

SAMPLE STUDY · RETURN ON INVESTMENT

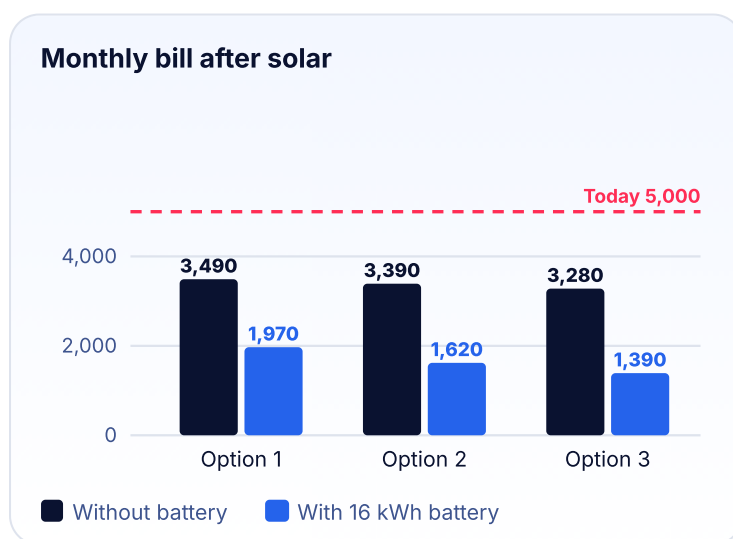
A home paying 5,000 THB a month: which solar system pays back best?

We compared three single-phase hybrid systems, each with and without a 16 kWh battery, hour by hour against a 5,000 THB bill. Option 2 with the battery gives the largest saving over 25 years; Option 1 with the battery is the best value when most power is used in the evening.

Bill 5,000 THB/month $\approx$ 1,110 kWh at 4.5 THB/kWh · Chiang Rai · Customer details and prices removed

OPTION 1 BEST VALUE	OPTION 2 BEST OVERALL	OPTION 3
6 kW + 6.03 kWp Solis 6 kW hybrid, 9 $\times$ AIKO 670 W. Sized close to daytime use.	6 kW + 10.05 kWp Solis 6 kW hybrid, 15 $\times$ AIKO 670 W. Fills the battery on most days.	10 kW + 16.08 kWp Solis 10 kW hybrid, 24 $\times$ AIKO 670 W. Makes more power than this home uses.
kWh per month ~740	kWh per month ~1,220	kWh per month ~1,970
Payback, evening home 8.9 6.4 years	Payback, evening home 13.9 8.4 years	Payback, evening home 20.2 11.3 years
Payback, daytime home 5.5 6.0 years	Payback, daytime home 8.3 6.4 years	Payback, daytime home 12.2 8.8 years

Each figure: without battery | with 16 kWh battery.



Which option fits

Option 1 + battery

Best value if the home is empty in the daytime or the budget is tight: highest yearly return for an evening-use home.

Option 2 + battery

Best overall: cuts the bill by 70–90% and gives the largest 25-year gain whether power is used by day or by night.

Option 3

Too large for a 5,000 THB bill: it makes about 1,970 kWh a month for a home that uses 1,110, and surplus cannot be sold to PEA.

THB per month, home that uses most power in the evening. Dashed line: today's bill of 5,000 THB.

THE NUMBERS

Return on investment, six setups

Home that uses most power in the evening (25% in daytime)

Setup	Saving / month	Bill after solar	ROI per year	Payback	25-year net gain
Option 1 no battery	1,510	3,490	11.2%	8.9 yrs	263,000
Option 1 + battery	3,030	1,970	15.6%	6.4 yrs	621,000
Option 2 no battery	1,610	3,390	7.2%	13.9 yrs	184,000
Option 2 + battery	3,380	1,620	11.9%	8.4 yrs	614,000
Option 3 no battery	1,720	3,280	4.9%	20.2 yrs	68,000
Option 3 + battery	3,610	1,390	8.9%	11.3 yrs	529,000

Home with someone in during the day (48% in daytime)

Setup	Saving / month	Bill after solar	ROI per year	Payback	25-year net gain
Option 1 no battery	2,440	2,560	18.1%	5.5 yrs	526,000
Option 1 + battery	3,250	1,750	16.7%	6.0 yrs	683,000
Option 2 no battery	2,700	2,310	12.0%	8.3 yrs	491,000
Option 2 + battery	4,400	600	15.5%	6.4 yrs	901,000
Option 3 no battery	2,840	2,160	8.2%	12.2 yrs	384,000
Option 3 + battery	4,640	360	11.4%	8.8 yrs	819,000

How we calculated: 4.0 kWh per kWp per day in Chiang Rai, averaged over sunny, partly cloudy and cloudy days; the home's load hour by hour; surplus solar is lost (no sale to PEA) unless the battery stores it (14.4 kWh usable, 92% round trip).

Electricity stays at 4.5 THB/kWh, panels lose 0.5% a year. ROI per year = first-year saving ÷ system price; 25-year net gain = 25 years of savings minus the system price. Battery and inverter replacements are not included. All amounts in THB.

THE SYSTEMS

Side by side

	Option 1	Option 2	Option 3
Solis single-phase hybrid inverter	6 kW	6 kW	10 kW
AIKO ABC 670 W bifacial panels (or equivalent Tier-1)	9	15	24
PV array	6.03 kWp	10.05 kWp	16.08 kWp
Roof area needed (approx.)	25 m ²	42 m ²	67 m ²
Estimated production	~740 kWh/mo	~1,220 kWh/mo	~1,970 kWh/mo
Optional battery: Solis IntelliHome 16 kWh LiFePO4	1	1	1
Backup during PEA power cuts	with battery	with battery	with battery

Every option includes mounting, DC and AC protection, PV and copper AC cable, grounding, installation and commissioning, and the PEA grid-connection application with an engineer-certified single-line diagram.

Warranty

15 years product PV panels (30-yr performance)	10 years Solis hybrid inverter	10 years IntelliHome battery	3 years Installation workmanship
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Good to know

- **Your own numbers:** savings depend on when your home uses power. Send us your last 3–12 bills and we will run this study for your home.
- **Power cuts:** without a battery, a grid-tied system switches off when PEA power is off (anti-islanding safety rule).
- **Prices:** removed from this sample. Ask us for a quotation for your home.

Want this study for your home?

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