

Summary of rooftop solar analysis

Location: Las Condes, Santiago, Chile

Date of analysis: May/2022

Recommendation: install 18 solar photovoltaic (PV) panels (46.5 m²), for a net present value (NPV) of 11,067.01 euros, with a payback of 8.92 years.

Main economic results

Financing	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
75% debt	11,067.01	8.92	16.14	0.04
100% equity	12,618.37	7.04	15.18	0.04

(All rows are for the same number of panels)

Additional results

Final recommendation is resilient to alternative electricity pricing forecasts – even in the most extreme scenarios evaluated, the NPV never falls below 292.99 EUR. Programming the dishwasher to hours with more solar irradiance instead of using it at night could improve the NPV by 160.56 EUR. Installing a PV system with a battery is not monetarily advantageous.

Main inputs and assumptions

<i>Household and Economics</i>					
Electricity Consumption	3008	kWh/year	Inflation 2022	4.43%	per year
			Inflation 2023	3.08%	per year
Electricity price – buy	0.15	EUR/kWh	Inflation 2024 - ...	3.00%	per year
Electricity price – sell	0.07	EUR/kWh	Exchange rate	1 CLP = 0.0011 EUR	
Equity cost of capital	5.53	% per year	Bank loan interest rate	12.55%	per year
			Bank loan maturity	5	years
<i>PV panels</i>					
Peak power	400	W/panel	System losses	13.5%	of output
Panel area	2.02	m ² /panel	Degradation with age	0.5%	per year
Useful life	25	years	Maintenance costs	0.5%	of total cost
Total cost of optimal installation size (after subsidies)			9,352.02	EUR	

The maximum power of panels was set at 10 kW to respect technical limitations of the power connection of typical residential houses.

Government subsidies

Co-financing system, whereby the buyer pays for the PV system according to the property's rateable value, and the rest is supported by the government. The buyer can only choose between a system of 1 or 2 kWp. Not applicable for houses with rateable values above 91,457,760 CLP, which is the base-case scenario in the analysis.

Some PV panel suppliers

- <https://puntosolar.cl/solarresidencial>
- <https://ciudadluz.cl/residencial/>
- <https://enerlife.cl/on-grid/>

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