QUEENSTOWN ELECTRIFICATION ACCELERATOR

Hotel: Solar and Batteries Case Study

Queenstown Electrification Accelerator assisted a Hotel to understand the financial benefits they could gain from installing solar and batteries.

The hotel wanted to explore solar and batteries as a solution to enable cost savings and reduce their carbon footprint. Their annual electricity costs are $165,300 and annual electricity emissions from electricity are 125,167 kg CO2e.

The proposed solution:

We found that the north-facing roof space on the hotel could accommodate a 225kW array of panels. QEA then reviewed the hotels annual consumption profiles against the potential solar electricity that could be produced.

What we found:

We found that the hotel could achieve significant cost and emission reductions from installing solar panels, enabling a 26% reduction.

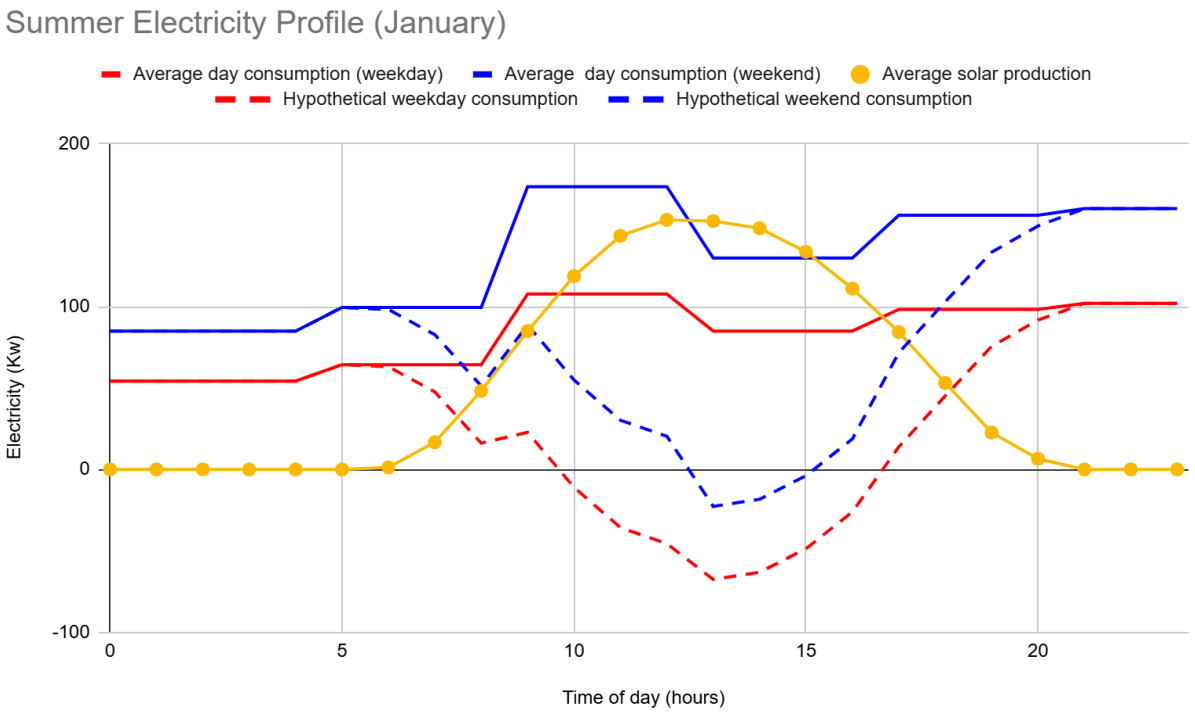
	Before Solar	**After 225kW of solar**	**Annual Savings**	**Savings %**
Annual Electricity costs	$165,293	$122,889	$42,403	26%
Annual Emissions from Electricity (kg CO2e)	125,167	93,217	31,950	26%

The performance of the panels varies over the course of the year due to seasonal variations, however electricity bill savings are still made every month above $1500.

Spring	**Summer**
Average consumption: 97% Average month cost savings: $1,539. Average month export earnings: $149.	Average consumption: 82% Average month cost savings: $3,768. Average month export earnings: $1,082.
Autumn	**Winter**
Average consumption: 92%	Average consumption: 100%

Average month cost savings: $3,594. Average month export earnings: $260.	Average month cost savings: $2,576. Average month export earnings: $0.

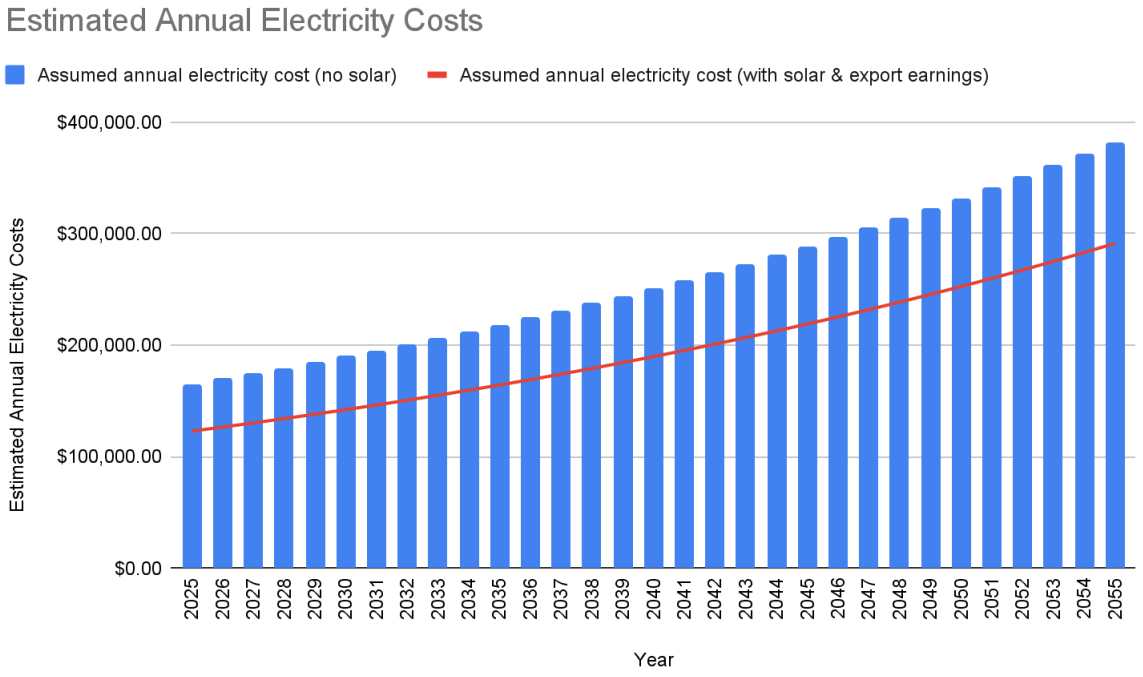
Example of typical summer profile



The graph above shows the average consumption profile of the Hotel against the estimated solar production during the summer month of January. The hypothetical consumption lines (dashed) shows the hotel's predicted electricity profile with solar generation.

Annual Electricity Cost

Based on the Electricity Authority EMI Price Data May 2025, it is estimated that electricity prices will increase by 2.83% annually. Therefore, the savings from utilising solar electricity is predicted to increase each year. The figure below showcases a prediction of the hotel's annual electricity costs with and without solar.



Year	Assumed electricity costs with solar	Assumed electricity costs without solar	Savings
2025	$122,889	$165,293	$42,403
2055	$291,184	$381,811	$90,627

Financials

Upfront Payment	
Estimated costs of solar and installation (including replacement invertor after 10 years)	$402,500
Pay back period (assuming no inflation in electricity prices) (years)	9
Pay back period (assuming 1.47% inflation in electricity prices annually) (years)	9
Net Present Value (before tax, excluding inflation of energy prices)	$181,914
Return on Investment (before tax, excluding inflation)	45%
Net Present Value (after tax, excluding inflation of energy prices)	$98,062
Return on Investment (after tax, excluding inflation)	24%

Solar Analysis Assumptions

- No CPD charges have been accounted for. If CPD prices were accounted for, it is predicted that solar would provide additional cost reductions.
- Solar price is assumed to be $1700 /kW.
- It is assumed that the inverter will need to be replaced in 15 years and the solar panels have a 30 year warranty.
- Solar export rate is assumed to be 15 c/kW.
- The impact of adding a battery will be delivered separately to this solar assessment.
- Annual degradation of solar panels is assumed to be 0.5%.