SAMPLE REPORT - address and identifying details removed; roof shown as a generic schematic; shading is a sample apartment complex, for privacy.

Residential Solar Analysis

an Oshkosh, Wisconsin home

Prepared October 6, 2026 · SIA Solar Design Studio

OUR RECOMMENDATION

A 44-panel, 17.6 kW system sized to your actual use — no battery, on the numbers — paid in cash, on the time-of-use rate. Aim for a quote at or below $2.90/watt: at that price it pays for itself in about 13 years and clears roughly $52,017 over 25 years. If you'd rather put nothing down, a PPA is the strongest financed route (p.7). Add storage only if outage backup is worth paying for.

$44,592	13.3 yrs	$52,017	Fair
Net cost at target price, after the $2,400 rebate	To pay for itself (best price, TOU rate)	Saved over 25 years (best price, TOU rate)	The Studio's rating — strong only at a low price

What we found

YOUR USAGE

22,340 kWh / yr

From your real 12 months. Two peaks: the pool in summer, electric sunroom heat in winter.

RECOMMENDED SIZE

44 panels · 17.6 kW

Offsets ~99% of your use. 48 would overproduce (108%); the excess earns less than retail.

SHADING

Low — 91–100% sun

Panels sit only on the four best faces (SE + SW). Minimal tree shade; a strong solar roof.

PRICE SETS THE OUTCOME

$2.67–$4.25 / W

Market range for Oshkosh. At ≤$2.90/W it clearly pays; above ~$3.50/W it largely doesn't.

BEST RATE FOR YOU

Switch to Rg5-OTOU

Our analysis: the time-of-use rate lifts 25-yr value ~30%, even counting your evening winter heat.

INCENTIVES

$2,400 + exemptions

Focus on Energy's 2026 rebate ($600/kW, capped). Plus WI sales- and property-tax exemptions.

FEDERAL CREDIT

0%

The 30% residential credit expired Dec 31, 2025. Any quote still showing it is wrong.

STORAGE

Backup, not savings

You asked for it. ~$15k buys ~9 hrs of backup but cuts 25-yr savings ~$26k. Full math on p.6.

MAIN PANEL

Likely +$3,500

A 17.6 kW array trips NEC's 120% rule on a 200 A panel; a service upgrade is included in our costs.

How this works, and what's next

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Our role — and yours

SIA doesn't sell panels, and we don't negotiate or sign anything on your behalf — that's what keeps us independent and keeps you in control. What we do is **vet local installers and introduce you to the ones that pass**, then hand you the analysis in this report so you can **lead the conversation and represent yourself with confidence**. You stay the single point of contact with your installer. We're in your corner in the background — ready to check anything they put in front of you against this model, privately. You're never on your own, and you're never handing us the wheel.

Savings over time — achievable

On the time-of-use rate at a well-negotiated price, the 44-panel system pays for itself in about 13 years and nets roughly $52,017 over 25 years. The price per watt you're offered is the biggest lever — and knowing the fair range before you talk to anyone is exactly what this report gives you.

Backup during outages — a separate call

Storage delivers the independence you want, but under full retail net metering the grid already acts as your "battery" for savings, so a physical battery is a **comfort and resilience purchase**, not a money-saver. We lay out the exact trade on p.6 so the choice is yours, made with open eyes.

Next steps

1

We make introductions

Our installer-matching service connects you with local installers we've screened for licensing, track record, and fair pricing.

2

You lead the talks

Use this report — your size, production, and fair-price range — as the benchmark when an installer sits down with you.

3

We check their numbers

Send us whatever they propose. We hold it up against this model and tell you privately how it compares.

4

Confirm the panel

Your installer verifies your main service rating on site — that settles whether the ~$3,500 upgrade is really needed.

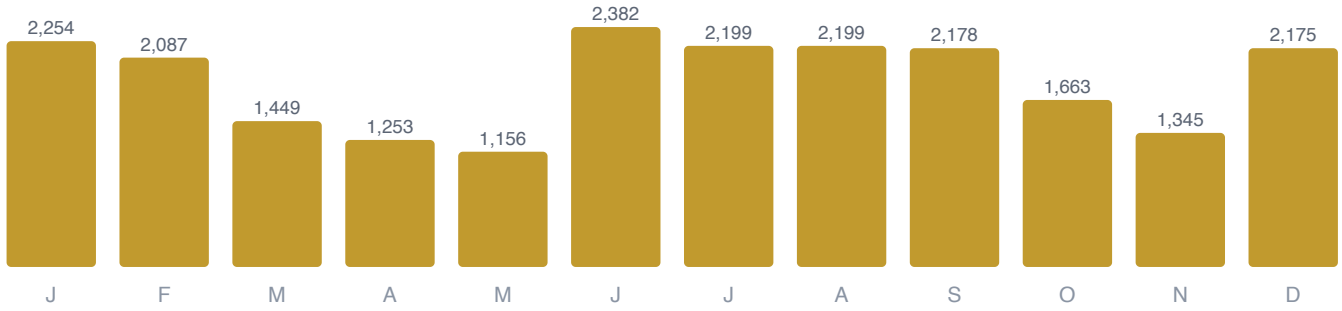
Roof and shading from the Google Solar API (imagery 2012, high quality); production from NREL PVWatts per roof face. Rate from the filed Wisconsin Public Service residential tariffs (URDB snapshot), valued hour-by-hour against your own monthly usage. Federal credit 0% (25D expired 31 Dec 2025). Escalation 2.5%/yr, degradation 0.5%/yr, O&M $34/kW-yr, discount 5%, 25 years. Installed-price range from paid-invoice market data for Wisconsin / Winnebago County. Estimates from the SIA Solar Design Studio, not a quote. SIA is paid a flat fee, sells no equipment, and earns the same whichever installer you choose.

Your electricity use

an Oshkosh, Wisconsin home
Prepared October 6, 2026 · SIA Solar Design Studio

You shared a full 12 months, so there's no guesswork — we modeled your **actual** consumption. You use **22,340 kWh a year** (about 1,862 kWh a month, ~$284/mo), roughly double a typical Wisconsin home. The shape matches the two big loads you have: a **summer peak** from the pool pump (J ≈ 2,382 kWh) and a **winter peak** from the electric sunroom heat, with mild spring and fall (M ≈ 1,156 kWh).

MONTHLY USE — YOUR LAST 12 MONTHS (KWH)



Source: the monthly kWh you provided. The twin peaks (pool in summer, electric heat in winter) are exactly what solar has to cover — and why a single month's bill can't stand in for the year.

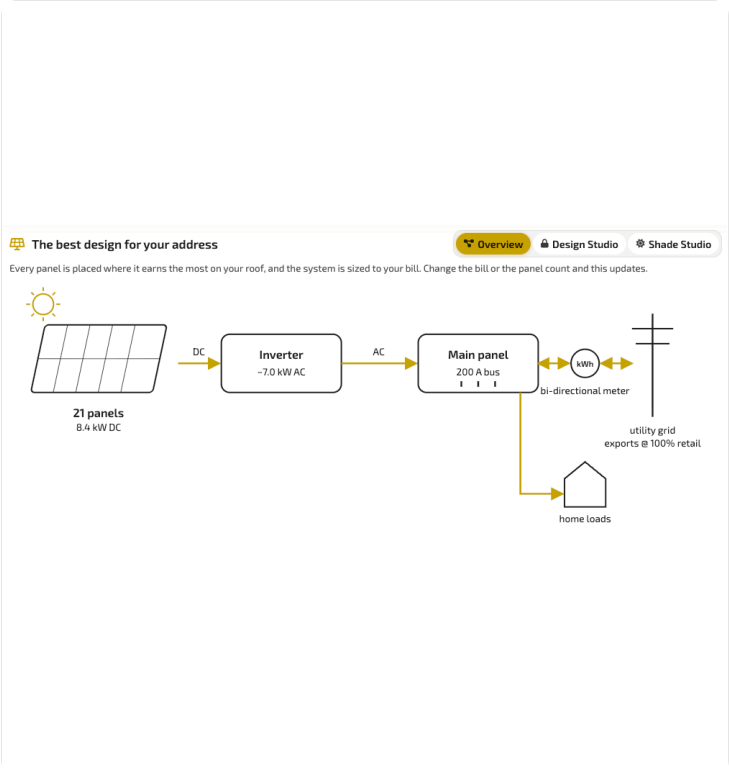
Why the shape matters here

Your pool runs in daylight, overlapping well with solar — good for direct self-use. Your sunroom heat runs on winter evenings, when the panels are dark, so that demand comes from the grid (or a battery). This load shape is the reason we analyzed both utility rates carefully (p.5) rather than assuming the usual answer.

Your roof, shading & system

an Oshkosh, Wisconsin home

Prepared October 6, 2026 · SIA Solar Design Studio



Google's solar-flux map of your roof with the recommended layout placed. Bright yellow is the most annual sun, purple the least. Panels are placed only where the roof earns the most — the dark bands are the lower-sun areas we avoid.

Proposed system

Panels	**44 × 400 W**
System size	**17.6 kW DC**
Year-1 production	**22,027 kWh AC**
Bill offset	**99%**
Roof faces used	**4 (SE + SW)**
Annual sun hours	**~1,544 / yr**
Net-metering cap	**20 kW — qualifies**

Production modeled per face in PVWatts and cross-checked against Google's shade-aware per-panel yields (agree within ~2%).

Shading analysis — the faces we'd use

ROOF FACE	ORIENTATION	PITCH	AREA	SUN ACCESS*
SE main face	135° SE	35°	69 m²	99.8%
SSE face	151° SSE	24°	20 m²	98.4%
SE steep face	129° SE	41°	18 m²	92.2%
SW face	221° SW	35°	73 m²	91.4%

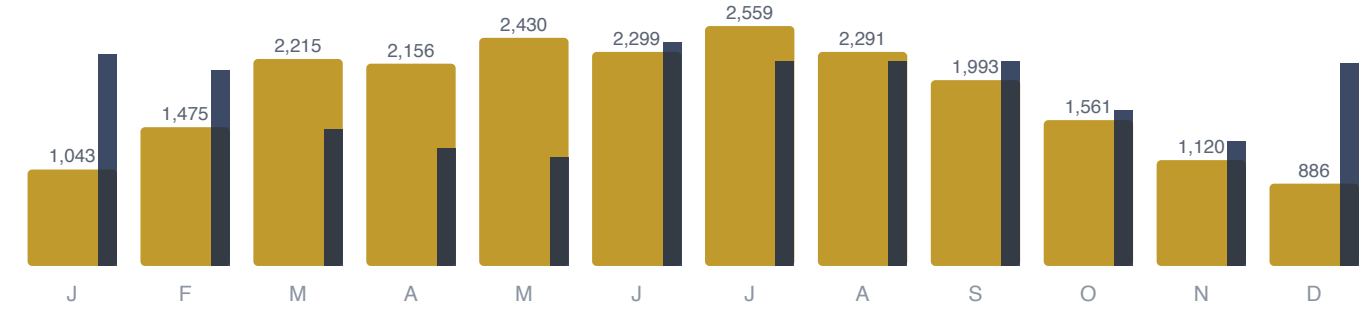
*Sun access = the share of an unshaded roof's sunlight each face actually receives, measured under the panels from Google's imagery. All four chosen faces clear 91%, so shading losses are minimal — this is a clean solar roof. We deliberately skip the lower-sun north faces and the shaded bands even though they'd hold more panels.

Production, and the right rate

an Oshkosh, Wisconsin home

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ESTIMATED MONTHLY PRODUCTION — 44 PANELS (KWH AC) VS. YOUR USE



Summer production rides above your use (banked as net-metering credit); winter falls short and you draw from the grid. Full retail net metering is what lets the summer surplus pay for the winter shortfall.

Which rate — our analysis

Wisconsin Public Service offers you two residential rates. We modeled your system on both, valuing every hour against your actual load shape — including the winter-evening sunroom heat, which lands in peak hours. Even with that, the **time-of-use rate (Rg5-OTOU) wins**, because your daytime solar and pool offset expensive peak hours and your exports earn more:

RATE (44-PANEL SYSTEM, CASH)	PAYBACK — BEST PRICE	25-YR NET — BEST	25-YR NET — AVG PRICE
Rg-1 — flat (your current), 14.3¢	14.8 yr	$41,213	$32,765
Rg5-OTOU — time-of-use	**13.3 yr**	**$52,017**	**$43,569**

Our verdict: move to Rg5-OTOU

It lifts your 25-year value by roughly 26% on the same hardware. Peak energy costs 32.5¢ and off-peak just 8.1¢, so the hours your panels and pool run in daylight are worth far more. The one habit that helps: run the pool pump and any flexible loads in daytime/off-peak windows. We'll confirm the switch mechanics with you — you don't need to work any of this out yourself.

What it should cost

an Oshkosh, Wisconsin home
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We don't quote one price — we give you the **market range** from paid-invoice data for the Oshkosh area, so you know what a fair price looks like before you sit down with anyone. For the recommended 44-panel system, after the $2,400 rebate (flat Rg-1 rate; the time-of-use rate improves every row):

PRICE	INSTALL	NET AFTER REBATE	PAYBACK	25-YR NET
$2.67/W	$46,992	$44,592	14.8 yr	$41,213
$2.92/W	**$51,392**	**$48,992**	**16.0 yr**	**$36,813**
$3.15/W	$55,440	$53,040	17.1 yr	$32,765
$3.50/W	$61,600	$59,200	18.7 yr	$26,605
$3.88/W	$68,288	$65,888	20.3 yr	$19,917
$4.25/W	$74,800	$72,400	21.9 yr	$13,405

~$3.15/W is the local average; ~$2.67–$2.90/W is achievable with competition; $4.25/W is the high end.

Size sensitivity — 25-year net by price

SYSTEM	DC	OFFSET	LOW $2.67/W	AVG $3.15/W	HIGH $4.25/W
24 panels	9.6 kW	54%	$23,454	$18,846	$8,286
32 panels	12.8 kW	72%	$30,567	$24,423	$10,343
40 panels	16.0 kW	90%	$37,706	$30,026	$12,426
44 panels	**17.6 kW**	**99%**	**$41,213**	**$32,765**	**$13,405**
48 panels	19.2 kW	108%	$44,740	$35,524	$14,404

Cash, flat Rg-1 rate, after rebate. Payback is nearly flat across sizes (~15 yr at low price, ~22 yr at high), so the question isn't "how fast" but "how much" — and bigger only helps up to your usage. 44 panels offsets ~99%; 48 would overproduce, and that extra output is credited below retail, so the last four panels add little.

The honest read

This is a **price-sensitive** investment. Well-negotiated (**$2.67–$2.90/W**) it pays back in ~13–15 years and clears a solid positive return; near the **high end it barely breaks even** over 25 years. With the federal credit gone, the price per watt is the whole game — which is exactly what this report arms you to push on.

Every way to pay for it

an Oshkosh, Wisconsin home

Prepared October 6, 2026 · SIA Solar Design Studio

Four ways to finance the 44-panel system, across the price range. "25-year net" is the money in your pocket after all costs; "NPV" discounts future savings to today's dollars (positive means it beats leaving the cash in a 5% alternative).

STRUCTURE	25-YR NET — LOW PRICE	25-YR NET — AVG	25-YR NET — HIGH	NPV @5% (LOW PRICE)
Cash	**$41,213**	**$32,765**	**$13,405**	**$937**
Loan (7%, 15 yr)	$15,081	$1,935	-$28,192	-$4,119
Lease (25 yr)	$20,642	$20,642	$20,642	$11,737
PPA (25 yr)	$26,877	$26,877	$26,877	$14,407

Cash and loan are on the flat Rg-1 rate (the time-of-use rate improves both — cash reaches $52,017 at the best price). Lease and PPA figures don't move with the install price because the fund, not you, carries that cost — which is exactly their appeal when price is uncertain.

If you can pay cash

At a low negotiated price it's the clear winner — $52,017 over 25 years on the time-of-use rate, with a positive NPV. This is our primary recommendation.

If you'd rather not

PPA beats a loan outright. It has the best NPV of any route ($14,407), needs $0 down, and is immune to the install price. A 7% loan, by contrast, lets interest outrun the savings — avoid it. A commercial fund can still use tax benefits you no longer can, which is why third-party ownership holds up here.

One caveat we're checking for you

The lease/PPA edge depends on the fund's 2026 tax position after the recent federal changes. We confirm that before ever pointing you toward third-party ownership — and most PPAs don't include a battery, so your backup goal would still be a separate purchase.

Storage: with vs. without

an Oshkosh, Wisconsin home

Prepared October 6, 2026 · SIA Solar Design Studio

You asked for battery backup, so we ran it both ways — and the recommendation follows the math, not the wish. The math is clear: **a battery does not pay for itself here.** It's a resilience purchase. Here's the exact trade for the 44-panel system on the time-of-use rate.

CONFIGURATION	NET COST	PAYBACK	25-YR NET	NPV @5%
Solar only — best price	**$44,592**	**13.3 yr**	**$52,017**	**$6,693**
Solar + Powerwall 3 — best price	$59,992	19.5 yr	$26,080	-$13,663
Solar only — avg price	**$53,040**	**15.4 yr**	**$43,569**	**-$1,755**
Solar + Powerwall 3 — avg price	$68,440	21.3 yr	$17,632	-$22,111

What the battery costs you (not what it saves)

Adding a 13.5 kWh Powerwall 3 raises the project by about **$15,400**, **cuts your 25-year savings by roughly $26,000**, and pushes payback out about **6 years**. Under full retail net metering there's almost no bill savings for it to recover. **On the numbers, we recommend solar without storage.**

If outage backup is worth paying for

That's a legitimate personal call — just make it as insurance, not investment. Your options, cheapest first:

BATTERY	USABLE	BACKUP RUNTIME*	INSTALLED	25-YR COST VS. NONE
Enphase IQ 5P (1 unit)	5.0 kWh	~3.3 hrs	$8,500	-$14,100
Enphase IQ 5P (2 units)	10.0 kWh	~6.5 hrs	$14,800	-$24,700
Tesla Powerwall 3	**13.5 kWh**	**~8.8 hrs**	**$15,400**	**-$25,900**
FranklinWH aPower 2	15.0 kWh	~9.8 hrs	$17,500	-$29,400

*Runtime at a modeled whole-home average draw; backing up only essential circuits lasts far longer. For "minimally power the home during an outage," one Powerwall 3 or two IQ 5Ps is the sensible range. If backup is the only goal and savings aren't, a standby generator is a cheaper route. Battery dispatch uses a deterministic heuristic, not a guaranteed-optimal schedule.

The bottom line, and the fine print

an Oshkosh, Wisconsin home

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RECOMMENDATION

Build 44 panels (17.6 kW), no battery, pay cash if you can, and move to the Rg5-OTOU rate. Aim for a quote at or below $2.90/watt — at that price it pays back in about 13 years and nets roughly $52,017 over 25 years. Can't pay cash? A PPA is the strongest financed route — never a 7% loan. Add storage only if ~$15k of outage backup is worth it to you; it won't come back in savings.

What we'll close with you (quietly, in the background)

- **Installer intros:** we connect you with screened local installers; you meet them directly and lead the talks.
- **Proposal check:** send us any quote and we'll compare it to this model privately, so you negotiate from strength.
- **Main panel:** your installer confirms your service rating on site — that settles the ~$3,500 upgrade question.
- **Lease/PPA tax basis:** we verify the fund's 2026 post-law tax position before pointing you to third-party ownership.
- **Net metering:** figures assume WPS full 1:1 retail net metering continues; utility tariffs can change.

Important disclosures

This is a **preliminary, consumer-side planning analysis**, not an engineering design, and not legal, tax, or investment advice. All production, savings, cost, and financing figures are **modeled estimates, given as ranges where possible, and are not guarantees**. Actual results depend on final system design, equipment, installer pricing, your real consumption, weather, utility-rate changes, and future policy. Final design and all structural, electrical, and code verification are the installer's responsibility. SIA does not negotiate with, contract with, or act as agent for any installer on your behalf; you remain the contracting party. SIA screens installers at a point in time — screening is not a guarantee of their work. Rate, incentive, and cost figures are point-in-time snapshots and may change; confirm the Focus on Energy rebate and any rate change at application. Consult a licensed tax professional before relying on any tax treatment. Battery results use a deterministic dispatch heuristic and are not guaranteed-optimal. SIA is paid a flat fee regardless of installer, system size, price, or financing, and sells no equipment.

Reproducible from the SIA Solar Design Studio calculator using the inputs recorded above · October 6, 2026