

Executive Summary

Location: Genoa, Italy

Date of analysis: April 2022

Recommendation: Install four solar panels (7.44 m²), for a Net Present Value of 4586 €, with a Payback period of 9.49 years.

Main economic results:

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
[Gov. subsidies and] 75% debt	4586€	9.49	14%	0.07
[Gov. subsidies and] 100% equity	4816€	8.50	12%	0.06
[No gov. subsidies and] 100% equity	2826€	14.57	5%	0.11

Additional results: A system of five panels, together with a battery of 5.12 kWh, requires an initial investment before subsidies of 9073 €, but provides an NPV of 7889 €, with a payback of 7.75 years.

Main inputs and assumptions

Household and Economics					
Electricity Consumption	3153.44	kWh/year	Inflation	2%	per year
Electricity price – buy	0.27	EUR/kWh	Bank loan interest rate	5.50%	per year
Electricity price – sell	0.00-0.03	EUR/kWh	Bank loan maturity	5	years
			Equity cost of capital	1.71%	per year
PV panels					
Peak power	385	W/panel	System losses	13.5%	of output
Panel area	1.86	m ² /panel	Degradation with age	0.5%	Per year
Useful life	25	Years	Maintenance costs	9.38	EUR/year per panel
Total cost of optimal installation size (without subsidies)				5432	EUR
Total cost of optimal installation size (after subsidies)				2716	EUR

Government subsidies: The incentive program Ecobonus was established through the law Decreto Rilancio. Italian citizens can save up to 50% of their investment to install photovoltaic systems which occurred before 31/12/2024.