Summary of rooftop solar analysis

Location: Munich, Germany **Date of analysis**: Dec/2023

***Recommendation**: Install 29 solar panels (56 m^2), for a net present value of 11,871.40 euros, with a payback of 9.75 years.*

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
Gov. subsidies and 75% bank debt	11,871.4	9.75	12.49	0.0641
Gov. subsidies and 100% supplier's credit	7,671.6	8.37	26.52	0.0778
Gov. subsidies and 100% equity	12,414.9	8.76	10.60	0.0623
No gov. subsidies and 100% equity	406.7	17.7	3.24	0.0797

(All rows are for the same number of panels)

Additional results

A system of 28 panels, together with a battery of 7.7 kWh, requires an initial investment of equity investment of 4,246 euros, but provides an NPV of 16,334.3 euros, with a payback of 11.23 years.

Main inputs and assumptions

Household and Economics

Electricity Consumption	4,500	kWh/year	Inflation	1.9%	per year
Electricity price – buy	0.34	EUR/kWh	Bank loan interest rate	5.14%	per year
Electricity price – sell	0.08	EUR/kWh	Bank loan maturity	5	years
			Equity cost of capital	3.05%	per year

PV panels

Peak power	435	W/panel	System losses	13.5%	of output
Panel area	1.94	m^2/panel	Degradation with age	0.5%	per year
Useful life	25	Years	Maintenance costs	10.76	EUR/year per panel
			Total cost of optimal installation size (without subsidies)	17,700	EUR
			Total cost of optimal installation size (after subsidies)	12,390	EUR

Government subsidies

Attractive credit terms from KFW (German state-owned development bank)

Fixed feed-in tariff for 20 years by the German state, for example 0.081 EUR/kWh for a nominal output of up to 10kWh and partial utilisation of the electricity for own use

Subsidy towards the investment costs by the City of Munich: 1,500 EUR basic subsidy, further 282 EUR per kWp output of the system and additional 47 EUR per kWp output of the system if the modules installed are glass-glass modules

Some PV panel suppliers

- https://sveasolar.de/de-de
- https://klarsolar.de

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