excluded or must not run together?
8. Are the inverter, battery and monitoring system fully compatible?
9. Which protection, earthing and distribution-board works are included?
10. Who is responsible for installation, commissioning and regulatory compliance?
11. What product and workmanship warranties apply, and who handles claims?
12. What documents, training and after-sales support will I receive?

Your safest next step

Use the Home Load Assessment and Solar Quote Comparison worksheets before paying. For a high-value system, obtain an independent design or quote audit.

SheSpeaksSolar support

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