Summary of rooftop solar analysis

Location: Dubai, United Arab Emirates (UAE) **Date of analysis**: Dec/2023

***Recommendation**: install 18 solar panels (46.08 m^2), for a net present value of 10,457.51 euros, with a payback of 10.82 years.*

Main economic results

Financing	NPV (EUR)	NPV (AED)	Payback (years)	IRR (%/year)	LCOE (EUR/kW)	LCOE (AED/kW)
75% bank debt	10,457.51	41,236.25	10.82	11.47	0.045	0.177
100% equity	11,121.92	43,856.14	9.51	10.85	0.043	0.169

(All rows are for the same number of panels)

Additional results

The project's value notably drops for an identical family but with district cooling instead of traditional air conditioning. For their annual electricity consumption of 5,913 kWh, the optimal number of panels is 6 and the NPV is 3,332 EUR (13,137 AED). The NPV decline is linked to the reduced electricity consumption. With net metering the higher the electricity consumption, the higher the project's NPV.

Main inputs and assumptions

Household and Economics

Electricity consumption	17,141	kWh/year	Inflation 2023	3.1%	per year
Bank loan interest rate	8.04%	per year	Inflation 2024	2.3%	per year
Bank loan maturity	4	years	Inflation 2025+	2%	per year
Equity cost of capital	5.065%	per year	Exchange rate	1 AED = 0.2536 EUR	

Electricity prices

Buy			Sell
From 0-2000 kWh	0.08	kWh/EUR	Solar panel production offsets electricity bills, making the implied selling price of electricity equal to the purchase price. However, sales are limited to the value of total consumption.
From 2001-4000 kWh	0.09	kWh/EUR	
From 4001-6000 kWh	0.10	kWh/EUR	
> 6001 kWh	0.12	kWh/EUR	

PV panels

Peak power	555	W/panel	System losses	20%	of output
Panel area	2.56	m^2/panel	Degradation w/ age	0.4%	per year
Useful life	30	years	Maintenance costs	0.5%	of total cost yearly

Total cost of optimal installation size 12,667.32 EUR (49,950 AED)

Government subsidies and incentives

The only government incentive being provided is the electricity bill reduction, achieved by the consumer purchasing less power from Dubai Electricity and Water Authority (DEWA) to fulfill the same energy needs. There are no tax reductions or additional incentives.

Some PV panel suppliers

- https://alshirawisolar.com/#divisions
- https://3demirates.ae/

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