

Solar Self-Consumption Calculator

Compare time-aligned PV generation and site load, with optional battery flows, in a transparent behind-the-meter energy balance.

Generated October 10, 2026

<https://www.elecatrix.com/solar-backup-power/solar-self-consumption-calculator/>

Inputs

Input	Value	Unit
Time-aligned intervals		Rows: 2
Row 1 - Interval label	PV interval	
Row 1 - PV generation	3	kWh
Row 1 - Site load	2	kWh
Row 1 - Battery charge request	N/A	kWh
Row 1 - Battery discharge request	N/A	kWh
Row 2 - Interval label	Load interval	
Row 2 - PV generation	N/A	kWh
Row 2 - Site load	2	kWh
Row 2 - Battery charge request	N/A	kWh
Row 2 - Battery discharge request	N/A	kWh

Results

Result	Value	Unit
Total PV generation	3	kWh
Total site load	4	kWh
Direct PV to load	2	kWh
PV to battery	N/A	kWh
Battery to load	N/A	kWh
Grid import	2	kWh
Grid export	1	kWh

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Self-consumption ratio	66.6667	%
Self-sufficiency ratio	50	%
Counted intervals	2	rows
Calculation details		

Detail	Value	Unit
Calculation basis	Each interval allocates PV directly to load first, then honors only the entered battery charge and discharge requests before calculating grid export and import.	
Profile boundary	Interval energy-balance planning only. Battery state of charge, round-trip efficiency, inverter limits, curtailment control, outage autonomy, tariff, export approval, and utility interconnection are not solved.	

Formulas

$$E_{\text{direct}} = \min(E_{\text{PV}}, E_{\text{load}})$$

$$E_{\text{charge}} = \min(\max(E_{\text{PV}} - E_{\text{direct}}, 0), E_{\text{charge request}})$$

$$E_{\text{export}} = \max(E_{\text{PV}} - E_{\text{direct}} - E_{\text{charge}}, 0)$$

$$E_{\text{discharge}} = \min(\max(E_{\text{load}} - E_{\text{direct}}, 0), E_{\text{discharge request}})$$

$$E_{\text{import}} = \max(E_{\text{load}} - E_{\text{direct}} - E_{\text{discharge}}, 0)$$

$$\text{Self consumption\%} = \frac{\sum E_{\text{direct}}}{\sum E_{\text{PV}}} \times 100$$

$$\text{Self sufficiency\%} = \frac{\sum E_{\text{direct}}}{\sum E_{\text{load}}} \times 100$$

Warnings and limitations

This is an interval energy-balance planning review. It does not solve battery state of charge, round-trip efficiency, inverter limits, outage autonomy, tariffs, export controls, utility approval, or interconnection compliance.