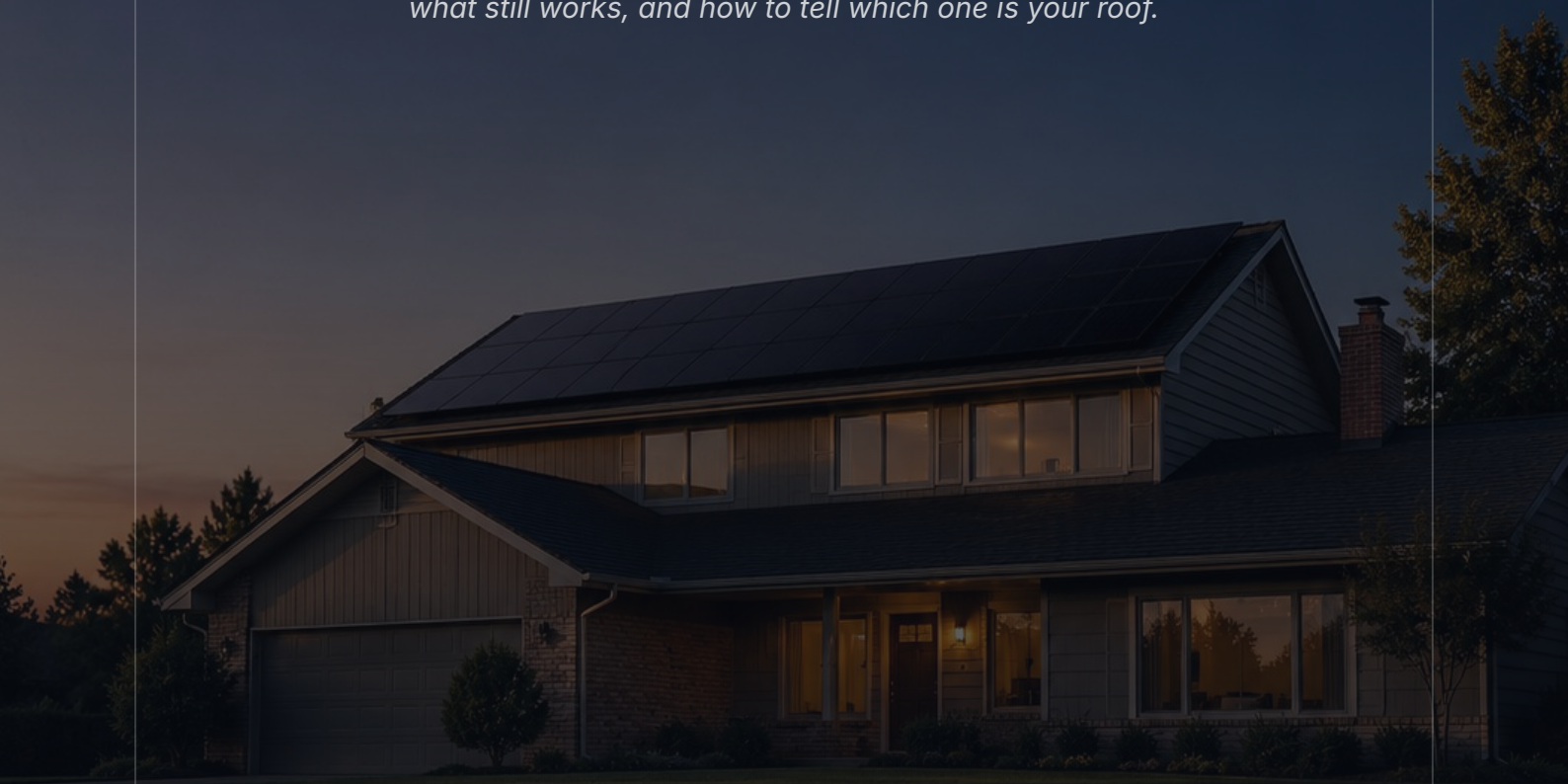
THE SOLAR BRIEF

RESIDENTIAL SOLAR ADVISORY

A HOMEOWNER'S FIELD GUIDE · 2026

Going solar, **honestly.**

~30 pages on residential solar after the federal credit ended — what changed, what still works, and how to tell which one is your roof.



WHAT CHANGED · STATE-BY-STATE · HONEST

OPEN HERE FIRST

If you only read one page, read this one.

The federal residential solar tax credit ended December 31, 2025. The math changed for most US homeowners. Solar still pays back for many of them — just not the same ones it used to. Six things to know before you read the rest.

1. **The §25D residential credit is gone.** No federal credit for cash or loan buyers in 2026. No transitional rule for systems contracted in 2025 but installed in 2026.

2. **The §48E lease/PPA credit is alive through 2027.** When a leasing company captures it, the better operators pass some through as lower per-kWh rates. Construction must begin by July 4, 2026 OR system placed in service by December 31, 2027.

3. **State incentives now do most of the math.** SuSI (NJ), SMART (MA), SGIP (CA), AZ residential credit, local utility rebates — these didn't change and they decide whether your specific roof pencils.

4. **Cash payback periods stretched 3 to 7 years.** What was 7-11 years pre-OBBBA is now 11-15 years for most cash buyers. NJ and MA still pencil under 12 years thanks to state stacks.

5. **The cash > loan > lease > PPA hierarchy inverted.** For mid-bill households ($150-250/mo) in many states, lease through 2027 may now beat cash on lifetime cost. State and bill size determine the right answer.

6. **Solar still isn't right for everyone.** Renters, low bills (<$150/mo), severely shaded or north-facing roofs, and roofs needing replacement soon — these were skip-cases before OBBBA and they still are. We'll tell you when honestly.

> **How to read this guide:** Section 1 helps you decide whether solar is right for you at all. Section 2 explains why the math changed. Sections 3-6 walk through the configurations, the quotes, the financing, and the installer-vetting process. Sections 7-8 cover what actually happens after you sign. Appendices have the glossary and our sources. The whole thing reads in about 45 minutes; the section-by-section pieces are usable on their own.

WHAT'S IN THIS GUIDE

Eight sections, two appendices.

Designed to be read straight through or used as a reference. Each section stands on its own; cross-references throughout.

FIT-CHECK 01

Is solar even right for you?

Five honest disqualifiers + the five questions every homeowner should answer before going further.

ECONOMICS 02

How the math actually works

The federal credit history, the §48E sunset, state stacks, and the seven-state comparison.

CONFIGURATIONS 03

The four configurations

Panels-only, +battery, +EV charger, whole-home electrification — what each costs, who fits.

QUOTES 04

How to read a quote

Panels, inverters, batteries, and warranties: what's actually different and what to ask.

FINANCING 05

Cash, loan, lease, PPA

The post-OBBBA inversion. Why lease may now beat cash through 2027 for many households.

VETTING 06

Vetting an installer

The 12-question checklist with right-vs-wrong answers + the red flags worth walking from.

PROCESS 07

The install timeline

From signed contract to switched-on system — what takes how long and where it gets stuck.

YEAR ONE 08

After install

Reading your post-solar bill, what to monitor, what counts as a real problem.

APPENDIX A

Glossary

Twenty-five essential terms in plain English. Skim once before you read installer marketing.

APPENDIX B

Methodology + sources

Every dollar figure cited. IRS, DSIRE, SEIA, NREL, EIA, peer-reviewed where applicable.

SECTION ONE

Is solar even right for you?

SECTION 1 · THE FIT-CHECK

The five honest disqualifiers, up front.

Most installer marketing tells you solar is right for almost everyone. It isn't. If you fall into any of these five categories, the math doesn't pencil in 2026, and we'd rather you know now than three quotes later.

1. You rent, not own.

Solar requires homeownership for the install. There is no homeowner-renter workaround. **If you rent, the closest functional substitute is community solar** — you subscribe to a share of an off-site solar farm and get bill credits. Available in most states; check the DSIRE database for your area. Stop here.

2. North-facing roof, or heavy shade.

Solar panels need unshaded south, west, or southeast exposure for at least 4-6 hours of midday sun. A roof that's fully shaded by trees, blocked by a neighbor's tall building, or oriented entirely north produces a fraction of what a south-facing equivalent would. The economics don't recover. **If your roof is borderline,** a ground-mount system on unshaded yard space is sometimes a workaround — flag this to an installer.

3. Monthly electric bill under approximately $120-150.

Without the federal credit, sub-$150 bills rarely pencil for ownership. The cheaper move is usually weatherization (insulation, air sealing, smart thermostat) or community solar. **If your bill is $150-250 and you're cash-only / owner-only,** the math is uncomfortable but a lease may still pencil through 2027 — see Section 5.

4. Roof needs replacement in under 5 years and you won't pay for it now.

Solar panels last 25-30 years. If your roof is approaching end of life, you'll pay $5,000-10,000 to remove and re-install panels for the roof replacement, which erases years of payback. **Replace the roof first.** Some installers (Boston Roof & Solar in MA, others) offer combined roof-and-solar quotes — a useful structure if your roof is at end of life.

5. The federal-tax-liability disqualifier no longer applies.

Pre-OBBBA, this was the catch: if your federal income tax liability was too low to absorb the 30% credit, you couldn't fully use it. **That disqualifier is now obsolete** for cash and loan buyers — there's no §25D residential credit to claim. For lease/PPA, the §48E credit goes to the installer, not you. Tax-liability concerns about solar are a 2025 concern, not a 2026 one.

> **If none of these apply, you're a candidate for solar in 2026.** The next page is the five questions every homeowner should answer before going further.

Five questions to answer before you go further.

If you cleared the disqualifiers, these are the five facts an honest solar advisor needs from you to give a useful read. Have them ready before you talk to anyone.

QUESTION 1

What's your average monthly electric bill across the year? Not just the worst summer month or the cheapest winter one — the annual average. Pull twelve months of bills if you can, or ask your utility for a year-long usage report. *Why it matters:* bill size determines whether ownership math pencils. Rule of thumb: $250+/mo for cash; $150+/mo for lease.

QUESTION 2

What's your zip code, and which utility serves you? State and utility rules drive most of the post-OBBBA math. Same bill in California vs. Texas produces dramatically different paybacks. Know your retail electricity provider and your state's net-metering rule (or lack of one).

QUESTION 3

Where does your roof face, and is anything shading it? South or west is best. Southeast or southwest is fine. East-only is marginal. North is a no. Note any trees, neighboring tall buildings, chimneys, or vents that block midday sun. If you're unsure, an installer's site survey (or even a satellite-image-based design tool) settles it quickly.

QUESTION 4

How old is your roof, and what's its replacement plan? Solar lasts 25-30 years. If your roof has 5+ years of useful life ahead, install away. If it has under 5, replace first or do them combined. If you don't know your roof's age, your home's age and a recent inspection are usually sufficient signals.

QUESTION 5

Are you set on owning the system, or open to a lease/PPA arrangement? This is the post-OBBBA question that didn't matter much before. Owner-minded buyers go cash or loan. Owner-flexible buyers should compare lease quotes too — for many bill-and-state combinations through 2027, lease produces lower lifetime cost than cash.

"If you cleared the disqualifiers and have honest answers to these five, you're ready to talk to an installer. If you don't, you're not — get the answers first, you'll save weeks of misdirection."

SECTION TWO

How the math **actually works.**

What the OBBBA actually did.

In one paragraph: the Inflation Reduction Act of 2022 set the residential solar tax credit at 30% through 2032. The One Big Beautiful Bill Act, signed July 4, 2025, accelerated that timeline by approximately seven years and terminated §25D entirely for systems placed in service after December 31, 2025. The §48E commercial credit remains available through 2027. Two consequences flow from this.

Consequence one: cash and loan buyers lost their main lever.

A typical 8 kW panels-only system that previously netted ~$16,800 after the 30% federal credit on a $24,000 list price now costs the homeowner the full $24,000 net. State incentives where they exist (SuSI, SMART, SGIP, AZ residential credit, utility rebates) still apply. But the federal lever — the biggest single lever in residential solar economics — is gone. Cash payback periods stretched approximately 3-7 years.

Consequence two: lease and PPA inverted from "trap" to "opportunity" — for now.

The §48E commercial credit applies to systems owned by third parties. When a leasing company installs panels on your roof under a lease or PPA, they capture the credit. Through 2027 (with construction-begin and placed-in-service safe harbors), the better lease providers pass some of that value through as lower per-kWh rates. Pre-OBBBA, "lease/PPA traps" was a fair default warning. Post-OBBBA, lease may produce lower lifetime cost than cash for many mid-bill households.

The 2027 calendar fact.

The §48E sunset is the most important timing detail in residential solar today. Construction must begin by July 4, 2026, OR the system must be placed in service by December 31, 2027. After that — absent legislative extension — the lease/PPA federal lever closes too. As of May 2026 there is no active extension effort.

> CAVEAT
>
> **Carry-forward of unused 2025 credits.** If you installed a residential system in 2025 and haven't used the full §25D credit on your 2025 return, the unused portion can carry forward to your 2026 (and later) federal tax returns. This affects 2025 installs only — not 2026 ones.

State stacks now do most of the math.

With the federal lever gone for owners, state-level incentives — and your retail electricity rate — drive payback. The stack varies wildly. Three of the seven states we cover have strong stacks; four have thin ones. The same 8 kW system pays back twice as fast in NJ as in NV.

The strongest state stacks in 2026.

New Jersey — Successor Solar Incentive (SuSI): 15 years of predictable per-kWh production payments. SuSI alone partially absorbs the lost federal credit; combined with full retail net metering and sales/property tax exemptions, NJ remains the best Northeast cash economy. **Massachusetts — SMART program:** 10-20 years of per-kWh production payments depending on enrollment block, plus state income tax credit (up to $1,000), plus sales tax exemption. High retail rates ($0.30-0.38/kWh) compound the value. **California — SGIP for batteries:** declining-tier rebate, but useful in NEM 3.0 economics where battery is essentially required. The California stack is now battery-driven and lease-favored.

The thinner stacks.

Arizona — AZ Residential Solar Tax Credit ($1,000) + sales tax exemption. APS/SRP export rates well below retail mean self-consumption (battery) matters more than export. **Texas — local utility rebates only.** Austin Energy, CPS Energy, Oncor offer rebates; no statewide net metering means the REP buyback plan you choose matters as much as the panels. **Nevada — property tax exemption only,** no state income tax credit (no state income tax). Tiered net metering at ~75% of retail. **Florida — sales + property tax exemption, no state income tax credit,** but full retail net metering preserved. The Florida value rests entirely on sun and net metering.

> **Practical implication:** NJ and MA homeowners can still cash-purchase confidently in 2026. CA homeowners should compare cash-with-battery to lease seriously. AZ, TX, NV, FL homeowners — particularly in the $150-300/mo bill range — should get at least one lease quote alongside any cash quote.

The federal lever, in plain language.

For cash and loan buyers in 2026: there is no federal credit on the system itself. For lease and PPA: the leasing company claims the §48E commercial credit (30% of system cost) on their tax return. They may pass a portion of that value through to you as lower per-kWh rates — see Section 5 for how to tell whether they actually do. After 2027, even the lease/PPA federal credit closes unless extended.

Seven states, one comparison.

Typical cash payback for an 8 kW panels-only system (panels + 13.5 kWh battery in CA) on a south- or west-facing unshaded roof, household at the midpoint of the $200-400/month bill range. Real outcomes vary by specific system size, equipment tier, installer, and individual tax situation.

STATE	RETAIL RATE / KWH	NET METERING	KEY STATE LEVER	2026 CASH PAYBACK	LEASE / PPA PATH
New Jersey	$0.18–0.22	Full retail	SuSI (15-yr per-kWh)	**9–11 yrs**	Available; cash usually still wins
Massachusetts	$0.30–0.38	Full retail	SMART per-kWh + $1K state credit	**9–12 yrs**	Available; cash usually still wins
California	$0.32–0.48	NEM 3.0 (export ~$0.07)	SGIP battery rebate	**12–16 yrs (battery req'd)**	Strongly preferred through 2027
Arizona	$0.13–0.17	Limited (export < retail)	$1K AZ state credit	**11–14 yrs**	Worth a hard look
Florida	$0.13–0.17	Full retail (preserved)	Sales + property tax exemption	**12–15 yrs**	Comparable to cash
Nevada	$0.13–0.17	Tiered (~75%)	Property tax exemption only	**12–15 yrs**	Worth strong consideration
Texas	$0.11–0.16	None statewide	Local utility rebates only	**12–16 yrs**	Often pencils better through 2027

Retail rates from EIA Electric Power Monthly, 2026 edition. State incentives per DSIRE state programs database, accessed May 2026.

"State stacks didn't change in 2026 — the federal lever did. Strong-stack states absorbed the loss; thin-stack states didn't. That's the whole story of the post-OBBBA market."

Three modeled scenarios.

To make the table concrete, three representative profiles modeled on NREL PVWatts Q4 2025 production figures + state retail rates as of May 2026. Not real customers — illustrative scenarios for the high-stack, mid-stack, and thin-stack archetypes.

CA · East Bay homeowner, $340/mo bill, NEM 3.0.

1,900 sq ft single-family with south-facing composite-shingle roof in good condition. Recommended system: 8.5 kW panels + 13.5 kWh battery (NEM 3.0 essentially requires battery). List price ~$36,000. State levers: SGIP battery rebate (~$2,000-4,000 declining-tier value). Cash net cost: ~$32,000-34,000. Annual savings: ~$4,200/yr at PG&E rates with battery self-consumption. **Cash payback: ~13-14 years.** Lease alternative: per-kWh rate ~$0.20 (vs $0.40 PG&E retail), effective payback ~7-9 years through §48E passthrough.

TX · Suburban Austin, $190/mo bill, deregulated retail.

2,200 sq ft single-family with south-southwest roof, 8 years old. Recommended system: 8 kW panels-only. List price ~$23,000. State levers: Oncor rebate ~$1,500, no state income tax credit, no federal credit. Cash net cost: ~$21,500. Annual savings: ~$1,650/yr at typical Oncor REP buyback rates. **Cash payback: ~13-15 years.** Lease alternative: per-kWh rate ~$0.10 (vs ~$0.13 average TX retail), effective payback ~10-12 years. Lease wins on lifetime cost at this bill level.

NJ · Suburban Bergen County, $260/mo bill, full retail NM + SuSI.

2,400 sq ft single-family with south-facing roof, 12 years old. Recommended system: 9 kW panels-only. List price ~$26,000. State levers: 15 years of SuSI per-kWh payments (~$2,800/yr value), full retail net metering, sales + property tax exemption. Cash net cost: ~$26,000 (no federal credit). Annual savings: ~$1,950 bill displacement + $2,800 SuSI = ~$4,750/yr total. **Cash payback: ~9-10 years.** NJ's SuSI absorbs most of the federal-credit loss; cash still wins comfortably.

> **Pattern:** In high-stack states (NJ, MA, CA-with-battery), cash purchase still pencils within a decade. In low-stack states (TX, NV, AZ, FL), cash payback stretches past the inverter replacement cycle and lease becomes the better-pencilling path through 2027.

SECTION THREE

The four configurations.

Most homeowners land in one of four buckets.

Solar configurations scale from a basic panels-only install to whole-home electrification with battery, EV charger, and heat pump prep. The right configuration depends on your bill, your state, and your other electrification plans for the next 5-10 years.

CONFIGURATION	LIST PRICE (USD)	2026 CASH PAYBACK	BEST FOR
Panels (cash or loan)	$15,000–30,000	**11–15 yrs**	Mid-bill homes in strong-stack states; no outage worries
Panels + battery	$25,000–45,000	**13–17 yrs**	CA NEM 3.0; backup-power needs; time-of-use markets
Panels + battery + EV charger	$28,000–50,000	**14–18 yrs**	Current EV owner or planning one; one-trip install
Whole-home electrification	$45,000–80,000+	**Long-horizon ROI**	Newer home, gas-to-electric conversion, max long-term economics

List prices from EnergySage Q1 2026 Marketplace data. Actual installer quotes vary 25-40% within the same metro. Cash payback assumes 8 kW panels-only system at midpoint state economics; lease/PPA alternatives produce shorter effective payback through 2027.

> *"The right configuration is rarely the most expensive one. Marcus is just as likely to recommend the smaller install as the bigger one."*

Configuration deep-dive (1 of 2).

Panels (cash or loan) — the base case.

An 8-10 kW rooftop panel system, no battery, no EV charger. Best fit for: mid-bill households ($150-300/mo) in states with full retail net metering (NJ, MA, FL). The grid functions as your free, lossless battery — every kWh exported earns a credit equal to what you'd pay to import. **What you get:** bill displacement during daylight hours, full export credit at night, ownership of the equipment with all attendant resale-value upside.

What you don't get: backup power during a grid outage. A panels-only system shuts off when the grid goes down (safety rule — keeps utility line workers safe from solar-fed back-feed). If you live somewhere with frequent outages, this matters; if not, it doesn't.

Panels + battery — the new California default.

The same 8-10 kW system plus 10-15 kWh of battery storage (Tesla Powerwall 3, Enphase IQ Battery 5P, FranklinWH). Adds ~$10,000-15,000 to the project. Best fit for: California (NEM 3.0 makes export credits low — battery-stored midday production used at night dramatically improves economics), hurricane states (FL, TX coastal), wildfire-PSPS-zone California, time-of-use markets where peak rates are 2-3x off-peak (AZ, NV, parts of TX).

The two flavors of backup. "Partial backup" powers a sub-panel of essentials (fridge, lights, internet, one outlet for medical equipment). $10K-13K added over panels-only. "Whole-home backup" powers everything including AC. $15K-25K added; usually requires a larger battery and sometimes a panel upgrade. For most households without medical or temperature-sensitive needs, partial backup is right. If you live in Phoenix and lose AC during a heat-wave outage, that's not a partial-backup situation.

> **The California-specific case.** Under NEM 3.0, panels-only economics in CA stopped working in April 2023. Battery-paired systems became the only configuration that pencilled. With the federal credit now gone for owners, CA cash payback on a typical 8.5 kW + 13.5 kWh battery system stretches from ~10 years (with §25D) to ~14 years in 2026. Lease providers in CA aggressively pass §48E credit value through — effective payback via lease falls to roughly 7-9 years through 2027.

Configuration deep-dive (2 of 2).

Panels + battery + EV charger — the one-trip install.

Add a Level 2 EV charger (~$1,500-3,000 installed) to the panels + battery system. Best fit for: current EV owners or anyone planning to buy one within the next 2-3 years. The marginal cost of pre-wiring during the solar install is small; the cost of retrofitting after the fact (running new conduit, possibly upgrading the panel) is significantly larger. If you might get an EV in the foreseeable future, do it now.

What to verify on the EV charger: 240V circuit sized for 40-80 amps, NACS or J1772 connector (NACS is increasingly standard), and ensure your main service panel can handle the load. A 40-amp Level 2 charger draws ~9.6 kW — meaningful demand the panel needs to support.

Whole-home electrification — the "do everything once" install.

Solar + battery + EV charger + heat pump prep + electric water heater conversion + induction-cooking pre-wire. $45,000-80,000+ depending on existing home wiring and state. Best fit for: homeowners planning to fully electrify the home over the next 3-5 years anyway, plus those with a strong ideological preference for a fully electric home. Lifetime ROI is strong but slower; payback runs 12-18 years.

The "do it once" argument is real: each of these installs separately costs more in labor and permitting than doing them together. The whole-home electrification path is most cost-effective if you're already planning to replace the gas furnace, the gas water heater, and add an EV in the next 3 years. If you're not, the marginal cost of the bundled install is wasted on equipment you don't yet need.

Decision flowchart.

> **If your bill is under $150/mo:** consider community solar instead.
> **If your bill is $150-250 and state stack is thin:** get a lease quote first.
> **If your bill is $250+ in NJ, MA, or any state with retail net metering, no battery needed:** panels-only.
> **If you're in California, or have outage worries, or are on time-of-use rates:** panels + battery.
> **If you have or plan to have an EV within 2-3 years:** add the EV charger pre-wire.
> **If you're already planning gas-to-electric for furnace, water heater, and stove within 3 years:** whole-home electrification pencils.

Three pages of installer marketing, decoded.

A typical installer quote runs 5-15 pages and contains roughly seven facts that actually matter. Most of the rest is marketing. Here's what to look for, what to push back on, and what to insist is written into the contract — not promised verbally.

"Tier-1 panels" doesn't mean what you think.

"Tier-1" is a financial classification used by Bloomberg New Energy Finance to indicate panel manufacturers considered bankable by lenders. It's a financial-risk rating, not a quality rating. There are panels in the Tier-1 list that are perfectly good and panels in the Tier-1 list you wouldn't want on your roof. **Always ask for the specific panel make and model number in the contract** — not "tier-1 mono panels," not "premium 400W modules," not "high-efficiency German engineering."

Reasonable choices in 2026: Q Cells Q.PEAK DUO, REC Alpha Pure, Panasonic EverVolt, Silfab Prime, SunPower Maxeon. The brand matters less than the specificity. If the contract reads "tier-1 panels and string inverter," the installer reserves the right to substitute whatever they have in the warehouse on install day. That's a real outcome, not a theoretical one.

Inverter brands — what's actually different.

Three main inverter architectures: **microinverters** (Enphase IQ8 series — one tiny inverter per panel, panel-level monitoring, no single point of failure), **string inverters** (SolarEdge SE-H series, SMA, Tesla Solar Inverter — one large inverter for the whole array, simpler but a single failure mode), and **hybrid inverters** (combine string inverter + battery management — common with Tesla Powerwall installs).

Microinverters cost more upfront but offer better per-panel performance under partial shading and per-panel monitoring. String inverters are cheaper, simpler, and have a longer track record but underperform when any one panel is shaded. For most US suburban roofs without shading concerns, either works. For complex roofs with multiple orientations or partial shading, microinverters are usually worth the premium.

Production estimates + the three warranties.

Modeled annual production in kWh — with the model output attached.

Every reputable installer designs the system in software (Aurora Solar, Helioscope, PVsyst, OpenSolar). The software produces an annual production estimate in kilowatt-hours per year that accounts for your roof's pitch, orientation, shading, and local irradiance. **That number — not the system's nameplate kW capacity — is what determines your savings.**

Ask for the production model output, either as a PDF or a screenshot. The good installers share it; the worried ones tell you "we use industry-standard assumptions." If two installers quote you the same 8 kW system with annual production estimates 1,500 kWh apart, the higher number is probably wishful — ask both how they modeled shading.

Three warranties — they cover different things.

Panel warranty (usually 25 years from the panel manufacturer): covers panel defects and output degradation beyond spec. Virtually identical across reputable manufacturers — don't choose between Q Cells and REC based on warranty length, choose based on price and reputation.

Inverter warranty (typically 12-25 years): covers inverter failure. Microinverters typically carry 25-year warranties (Enphase); string inverters typically 12-15. The shorter inverter warranty is the wear-part exposure — expect to pay for inverter replacement at year 12-15 on a string-inverter install.

Workmanship warranty (varies wildly, from the installer): covers everything else — roof penetrations, mounting hardware, wiring, labor. **This is the one most likely to come due in years 5-15**, and the one most likely to be quietly short. We see installers in our partner network offering anywhere from 2 to 25 years. Ten years is a reasonable floor for a serious purchase.

> DO NOT ACCEPT
>
> **"Lifetime warranty" claims that aren't actually lifetime.** Some installers advertise "lifetime warranty" but the small print says 5 or 10 years, or the warranty is issued by a third-party marketing entity rather than the company doing the install. Ask: who issues the warranty, what's the term in years, and what specifically does it cover? Vague answers reveal the actual quality of the warranty.

The "lifetime savings" sleight-of-hand.

Almost every quote will lead with a lifetime-savings figure: "$67,000 over 25 years," "saves you $112,000 over the life of the system." These numbers depend on at least four stacked assumptions — change any one of them and the number swings by tens of thousands.

The four hidden assumptions.

Lifetime savings depend on (1) annual electricity rate inflation (typically assumed at 3-5%, optimistically), (2) system production degradation (~0.5%/year), (3) what the homeowner actually does with bill credits, and (4) whether the system reaches its full useful life without major component replacement. **Small changes in any of these assumptions move the lifetime number by tens of thousands.**

The number we trust.

Cash payback period in years — how many years until the system has paid for itself in displaced electricity at today's rates, with no rate-inflation assumption baked in. After that point, all production is upside, but how much upside depends on factors no one can predict 20 years out. Ask every installer for the cash payback assuming today's electricity rate, no rate inflation. The number that comes back is the comparable one across quotes.

"We deliberately don't quote specific lifetime savings figures in our analysis. Too many compounding assumptions stack up over 25 years for that to be useful in any given homeowner's decision."

The "system size" sleight-of-hand.

Two patterns to watch. **Oversizing for incentives:** some state programs (SuSI, SMART) pay per-kWh produced, so installers may quote a larger system than your bill justifies because the per-kWh state payments make the bigger system pencil. This is fine if you understand the bet — you're trading some upfront capital for state cash flow over 15 years. **Undersizing for sticker shock:** some installers quote a smaller-than-optimal system to keep the headline price low, leaving you under-producing relative to your bill. Both are legitimate trade-offs but should be transparent. Ask: "Is this system sized to my actual usage, or to the incentive program?"

What you owe before you sign anything.

Get three quotes from three different installers. Pricing variance between installers in the same metro is routinely 25-40%. The lowest quote is not always the right one — workmanship warranty, equipment specificity, and production-estimate honesty all matter. The highest quote is rarely the right one either. The middle quote, with the strongest warranty and the most specific equipment list, is usually where the right installer lives.

The hierarchy that just inverted.

For two decades, the honest line on solar financing was: cash if you have it, then loan, then lease, then PPA. The hierarchy held because cash and loan buyers captured the federal Investment Tax Credit and lease/PPA buyers gave it up. On January 1, 2026, that hierarchy inverted for many households. Through 2027, lease may now produce lower lifetime cost than cash for mid-bill homeowners.

Cash purchase.

You pay the full system price upfront. You own the equipment. No federal credit in 2026. State credits and utility rebates still apply. Best for: $250+/mo bill in a strong-stack state, owner-minded buyer with the cash, plans to stay 12+ years. Cash is still the cheapest lifetime cost *for households where the math pencils*.

Solar loan.

A third-party lender pays the installer; you make monthly payments for 10-25 years. You own the equipment. Same federal-credit position as cash in 2026 (none). Loan adds interest carry over a longer payback. Practical equivalent to cash plus a financing cost. Best for: same bill-and-state profile as cash, but without the liquidity to put cash down. Watch loan APR (not just monthly payment), origination fees (sometimes 15-30% of the loan baked in as "dealer fee"), and re-amortization clauses.

Lease (third-party owned).

The leasing company pays for and owns the system on your roof. You pay them a fixed monthly amount for 20-25 years, often with an annual escalator clause of 1.9-2.9%. **The leasing company captures the §48E commercial credit.** Through 2027, the better lease providers pass some of that value through as lower per-kWh rates than they could otherwise offer. Best for: bills $150-250/mo, owner-flexible buyer, want zero upfront cost, comfortable with a 20-25 year contract on the home.

PPA — Power Purchase Agreement.

Same structure as a lease — installer owns the system — except instead of fixed monthly amount, you pay a per-kWh rate for whatever the system produces. Same §48E capture, same passthrough opportunity through 2027. Functional difference: consumption-aligned pricing, useful for variable-bill households (vacation homes, work-from-home variability). Same 1.9-2.9% annual escalator typically applies. Most common in CA and parts of the Northeast.

The §48E passthrough — when installers actually pass it through.

The §48E commercial credit equals 30% of the system's eligible cost, claimed by the system's owner. When a leasing company owns the system, they're the owner — the credit goes to them. There is no rule requiring them to pass any of that value through to the homeowner. Whether they do, and how much, is a competitive decision.

AGGRESSIVE PASSTHROUGH

- **Common in:** Bay Area, Phoenix, Austin, South Florida — markets with multiple competing TPO providers
- **Looks like:** per-kWh rate 25-40% below local retail; willingness to walk through the math
- **Example:** CA lease at $0.20/kWh vs PG&E retail of $0.40

PARTIAL PASSTHROUGH

- **Common in:** less-competitive metros, larger national TPO providers with pricing power
- **Looks like:** per-kWh rate 10-20% below local retail; some §48E value reaches you
- **Example:** TX lease at $0.10/kWh vs typical TX retail of $0.13

NO MEANINGFUL PASSTHROUGH

- **Common in:** single-installer markets, door-to-door / pressure-driven sales
- **Looks like:** per-kWh rate at or above local retail; vague answers about §48E
- **Example:** any lease that doesn't pencil meaningfully better than buying nothing at all

How to ask the question.

Get three lease quotes the same way you'd get three cash quotes. Ask each one directly: **"How much of the §48E credit are you passing through to my per-kWh rate, and can you show me the math?"** Aggressive-passthrough installers will engage the question with specific numbers. No-passthrough installers will deflect ("our pricing reflects current incentives," "proprietary pricing model"). That deflection is the answer.

> **The 2027 sunset matters here.** The §48E credit ends Dec 31, 2027 (with safe harbors for projects beginning construction by July 4, 2026 OR placed in service by Dec 31, 2027). After that — absent legislative extension — even the lease/PPA federal lever closes. The favorable lease pricing currently available has roughly an 18-month window to be locked in. Expect aggressive marketing from TPO providers in late 2026 and early 2027.

Four lease/PPA red flags — still traps, even now.

The federal-credit math changed. The contractual gotchas didn't. Four lease and PPA terms remain genuine traps in 2026. None of these are made better by the §48E passthrough.

TRAP 1

Escalator clauses above 2.9%/yr

Industry standard is 1.9-2.9%. Anything above 3% compounds aggressively over 25 years — a 4% escalator more than doubles your effective per-kWh rate by year 18. 0% escalators (fixed leases) exist and are notably better than 2.9% leases.

TRAP 2

End-of-term forced purchase requirements

Some lease contracts require the homeowner to purchase the system at fair market value at end of term, OR the leasing company removes it at the homeowner's expense. Either path can cost $5,000-15,000. Read the end-of-term section carefully.

TRAP 3

Restrictive transfer-on-sale terms (or transfer fees)

If you sell the home with a leased system on the roof, the buyer typically has to assume the lease or you have to buy it out before sale. Some contracts include $500-2,500 transfer fees. Cleanest contracts allow lease assumption with standard credit-check and no per-transfer fee.

TRAP 4

No production guarantee with a real dollar mechanism

A reputable lease/PPA includes a written production guarantee — if the system underproduces against the modeled estimate by >5-10% in any year, the leasing company compensates. "Industry-standard production estimates" without a written dollar mechanism is not a guarantee.

The decision matrix in one paragraph.

Cash: $250+/mo bill, owner-minded, NJ/MA or CA-with-battery, 12+ years in home.
Loan: same profile but without liquidity; verify APR not monthly payment.
Lease through 2027: $150-250/mo bill, owner-flexible, any state, want zero upfront cost.
PPA: variable-bill household (vacation home, WFH variability), CA or Northeast.
Wait or skip: bill under $150, severe shading, roof at end of life with no replacement plan.

Twelve questions every installer should answer.

Right answers are specific. Wrong answers are vague, deflect to marketing language, or pivot the conversation back to financing. Ask all twelve before you sign anything.

QUESTION 1 — INVERTER BRAND

Q: "What inverter brand and model do you carry, and why that one?" **Right:** specific model number (e.g., "Enphase IQ8M") + concrete reason (e.g., "Per-panel monitoring fits your partial shading"). **Wrong:** "We use industry-standard inverters."

QUESTION 2 — PRODUCTION GUARANTEE

Q: "What's your production guarantee — kWh per year, and who underwrites it?" **Right:** specific kWh number + named guarantor + the dollar mechanism if production falls short. **Wrong:** "We guarantee performance."

QUESTION 3 — LONG-TERM EQUIPMENT FAILURE

Q: "What happens if a panel fails in year 12 — who pays for replacement and labor?" **Right:** equipment warranty (manufacturer) + labor warranty (installer or third party) named separately, with terms. **Wrong:** "We've never had a panel fail."

QUESTION 4 — SIZING PROCESS

Q: "How is your bid sized to my actual usage?" **Right:** pulls last 12 months of utility bills and does a real calculation accounting for future EV / heat pump / electrification plans. **Wrong:** assumes a system size based on roof area or "typical homes like yours."

QUESTION 5 — SUBCONTRACTING

Q: "Do you self-install or subcontract the install?" **Right:** clear answer either way; if subcontracted, names the subcontractor and how they're vetted. **Wrong:** dodge or "we manage the install."

QUESTION 6 — STATE LICENSING

Q: "What's your installer-licensing status in my state, and can I see your license number?" **Right:** specific license number you can verify with the state contractor board. **Wrong:** "We're fully licensed."

Six more questions, then the red flags.

QUESTION 7 — TAX FILING (ESPECIALLY FOR LEASE/PPA)

Q: "How does the federal credit work for my financing path, and what do I need to file?" **Right:** for cash/loan: "the §25D residential credit is no longer available — there's no federal credit on the system you'd buy." For lease/PPA: "we capture the §48E commercial credit; your benefit is reflected in your per-kWh rate, and we'll show you the math." **Wrong:** "You'll claim the 30% credit on Form 5695."

QUESTION 8 — PERMITS

Q: "What permits do I need and who pulls them?" **Right:** clear answer, installer pulls all local + electrical + utility-interconnection permits, with timeline. **Wrong:** "You'll handle local permits."

QUESTION 9 — INSTALL TIMELINE

Q: "What's your total install timeline from contract signing to PTO (Permission to Operate)?" **Right:** specific weeks (typically 6-16 weeks total: 2-4 weeks design, 3-8 weeks permitting, 1-3 days install, 2-6 weeks utility interconnection wait). **Wrong:** "Pretty quick."

QUESTION 10 — REFERENCES

Q: "Can I see references from local customers from 3+ years ago?" **Right:** yes immediately — established installer can produce 3-year-old references easily. **Wrong:** only recent references (2024-2025), or "all our references are confidential."

QUESTION 11 — WHAT'S NOT INCLUDED

Q: "What's NOT included in this quote?" **Right:** explicit list — e.g., "main panel upgrade if needed ($2,000-4,000), tree removal if shading mitigation required, structural reinforcement if roof deck inadequate." **Wrong:** "Everything is included."

QUESTION 12 — BATTERY-READY

Q: "If I want to add a battery later, does this system support it?" **Right:** yes/no with technical reasoning (battery-ready inverter or not, panel-ready or not, what would need to change). **Wrong:** "Yes, easily" without specifics.

Red flags — walk away.

- **Door-to-door pressure tactics.** The "neighborhood discount expires today" is a manipulation, not a real offer.
- **"This price expires today / this week."** Honest installers don't price-pressure; their prices are good for 30-60 days.
- **ITC promises in specific dollar amounts.** Especially in 2026 — the residential credit doesn't exist for cash/loan. Anyone promising you "your $7,200 federal credit" is misinformed or misleading.
- **Reluctance to put production guarantee in writing.** Verbal guarantees are not guarantees.
- **"We'll handle the ITC for you."** They literally cannot — you file your own taxes. Anyone offering to "file the credit" is being misleading.

SECTIONS SEVEN & EIGHT

What actually **happens.**

Contract signing to switched-on system: 2-4 months.

The actual physical install is the shortest part of the timeline — typically 1-3 days. Most of the wait is permitting and utility interconnection. Here's what each phase actually involves and where it tends to get stuck.

Phase 1 — Site visit + design (2-4 weeks).

An installer technician comes to the house, climbs on the roof if accessible, takes measurements, photographs the electrical panel and meter, and notes any shading. Design happens in software (Aurora, Helioscope, or installer's proprietary tool). You get a draft layout showing panel placement, projected production, and an updated quote. Often takes 2-3 weeks because installer queues are seasonal — spring and summer install seasons book up.

Phase 2 — Permitting + HOA approval (3-8 weeks, varies wildly).

The installer files with your local building department (electrical permit, structural permit, sometimes a separate solar-specific permit). Permit timing varies dramatically by jurisdiction — Phoenix turns around in days, San Francisco can take months. If you have an HOA, they often require a separate review. Allow extra time in HOA-heavy markets (parts of CA, FL, AZ).

Phase 3 — Install day(s) (1-3 days).

The installer's crew (usually 2-4 people) installs racking, panels, wiring, the inverter, and any battery. Most residential installs complete in 1-2 days. Larger systems or whole-home electrification jobs can take 3-5 days. This is the most disruptive part of the process — there's a crew on your roof and electricians inside the house — but the shortest.

Phase 4 — Inspection (1-3 weeks).

City or county inspector signs off on the installed system. Usually quick. Sometimes finds minor issues that need correcting before they sign — installer schedules a follow-up.

Phase 5 — PTO wait (2-6 weeks, occasionally longer).

Permission to Operate (PTO) is the utility's sign-off. After install + inspection, the utility has to formally approve interconnection and (if your meter is being upgraded) install the bidirectional meter. This is the most frustrating part — the system is physically installed and you can see the panels on your roof, but you can't legally turn it on yet. Some utilities are fast (PG&E in CA used to be ~2 weeks; longer in 2025-2026 due to backlog); some are slow (rural electric coops can take 6+ weeks). Your installer manages this; you wait.

What "after install" actually looks like.

The first year is mostly uneventful — solar systems are durable and maintenance-free. Three things matter: reading your post-solar bill, monitoring production, and (for cash/loan owners) understanding what the §25D carry-forward looked like for any 2025 install.

Reading your bill post-solar.

Your bill will look different. New line items typically include: **solar generation credits** (kWh exported and credited, multiplied by the export rate — full retail in NJ/MA/FL, NEM 3.0 export rate in CA, REP buyback in TX), **true-up cycle** (annual reconciliation in many states — your monthly bills net out over a year, with a final settlement at the anniversary), and **fixed charges** (you still pay them; solar doesn't displace them). Your utility's website usually has a post-solar bill explainer; if not, your installer should walk you through your first bill.

Monitoring — what to watch.

Modern systems include monitoring software (Enphase Enlighten, SolarEdge mySolarEdge, Tesla app). You should have full access — not "limited installer access" — so you can see daily and monthly production data. **What to compare:** first 12 months of actual production vs the modeled production estimate from your design. They should be within ~5-10% of each other. If you're under by more than that, there's something wrong (shading you didn't account for, a panel-level issue, soiling, inverter underperformance) — call the installer.

When to call the installer.

Production noticeably below estimate (after the first 30 days, which often have install-process noise): call. Visible damage to panels (cracked glass, etc.) after a hailstorm: call (often covered by homeowner's insurance as a roof-damage incident). Inverter offline / monitoring app showing system down: call. Minor squirrel-related wiring damage (more common than you'd think): call your installer first; they'll often fix it under workmanship warranty if applicable.

Maintenance reality.

Almost none. Panels are self-cleaning in most climates; in dusty/dry areas (Phoenix, Las Vegas), an annual rinse with a hose helps. Inverter is the wear part — expect to replace at year 12-15 on a string-inverter install ($1,500-3,000 typical), or essentially never on a microinverter install (Enphase IQ8 carries a 25-year warranty).

For 2025 installs — the §25D carry-forward.

If you installed solar in 2025 and didn't fully use the §25D credit on your 2025 federal tax return (because your tax liability was too low), the unused portion *can* be carried forward to your 2026 (and later) returns. Worth flagging to your tax pro. For 2026 installs, this doesn't apply — there's no §25D credit at all.

APPENDIX A

Glossary — twenty-five terms, plain English.

Skim once before you read installer marketing. The right vocabulary makes the difference between understanding and being talked at.

kW (kilowatt). Power. The system's nameplate capacity. An 8 kW system can produce 8 kW at peak.

kWh (kilowatt-hour). Energy. What you actually consume (or produce) over time. Your bill is in kWh.

PV (photovoltaic). The technology in solar panels — converting sunlight directly to electricity.

Inverter. Converts the panel's DC electricity to the AC your home uses.

Microinverter. One small inverter per panel. Better under partial shading, more expensive.

String inverter. One large inverter for the whole array. Cheaper, simpler, single point of failure.

MPPT. Maximum Power Point Tracking — the inverter's logic for extracting maximum power from changing light.

NEM (net metering). The utility rule for crediting solar exports back to you. Full retail = best.

NEM 3.0. California's 2023 export-rate cut. Reduced solar export credits to ~15% of retail.

Net billing. Replacement for net metering in some states. Exports credited at wholesale, not retail.

True-up. Annual reconciliation of monthly bill credits / debits. Settled at the anniversary date.

§25D / ITC. The 30% federal residential credit. Ended Dec 31, 2025.

§48E. The federal commercial credit lease/PPA providers capture. Available through 2027.

SREC / SuSI. State-issued credits / payments per kWh produced (NJ).

SMART. Massachusetts state solar incentive program — per-kWh production payments.

SGIP. California Self-Generation Incentive Program — battery rebate.

PTO. Permission to Operate — the utility's final approval to switch the system on.

PPA. Power Purchase Agreement — third-party-owned, you pay per kWh produced.

TPO. Third-Party Owned — covers both leases and PPAs.

NABCEP. The industry-standard certification for installer competence.

REP. Retail Electricity Provider — the company you buy electricity from in deregulated markets (TX).

Time-of-use (TOU). Rate plans where electricity costs more during peak hours (evenings).

Backup-ready inverter. Inverter capable of supplying loads from a battery during a grid outage.

Production guarantee. Written commitment that the system produces at least X kWh/year.

Workmanship warranty. Installer's warranty covering install quality (penetrations, mounting, wiring) — not equipment.

Methodology — why these numbers.

Every dollar figure and statistical claim in this guide is sourced from primary documentation. The next page lists every source we used. This page explains the deliberate choices behind what we publish and what we don't.

No lifetime savings figures.

You will not see a "$45,000 saved over 25 years" headline in this guide. Lifetime savings calculations stack roughly seven compounding assumptions on top of each other — utility rate inflation, panel degradation, inverter replacement timing, roof condition at year 18, household consumption changes, future net-metering policy, and resale event timing. Each assumption carries a margin of error; multiplied together over 25 years, the resulting number tells you almost nothing about your specific decision. We quote payback in years and first-year cash flow in dollars, because those numbers are testable against your actual bill within twelve months.

Modeled scenarios, not real customers.

The three "Modeled scenario" examples in Section 2 are explicitly representative profiles built from NREL PVWatts production figures, EIA retail rate data, and EnergySage marketplace pricing — not real customers. The Solar Brief is too new to have real partner-network customer data. We could have published only tables, but tables are too dry to convey what the math actually feels like for a homeowner sitting at a kitchen table with a $190 utility bill.

State coverage.

Section 2 covers seven states (CA, NJ, MA, AZ, TX, NV, FL). These were chosen because they account for the bulk of US residential solar installations and span the meaningful policy archetypes — strong net metering (NJ, MA), weak or zero net metering (CA NEM 3.0, NV), state tax credit (AZ), deregulated retail electricity (TX), and incentive-free but high-sun (FL). A homeowner in a state not covered here can usually identify which archetype their state most resembles by checking the DSIRE database for net metering policy and any active state credit.

Update cadence.

We update this guide when new federal or state legislation, IRS guidance, or material market shifts warrant it — not on a fixed schedule. Last updated May 2026. For the most current version, visit thesolarbrief.com.

Sources — every claim cited.

Where the numbers, policy citations, and modeled assumptions in this guide come from. Grouped by topic so you can verify any specific claim quickly.

Federal policy.

One Big Beautiful Bill Act (Public Law 119-21, 139 Stat. 72), signed July 4, 2025. Section 70502 modified §25D, terminating eligibility for systems placed in service after December 31, 2025. Section 70504 modified §48E timing. Source: *IRS FAQs for OBBBA modifications* (irs.gov/newsroom). Independent legal analysis: *Arnold & Porter — From IRA to OBBBA: A New Era for Clean Energy Tax Credits* (July 2025). **§25D credit history:** DSIRE Federal Residential Renewable Energy Tax Credit (programs.dsireusa.org). **§48E commercial credit:** SEIA Clean Energy Provisions in the OBBBA (seia.org). **2025 carry-forward:** IRS Instructions for Form 5695 (2025 tax year), irs.gov/instructions/i5695.

State-level incentives.

DSIRE state programs database (dsireusa.org), accessed May 2026, for net metering rules, state credits, and utility programs in all seven covered states. Specific program references: *NJ Successor Solar Incentive (SuSI)* via NJ Board of Public Utilities; *MA SMART Program* via MA Department of Energy Resources; *CA Self-Generation Incentive Program (SGIP)*; *AZ Residential Solar Tax Credit* via Arizona Department of Revenue; *Texas REP buyback plans* via PUC Texas Power To Choose.

Pricing + production.

Residential solar pricing: EnergySage Solar Marketplace data, Q1 2026 averages (energysage.com). **Annual production estimates:** NREL PVWatts, Q4 2025 production figures (pvwatts.nrel.gov). **US residential retail rates:** EIA Electric Power Monthly, 2026 edition (eia.gov/electricity/monthly).

Lease and PPA mechanics.

Lease and PPA contract terms, escalator clauses, and §48E passthrough patterns from **SEIA Solar Power Purchase Agreements** (seia.org/research-resources/solar-power-purchase-agreements). Lease pricing observations from public TPO provider rate cards (Sunrun, Sunnova, Tesla, Sunlight, GoodLeap, Mosaic, EverBright), May 2026.

Home-value premium.

Owned-system home-value premium ($4 per watt installed, ~$28K added value on a 7 kW system) from **Lawrence Berkeley National Laboratory — Selling into the Sun** studies (emp.lbl.gov/publications/selling-solar) and subsequent LBNL Tracking the Sun annual reports.

~30 PAGES OF PREPARATION

Five minutes, an honest read.

You've read the field guide. The next step is a five-minute conversation with Marcus, our AI solar advisor — he'll walk through your specific roof, your specific bill, your specific state, and tell you honestly whether you're a cash candidate, a lease candidate, or someone we'd recommend wait. Free. No follow-up calls you didn't ask for.

TALK TO MARCUS

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