Summary of rooftop solar analysis

Location: Hamburg, Germany **Date of analysis**: Oct/2021

***Recommendation**: install 30 solar panels (48 m^2), for a net present value of 4383 euros, with a payback of 13.92 years.*

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
Gov. subsidies and 75% debt	4383	13.92	7.67	0.0961
Gov. subsidies and 100% equity	6831	15.30	3.95	0.0855
No gov. subsidies and 100% equity	336	24.40	0.36	0.0855

(All rows are for the same number of panels)

Additional results

Under current market conditions the optimal size of a PV system will decline in the short term. Due to the degression of the feed-in tariff and stagnating system prices, the optimal decision would be to install 15 solar panels in October 2022. From an economic perspective, the additional installation of a battery storage system cannot be justified.

Main inputs and assumptions

Household and Economics					
Electricity consumption	4500	kWh/year	Inflation	1.38%	per year
Electricity price – buy	0.30	EUR/kWh	Bank loan interest rate	2.31%	per year
Electricity price – sell	0.03	EUR/kWh	Bank loan maturity	20	years
			Equity cost of capital	0.17%	per year
PV panels					
Peak power	330	W/panel	System losses	15%	of output
Panel area	1.6	m^2/panel	Degradation with age	0.5%	per year
Useful life	25	years	Maintenance costs	1.5%	of inv. cost per year
			Total cost of optimal installation size	12872	EUR

Government subsidies

Feed-in tariff (0.0714 EUR/kWh for October 2021) according to EEG and concessional credit terms (KfW Standard 270)

Some PV panel suppliers

- https://www.ewe-solar.de/
- https://www.eigensonne.de/

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