

# The 2027 California Solar Buyer's Worksheet

Everything you need to evaluate a solar + storage project — without sales pressure.

| What's inside                            |  |
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| <b>Site assessment</b>                   | A 12-point checklist before you take any quote seriously.                          |
| <b>Financial framework</b>               | How the 30% ITC, MACRS, NEM 3.0 and demand charges actually compound.              |
| <b>Equipment buyer's matrix</b>          | Why panel + inverter + battery quality determines whether your 25-year math holds. |
| <b>12 questions to ask any installer</b> | Plays out every shortcut a low-bid contractor will take.                           |
| <b>Red flags</b>                         | When to walk away from a proposal.   |
| <b>ROI worksheet</b>                     | Fill-in-the-blanks template for your own property.                                 |

Symmetric Energy designs and installs solar, battery storage, EV charging, and microgrid systems for California businesses, property owners, and homes. We've been engineering integrated solar+storage since 2018. CSLB License #1107653.

# A short note before you start

Solar is a 25-year financial decision sold by people incentivized to close this month. The math is real — commercial solar regularly delivers 15–22% IRR in California — but the math only holds if the system is designed and built well. Most projects that disappoint were undersold on capacity, oversold on equipment longevity, or installed by crews who skipped steps that don't show up until year 8.

This worksheet exists to help you tell the difference. It's the same checklist we use internally before we sign a contract — nothing proprietary, just the questions that separate a system that performs from one that limps.

Use it when reviewing any solar proposal, including ours. If anything we tell you doesn't match what's in this PDF, we'd want to know about it.

— Elliott Jessup, CEO & Marius Winger, COO

## SECTION 1

# Site Assessment Checklist

Run through this before you accept any installer's proposal. If they didn't verify these things, their numbers are guesses.

### ■ 1. Utility data, 12–24 months of interval

Not just monthly bills — 15-minute interval data showing peak demand events. Determines whether storage pays for itself.

### ■ 2. Roof age and remaining life

A solar system locks panels to a roof for 25 years. If the roof has <15 years left, replace it before install or budget for re-do.

### ■ 3. Shading study (full year, not snapshot)

A morning shadow study misses afternoon shadows. We use Sketchup-based modeling or Aurora's full-year simulation.

### ■ 4. Structural assessment

For commercial roofs >100 kW or older residential roofs, the roof has to be load-rated. Skipping this causes warranty problems.

### ■ 5. Service panel capacity (residential)

A 100A panel often can't accept a battery + Level 2 EV charger + solar without a 200A upgrade. Adds \$3K–\$8K.

### ■ 6. Three-phase service (commercial)

Commercial sites need three-phase inverters. The inverter selection drives 30% of total cost.

### ■ 7. Property line setbacks

California Fire Code requires 3-ft setbacks on residential roofs, more in WUI zones. Eats into usable roof area.

### ■ 8. Existing wiring + grounding

NEC 2023 requires rapid shutdown and arc fault protection. Older homes need a service entrance upgrade.

### ■ 9. Wildfire risk zone (WUI)

Tier 2 and Tier 3 zones require additional fire-rated equipment and conduit. Most residential installers ignore this and you fail inspection.

### ■ 10. Net metering grandfathering status

If you have a system installed under NEM 2.0, adding to it can collapse you to NEM 3.0. We confirm in writing with PG&E.

#### ■ 11. Battery placement options

Lithium batteries need ventilation, cool ambient temps, and ideally indoor placement away from living spaces. Most contractors put them in the garage out of laziness.

#### ■ 12. Conduit run distances

Long DC conduit runs require oversized wire (expensive). Long AC runs are cheap. The placement of inverters vs panels determines the build cost more than panel pricing.

## SECTION 2

# Financial Framework

Five line items drive 90% of solar economics in California. Understanding how they stack is the difference between getting a 17% IRR and a 7% IRR.

## Federal Investment Tax Credit (ITC)

30% credit on system cost. Available through 2032 for projects that begin construction by then. Steps down to 26% in 2033, 22% in 2034, then sunsets for residential. Commercial keeps 10% indefinitely.

**The single biggest line item on your tax return that year.**

## Accelerated Depreciation (commercial only)

5-year MACRS plus bonus depreciation under current law. Half the system cost typically depreciates in year 1. For a profitable C-corp at 21% federal + ~9% state, this is worth ~22–28% of system cost.

Combined with the ITC, the effective net cost of commercial solar is roughly 40–50% of sticker.

## NEM 3.0 export credit (residential)

California cut export credits roughly 75% in April 2023. Solar-only systems give 60–80% of their production back to the utility at \$0.06–\$0.10/kWh. **This is why solar-only no longer pencils.** Adding a battery lets you store excess production for evening use at the full retail rate (\$0.38–\$0.50/kWh on PG&E peak).

## Demand charges (commercial only)

On PG&E E-19 / E-20, demand charges represent 30–50% of your bill. Solar alone reduces consumption but rarely reduces peak demand. Battery storage configured for demand-shaving can cut peak demand 40–70%. This is often where the IRR makes or breaks for commercial.

## Rate escalation (the silent compounder)

PG&E residential rates have risen ~6% annually over the last decade. The CPUC currently models 3–5% annual escalation as base case. Over 25 years, this single assumption can swing your IRR by 4–7 percentage points. Ask your installer what escalation rate they used in their model.

SECTION 3

# Equipment Buyer's Matrix

Cheap equipment will outlast its warranty by a year or two. Then it dies, and your "25-year payback" model becomes a "10-year regret." Here's the matrix we use.

| Component                     | What we specify                                    | What to avoid   |
|-------------------------------|--|---|
| <b>Panels</b>                 | Maxeon, REC Alpha, Q CELLS Q.PEAK                  | Re-branded ODM panels with no domestic distribution           |
| <b>Panel degradation rate</b> | 0.25–0.4% per year                                 | Anything over 0.5%; budget panels degrade fastest             |
| <b>Panel warranty</b>         | 25+ years product warranty                         | Performance-only warranties (no product coverage)             |
| <b>Inverters</b>              | Sol-Ark hybrid, Enphase IQ8                        | String inverters without rapid shutdown; cheap microinverters |
| <b>Battery</b>                | Enphase IQ Batteries, FranklinWH, EG4 (commercial) | Off-brand lithium with no UL listing                          |
| <b>Battery thermal mgmt</b>   | Active cooling or passive with vented enclosure    | Sealed enclosures in unconditioned garages                    |
| <b>Racking</b>                | Unirac, IronRidge, S-5! (metal roof)               | No-name rails; non-grounded systems                           |
| <b>Monitoring</b>             | Per-panel optimization (Tigo) or per-microinverter | String-only monitoring (one failed panel hides for months)    |

## Why this matters

In 2014–2018, the industry collectively learned what cheap solar costs. Hundreds of California homes ended up with panels that delaminated in year 7, inverters from now-bankrupt brands with no warranty support, and racking that voided roof warranties. The companies that sold them are mostly out of business. The homeowners are still paying.

Premium equipment costs 15–25% more upfront and saves 50% over the 25-year lifetime. The math is unambiguous once you model failure modes. Ask any quote whether the panels are in the Tier 1 list (Bloomberg) and whether the inverter manufacturer has been in business for >10 years.

## SECTION 4

# 12 Questions to Ask Any Installer

A good installer welcomes these. A bad installer pivots to talking about monthly payments. Use this as your qualification call.

### 1. What's your CSLB license number, and is it C-46 (solar) or C-10 (electrical)?

Both are valid in California; C-46 is solar-specific. Verify at [cslb.ca.gov](http://cslb.ca.gov) — license should be active 5+ years.

### 2. Who does the engineering and design — in-house, or subcontracted?

In-house is dramatically better for accountability. Subcontracted design means the installer doesn't fully control the build.

### 3. What's your assumed annual production (kWh/kWp/yr) for my address?

Should be 1,300–1,700 for most California sites. If they can't answer specifically, they're working from spreadsheet defaults.

### 4. What rate escalation rate did you use in your savings model?

3–4% is realistic. 5–7% is wishful thinking. 8%+ is a sales tactic.

### 5. Show me the production data from 3 similar projects you've built nearby.

They should be able to email you actual monitoring data from past installs. If not, your install will be their experiment.

### 6. Who handles permitting and inspections, and what's your typical timeline?

Should own permitting end-to-end. Pad timeline by 30% for PG&E interconnection.

### 7. Are you NABCEP-certified, and which staff member would be on-site?

NABCEP is the industry gold standard. The person on your roof should have it.

### 8. What happens if a panel fails in year 12?

They should explain the warranty claim process, who handles labor (you or them), and what stock they keep.

### 9. Will you put your roof penetration warranty in writing?

Real installers will. Subcontracted crews won't.

### 10. What's your battery thermal management strategy in summer?

Should mention placement, ventilation, and active vs. passive cooling. If the answer is "we just put it in the garage," they're cutting corners.

### 11. Do you handle interconnection (Rule 21) directly, or do I?

They should. If you're asked to file paperwork with PG&E, that's a red flag.

**12. Can you walk me through your monitoring plan after install?**

You should get a per-panel dashboard. They should proactively notify you of underperformance. Quarterly reviews for commercial.

SECTION 5

# Your ROI Worksheet

Fill this in for any property you're evaluating. The numbers your installer gives you should reconcile to these inputs — if they don't, ask why.

| Input                                 | Your number | Typical range / source  |
|---------------------------------------|-------------|---|
| Annual electricity consumption (kWh)  | _____       | From your utility bill summary  |
| Average rate (\$/kWh)                 | _____       | PG&E residential: \$0.38–0.50; commercial: \$0.22–0.30                  |
| Roof or array area (sq ft)            | _____       | Capacity is ~15 W/sq ft for rooftop, 5 W/sq ft for carport              |
| Proposed system size (kW DC)          | _____       | Should match annual consumption ÷ (1,500 kWh/kW/yr)                     |
| Year-1 production (kWh)               | _____       | System size × 1,300–1,700 kWh/kW for California                         |
| Sticker price (before incentives)     | _____       | Residential: \$3.00–4.00/W. Commercial: \$2.00–3.00/W                   |
| Federal ITC (30%)                     | _____       | Apply to sticker  |
| MACRS depreciation value (commercial) | _____       | Sticker × ~25% for typical C-corp tax position                          |
| Net cost                              | _____       | Sticker minus ITC minus MACRS value                                     |
| Year-1 savings (no storage)           | _____       | Production × rate × NEM offset %  |
| Year-1 savings (with storage)         | _____       | Add 10–20% for self-consumption / demand-charge offset                  |
| Simple payback                        | _____ yr    | 4–7 years typical for well-designed CA commercial; 7–10 for residential |
| 25-year IRR                           | _____ %     | 15–22% commercial; 8–14% residential with storage                       |

## SECTION 6

# Red Flags

If you see any of these in a proposal or sales conversation, slow down and ask harder questions.

### ▲ "This price is only good today."

Solar economics don't change in 24 hours. High-pressure sales = thin margins, cut corners, or both.

### ▲ No site visit before quote

Anyone quoting from Google satellite alone hasn't seen your roof condition, your service panel, or your trees.

### ▲ Monthly payment focus over total cost

A "\$0 down, \$X/month" pitch is designed to obscure markup. Always ask for the cash price.

### ▲ Door-to-door cold canvass

Reputable installers don't need to knock. Most door-to-door operators are 1099 reps for 4–6 different installers.

### ▲ They can't name the equipment brands

Or they say "we use whichever panels are best." That means cheapest.

### ▲ "Free solar" or "no cost to you"

Means leases or PPAs, which transfer 70–80% of the value to a third party. Almost never the right move for owners.

### ▲ Production guarantees with vague clawback terms

A "we guarantee X kWh" promise is only worth what they'll do when production misses.

### ▲ Subcontracted labor with no project manager

You should have one named point of contact from contract to commissioning.

### ▲ Skipping the structural and electrical assessments

Then the install fails inspection, costs you weeks, and someone has to eat the rework.

### ▲ Won't share past projects or references

Ask for 3 you can call. If they hesitate, walk.

# When you're ready to talk specifics

We model every project against this same framework before we write a proposal. If the numbers don't work for your property, we tell you upfront — we'd rather lose the deal than build a system that disappoints in year 8.

**Symmetric Energy**  
3020 Bridgeway #325, Sausalito, CA 94965  
415-257-3060 · info@symmetricenergy.com  
www.symmetricenergy.com  
CSLB License #1107653

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