Summary of rooftop solar analysis

Location: Zurich, Switzerland **Date of analysis**: Feb/2022

***Recommendation**: Install 23 solar panels (42.65 m^2), for a net present value of CHF 4,383.18 (EUR 4,339.35) and a payback of 25 years. If there is more roof area available, it is optimal to install even more panels.*

Main economic results

Financing	NPV in CHF (EUR)	Payback in years	IRR in %/year	LCOE in CHF/kWh (EUR/kWh)
Gov. subsidies and 75% debt	4,383 (4,339)	25	1.77%	0.0965 (0.0956)
Gov. subsidies and 100% equity	11,002 (10,892)	19	3.93%	0.0768 (0.0760)
No gov. subsidies and 100% equity	1,708 (1,691)	27	0.86%	0.1045 (0.1035)

(All rows refer to 23 panels)

Additional results

Adding a battery at today's market prices does not add value to the project. Only when prices decrease in the future, a battery adds value to the project.
The NPV of installing solar panels is highly sensitive to the total annual consumption and the electricity price (buy). The higher both parameters the higher the NPV. For high combinations of both parameters, a battery is adding value – even at today's market prices.
The NPV can vary within a very large range dependent on the future developments of significant input parameters, such as electricity prices, consumption, or maintenance costs.

Main inputs and assumptions

Household and Economics

Electricity Consumption	5,000	kWh/year	Inflation	1.5%	per year
Electricity price – buy peak hours	0.2666 (0.2639)	CHF/kWh (EUR/kWh)	Bank loan interest rate	5.3%	per year
Electricity price – buy off-peak hours	0.1568 (0.1552)	CHF/kWh (EUR/kWh)	Bank loan maturity	5	years
Electricity price – sell	0.0791 (0.0783)	CHF/kWh (EUR/kWh)	Equity cost of capital	0.46%	per year

PV panels

Peak power	390	W/panel	System losses	13.5%	of output
Panel area	1.85	m^2/panel	Degradation with age	0.5%	per year
Useful life	30	years	Maintenance costs	1%	of gross investment
Total cost of optimal installation size (before subsidies and tax deduction)				25,901 (25,641)	CHF (EUR)
Total cost of optimal installation size (after subsidies and tax deduction)[1]				16,607 (16,441)	CHF (EUR)

[1] Note: The tax deduction only applies to the part financed by equity. This number assumes 100% equity financing.

Government subsidies

There are subsidies for installations of at least 2kWp in size consisting of a base amount of 350 CHF and a performance amount of 380 CHF/kWp (capped at 30% of total installation cost). Equity investment is tax-deductible.

Some PV panel suppliers

- https://www.staehlin-ag.ch/beratung-photovoltaik
- https://www.helion.ch/solaranlage/

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