

DairyTas Solar for Dairy Sheds

Duncan Livingston
Tom Mills
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The logo for ENERGY ROI features the word "ENERGY" in blue and "ROI" in yellow, both in a bold, sans-serif font. The text is set against a black rectangular background. A blue brushstroke-like graphic element is positioned below the black box, extending to the right.

ENERGY ROI

Dairy Solar - Why Should I do it?

- Significant CO₂ savings
- 5.5 to 7.5 year payback on most dairies depending on contract pricing, roof area, consumption profile.
- It makes money without having to be milked, fed or drenched.



What are the pitfalls?

- No one solution will fit all situations.
- Paying too much for the quality of equipment purchased.
- Poor installer quality or layout configurations.
- No ongoing warranty support.
- Production and payback expectations not meeting reality.



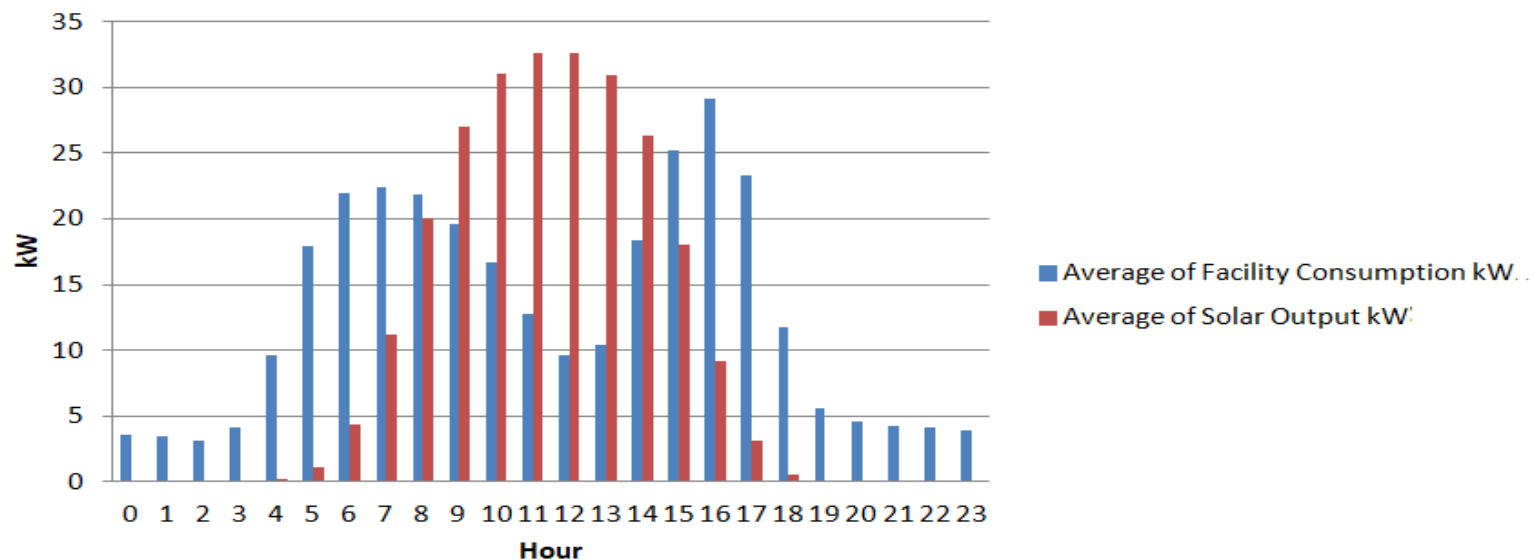
How do I know if my dairy is suitable?

- Flush mounted panels for sheds 15° or greater pitch, otherwise panels should be racked so they self clean during rain.
- Panel orientation to the north, but east and west also acceptable, just with a slightly longer payback.
- A usage profile that has some midday loading (e.g. once per day milking, timed water heating).
- No significant tree or terrain shading.

How Much Will it Save Me

- This will depend on your usage profile and system size.
- Typically ~1kW of installed capacity per milking bay.
- Dairy interval data compared to solar radiation data from nearest BOM site.

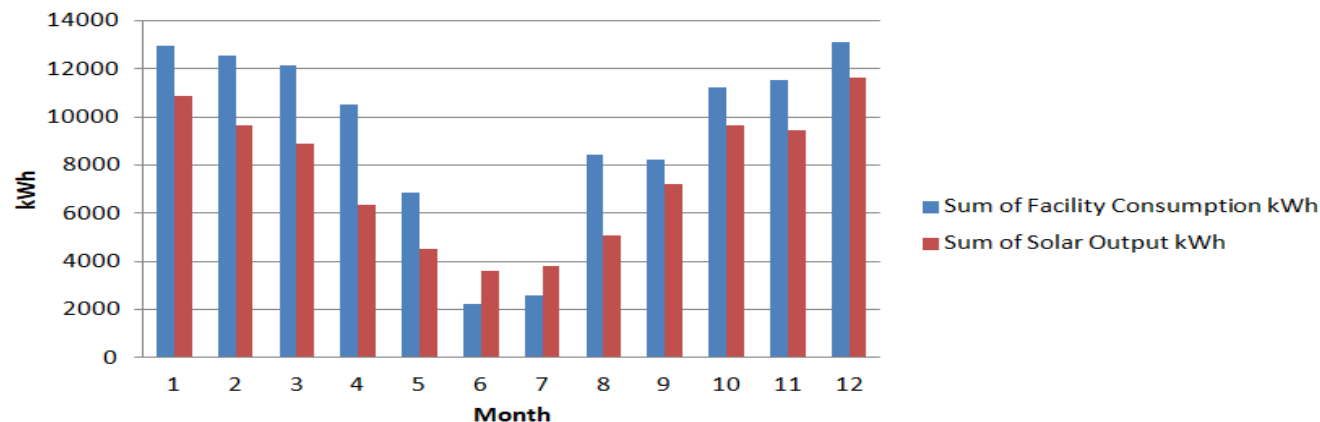
50 Bay Rotary Dairy Average Consumption V's Average Output From 65kW Solar Array (50kW Inverter)



Will the Output Match My Demand?

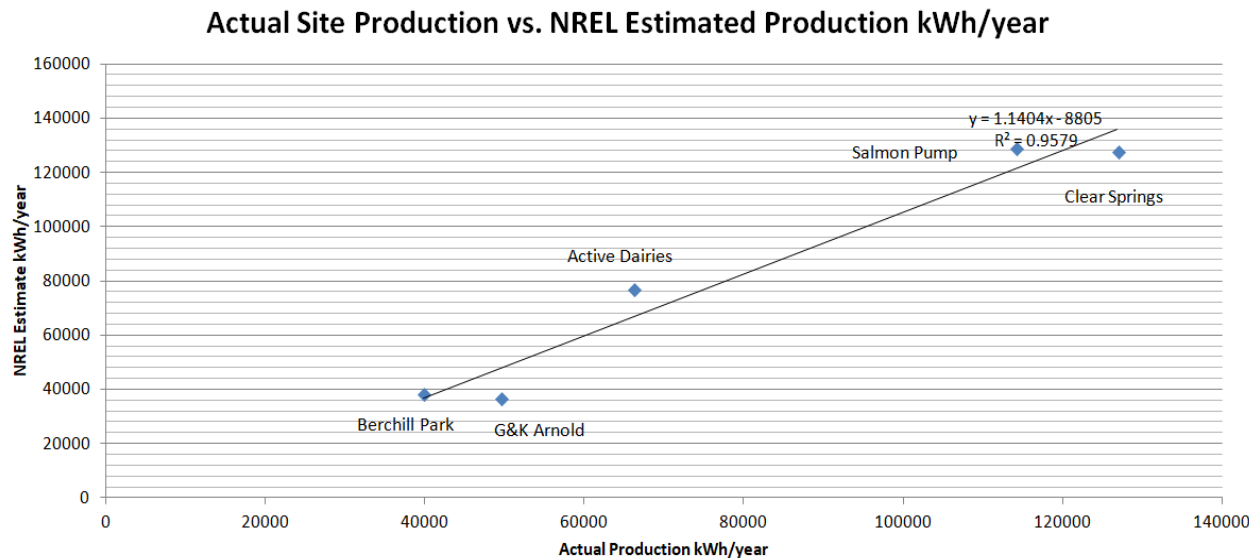
- Find the balance:
 - **Small systems:** Short payback, but low impact on bill pricing.
 - **Large systems:** Grid export paid at a lower rate
- Dairy's typically have low midday consumption, but a monthly consumption profile that matches typical solar output, and 7 day utilization.

50 Bay Rotary Dairy Average Consumption V's
Average Output From 65kW Solar Array (50kW
Inverter)



How Have Systems Performed Historically?

- Analysis utilizes the NREL model and BOM solar radiation data.
- Average accuracy within 1%, but standard deviation 16%.
- Model accuracy affected by high/low rainfall years, distance from BOM station etc.



Will it produce energy than it took to manufacture?

- Australian east coast grid currently produces 0.82kg/CO₂ per kWh.
- Solar panels will typically save more than 40 times the emissions produced in the production, installation and decommissioning of the system.
- Every kWh of solar produced in Tasmania forces 1kWh of coal or gas off the grid in Victoria.



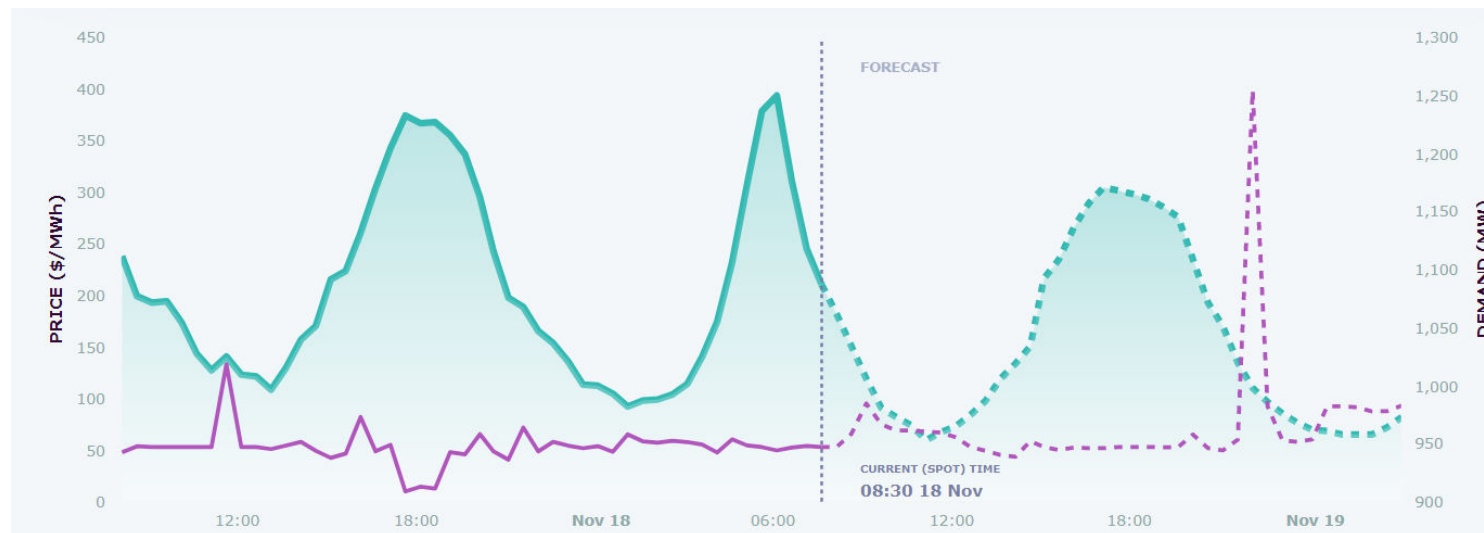
Equipment Choice

- Premium panels typically Sunpower, LG or Tindo
- Typically +10% cost, but double the full “Product warranty” to 25 years, with a 40 year design life.
- Don’t be mislead by 25 year “Production warranty” as this is typically worthless.
- Premium inverters by SMA, Solar Edge, Fronius and ABB, the rest should be treated with utmost caution.



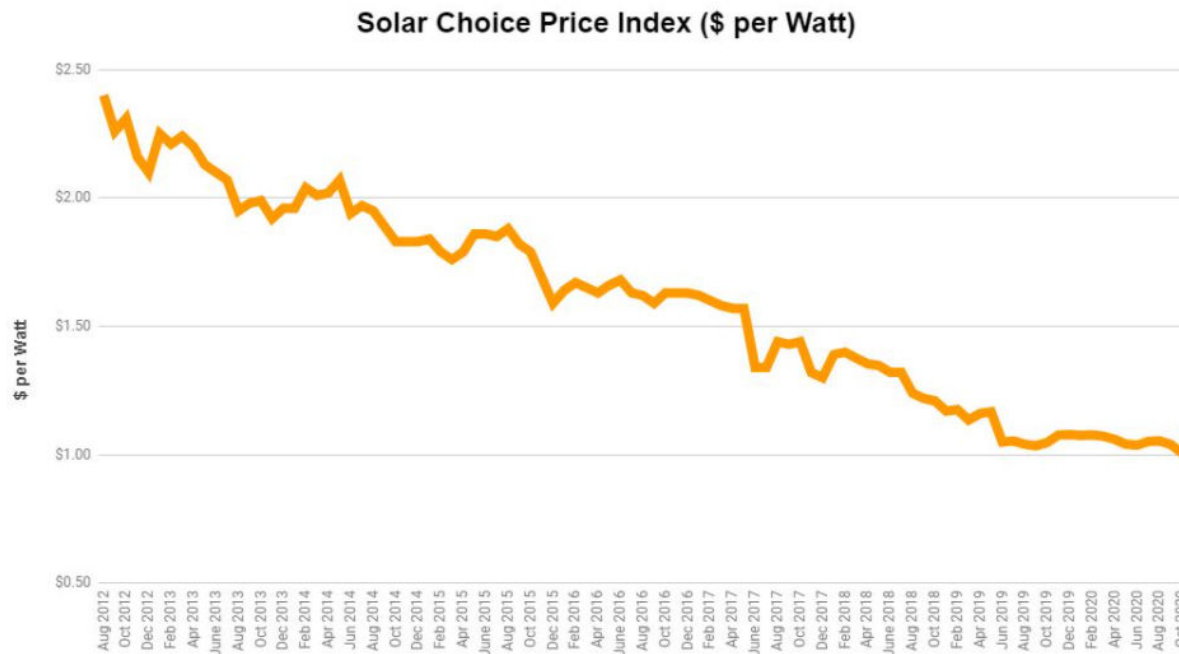
Should I get a battery?

- Short answer: NO
- Longer answer: Battery costs are still rapidly decreasing, and are only of particular importance in markets with lots of slow ramping coal plants or intermittent energy sources (unlike hydro).



When Should I Install Solar?

- STC's pay for 1/3rd the project cost, but reduce by each year on January 1st until 2030 when they will be expired.
- Solar PV and Wind now the cheapest form of electricity, so minimal pressure to continue downward pricing.



Summary

- Find other efficiencies in your dairy.
 - Plate coolers, CO₂ heat pump hot water, VSD vac pumps.
- Buy quality gear
- Get multiple quotes
- Expect reasonable business cases (5.5-7.5 years).
- Save the planet one panel at a time.

Duncan Livingston –

duncan@energyroi.com.au

+61(0) 488 785 039

Thomas Mills –

tom.mills@energyroi.com.au

+61(0) 490 445 717