Summary of rooftop solar analysis

Location: Sydney, Australia **Date of analysis**: Dec/2021

***Recommendation**: install 27 solar panels (49.58 m^2), for a net present value of 17138 AUD, with a payback of 2.79 years.*

Main economic results

Financing	NPV (AUD)	Payback (years)	IRR (%/year)	LCOE (AUD/kWh)
[Gov. subsidies and] 75% debt	16566	3.13	2.72	0.0287
[Gov. subsidies and] 100% equity	17138	2.79	1.92	0.0194
[No gov. subsidies and] 100% equity	11756	8.03	0.78	0.0374

Additional results

If the investment is delayed by one year, the optimum amount of installed panels is 27, with a net present value of 14054 AUD, a payback period of 5.55 years, an IRR of 1.30% and levelized costs of electricity of 0.0368 AUD/kWh. The sharp decrease in the net present value stems from a significant decrease in government subsidies, as well as increase in installation costs by ten percent.

Main inputs and assumptions

Household and Economics					
Electricity Consumption	5867	kWh/year	Inflation	3%	per year
Electricity price – buy	0.2329	AUD/kWh	Bank loan interest rate	12.69%	per year
Electricity price – sell	0-0.11	AUD/kWh	Bank loan maturity	7	years
			Equity cost of capital	1.8%	per year
PV panels					
Peak power	370	W/panel	System losses	20.15%	of output
Panel area	1.836	m^2/panel	Degradation first year	1%	Per year
			Degradation afterwards	0.4%	Per year
Useful life	25	Years	Maintenance costs	10	AUD/kW installed
Total cost of optimal installation size (without subsidies)				8250	AUD
Total cost of optimal installation size (after subsidies)				2868	AUD

Government subsidies

The Australian Government offers a solar rebate scheme, which reduces the upfront installation costs of the solar system. The subsidized amount depends on kW being installed, the location of the installation and the year of the installation. In the past, the Australian Government funded feed-in tariffs for solar

installations. However nowadays, this is done by private electricity retailers. These retailers offer either fixed- or time-variable feed-in tariffs. In this analysis, the fixed tariff amounts to 0.046 AUD/kWh and the time-variable tariffs range from 0 to 0.11 AUD/kWh.

Some PV panel suppliers

- https://rapidsolarenergy.com.au
- https://www.bananasolar.com.au/

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