

Monthly Report: Solar Performance

5 kWp hybrid home with battery · 1 – 24 October 2026

System type	Grid-connected hybrid PV + battery, zero export (no feed-in payment)
PV array	5 kWp
Inverter	Deye 5 kW single-phase hybrid
Battery	1 × LVTOPSUN LVT5-512300-G3, 51.2 V 300 Ah LiFePO4 (15.36 kWh)
Monitoring	DeyeCloud – online, last update 24 Oct 2026 22:27
Report period	1–24 Oct 2026 (24 Oct to 22:27)

Key figures – October to date

545.4 kWh PV production	932.7 kWh House consumption	404 kWh Bought from PEA	57 % Use covered by solar
22.7 kWh Avg PV per day (≈4.5/kWp)	38.9 kWh Avg use per day	0 kWh Exported (zero export OK)	93 % Battery round trip

Summary

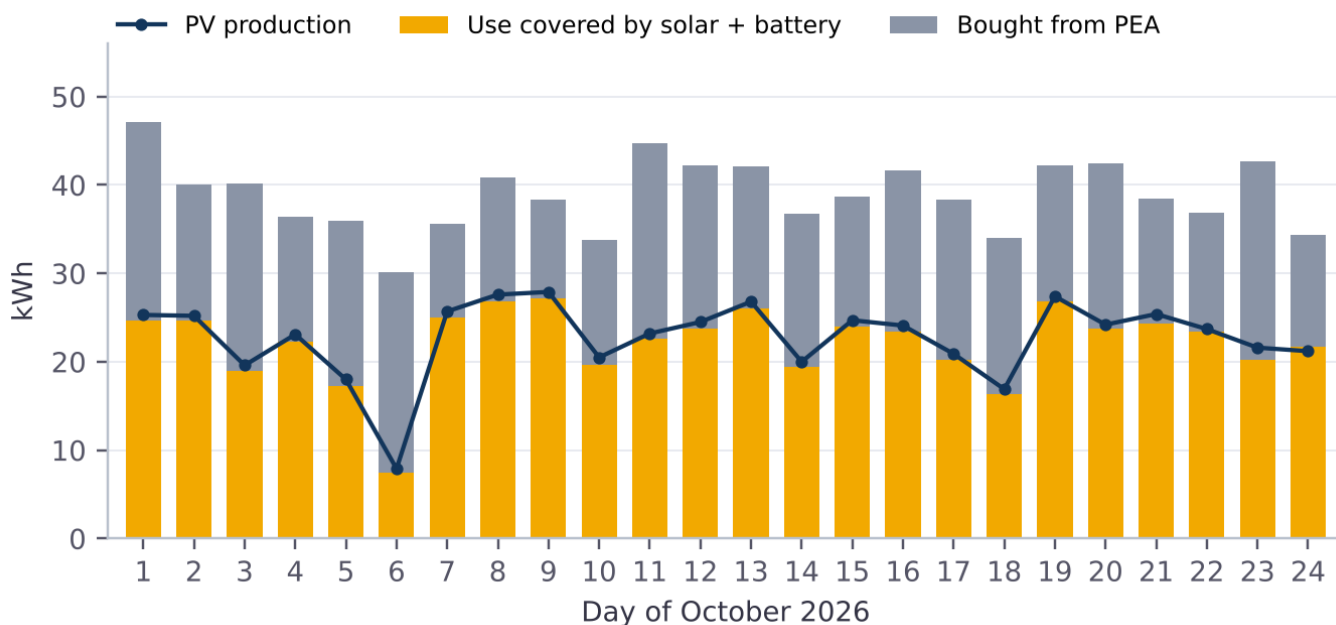
The system is **working well and producing strongly** – about 22.7 kWh a day from 5 kWp, a good yield for October. Zero export is now active, so no solar is given away to the grid, and the battery is healthy (≈93% round trip). Solar covers about **57% of the house's electricity**; the rest – about 17 kWh a day – is bought from PEA, almost all of it between 20:30 and 06:30.

The clear-day data shows four limits: the 5 kW inverter clips the morning peak; the battery is full by about 11:30 so some midday solar is held back; **from 13:00 the panels can no longer meet the house load even on a clear day**, which points to panel orientation or afternoon shading; and the battery stops discharging at 35%, so a third of it is never used.

Two free changes (battery floor and load timing) and one targeted upgrade (west-facing panels) could lift solar coverage from about 57% to around 70% before any new battery is needed.

1. Daily performance

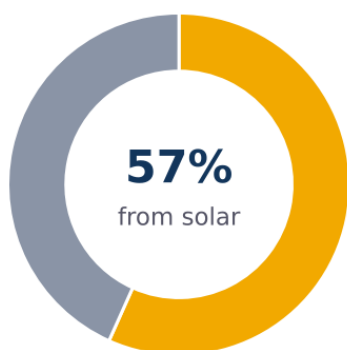
Each bar is the day's consumption: the yellow part was supplied by solar and the battery, the grey part was bought from PEA. The line is solar production. Cloudy days (6 and 18 October) show clearly; on every other day the house still buys 11-23 kWh.



Energy sources and when PEA power is bought

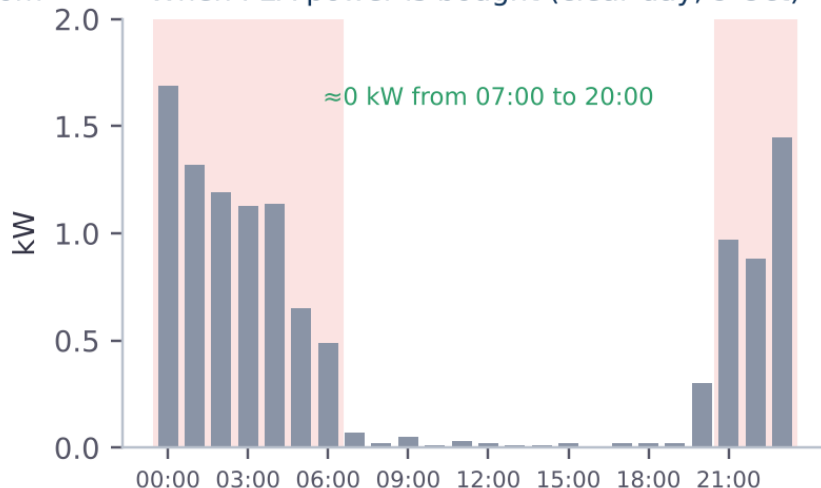
From 07:00 to 20:00 the house runs almost entirely on solar and battery. Grid purchases start when the battery reaches its 35% floor at about 20:30 and continue all night at 1-1.7 kW.

Where the house's energy came from



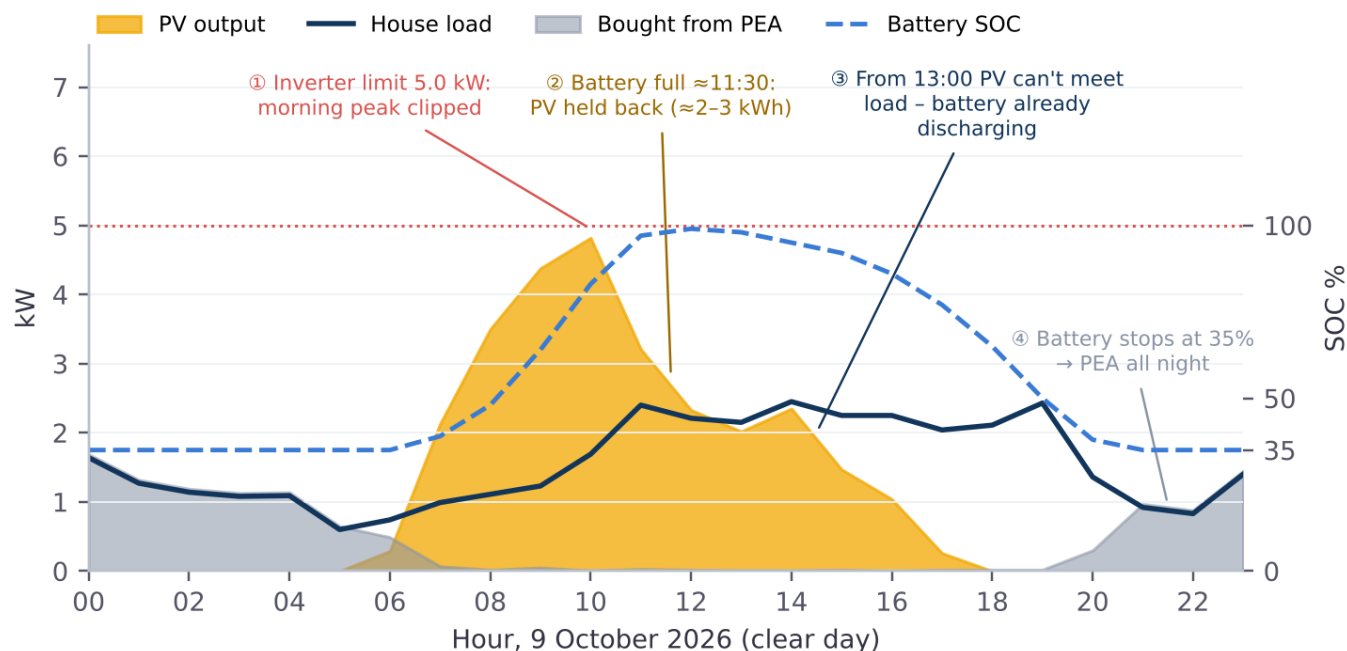
Solar + battery 529 kWh
 PEA grid 404 kWh

When PEA power is bought (clear day, 9 Oct)



2. A clear day, hour by hour - where energy is lost

9 October was the best day of the month (27.9 kWh). The four numbered points are where the system leaves energy on the table.



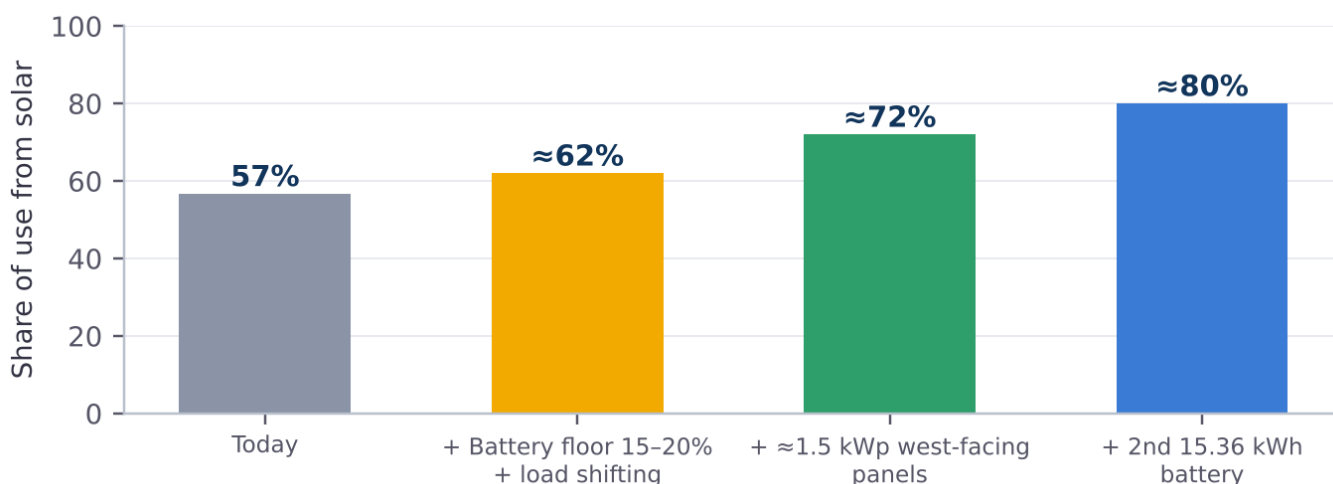
#	What happens	Effect
①	PV reaches the inverter's 5.0 kW limit at 10:00-11:00 and the peak is clipped.	Small loss on bright mornings
②	Battery is full at about 11:30; zero export then holds PV back to the house load.	≈2-3 kWh/day on clear days
③	From 13:00 PV stays around 2 kW and falls to 1 kW by 16:00, while the battery is already discharging - the panels cannot meet the load even with full sun.	Largest gap - likely east-facing array or afternoon shade
④	Battery stops at 35% SOC at about 20:30; PEA supplies the house overnight.	≈5.4 kWh of battery never used

Point ③ is confirmed on 24 October as well. A site check of panel direction, shading from trees or buildings after midday, and string voltages will show which it is.

3. Ideas for improvement

Idea	What to do	Est. gain	Cost
1. Lower battery floor	Change the discharge limit from 35% to 15–20% SOC (keep 20% if the battery is relied on during power cuts).	≈1.5–3 kWh/day less from PEA	Free
2. Shift loads to the morning	Run water heater, washing machine, pumps and pre-cooling between 09:00 and 12:30, when PV is strongest.	≈1–3 kWh/day	Free
3. Check the afternoon	Site check of panel direction, shading and strings; clean panels before the Feb–Apr haze.	Confirms the upgrade below	Service visit
4. Add west-facing panels	≈1.5 kWp facing west on the second MPPT fills the afternoon gap without more morning clipping (a Deye 5 kW hybrid typically accepts up to ≈6.5 kWp – confirm on the nameplate).	≈4–5 kWh/day	Upgrade
5. Second battery – after step 4	Add a second LVT5-512300-G3 once there is more solar to fill it; on its own it would be only partly charged.	More of the night from battery	Upgrade
6. TOU meter (check)	Most purchases are after 22:00, in PEA's off-peak window; compare a TOU tariff against recent bills.	Lower price per unit bought	Check bills

Solar coverage roadmap (estimates)



Recommended settings (step 1)

Setting	Now	Recommended
Battery discharge floor (grid-connected)	35% SOC	15–20% SOC
Zero export	On	Keep on (no feed-in payment)
Grid charging of battery	–	Off (unless a TOU meter is installed)

Customer details removed for publication. Estimates are based on October 2026 DeyeCloud data and will vary with weather and household use. Solar ESS supplies energy from the solar system only and is not responsible for the electrical system inside the house.