

# Summary of rooftop solar analysis

**Location:** Thessaloniki, Greece

**Date of analysis:** Dec/2023

**Recommendation:** Install 6 solar panels (9.6 m<sup>2</sup>), for a net present value of 3,466 euros, with a payback of 9.8 years.

## Main economic results

Financing	Panels	NPV (EUR)	Payback (years)	IRR (%/year)	LCOE (EUR/kWh)
<b>Gov. subsidies and 75% bank debt</b>	<b>6</b>	<b>3,466</b>	<b>9.8</b>	<b>14%</b>	<b>0.081</b>
75% bank debt and 25% equity	4	2,510	11.3	10%	0.115
Gov. subsidies and 100% equity	6	3,780	8.2	12%	0.076
No gov. subsidies and 100% equity	4	2,746	10	10%	0.108

## Additional results

Integrating a 5kWh battery in a 9-panel solar system leads to a higher NPV of 5,684€, thanks to government subsidies that essentially make the battery free. The initial 10,679€ investment results in a 36% IRR and a 9.2-year payback. However, transitioning 50% of gas usage to electric with a battery in a 9-panel system yields to a lower NPV of 3,256€, requiring a 13,253€ investment, with a 12% IRR and a 12.7-year payback.

## Main inputs and assumptions

### Household and Economics

Electricity Consumption	3249	kWh/year	Inflation	2.4%	per year
Electricity price – buy	0.2548	EUR/kWh	Bank loan interest rate	7.82%	per year
Electricity price – sell	0.0329	EUR/kWh	Bank loan maturity	up to 7	years
			Equity cost of capital	3.26%	per year

### PV panels

Peak power	300	W/panel	System losses	13.5%	of output
Panel area	1.6	m <sup>2</sup> /panel	Degradation with age	0.5%	Per year
Useful life	25	Years	Maintenance costs	2%	Of the initial system cost

Total cost of optimal installation size (without subsidies)	7,597	EUR
Total cost of optimal installation size (after subsidies)	6,427	EUR

## Government subsidies

Greece 2023-24: up to 35% of initial cost for a standard household, with maximum subsidized PV capacity 10.8kWp & up to 100% for battery, with maximum subsidized battery capacity 10.8kWh.

### **Some PV panel suppliers**

- <https://www.elpedison.gr>
- <https://www.dei.gr>
- <https://www.nrg.gr>

### **Author of this report**

Christina Lefkarou

[lefkarou.christina@outlook.com](mailto:lefkarou.christina@outlook.com)

<https://www.linkedin.com/in/christina-lefkarou>