

Energy Savers Plus Program

targets significant energy savings for a
Queensland horticulture farm

PROPOSED SOLUTION 

Potential energy savings 

Key facts

Farm / Industry

Horticulture

Product

Tomatoes and capsicums

Location

Glen Aplin

Irrigation

Drip and micro irrigation

Pumps

Centrifugal

Solution

Proposed:
Solar photovoltaic installation and compressor upgrade

The Energy Savers Plus Program is funded by the Queensland Department of Energy and Water Supply



Farm profile

The farm, near Stanthorpe, produces a variety of tomatoes and capsicums, supplying markets from late December until early May.

There are two packing sheds on site, one for tomatoes and one for capsicums with cool rooms and associated refrigeration equipment that constitute the majority of site energy usage. A processing line for tomatoes automatically washes and sorts the produce based on size, shape and colour, while the capsicums are sorted by hand.

Irrigation pumps are a significant portion of energy consumption, with the fields being watered two to three times per day depending on weather conditions.

Current energy demand

The site energy consumption consists of:

- Processing lines
- Two cool rooms for tomatoes
- Three cool rooms for capsicums
- Eight irrigation pumps ranging between 3.5kW and 30kW.

Action

An audit of site energy consumption evaluated:

- solar photovoltaic (PV) installation
- compressor upgrade
- temperature control strategy
- lighting upgrade
- coil remediation.

Results

Of the energy-saving opportunities evaluated, two initiatives were identified with potential energy savings of 6% and a combined payback period of 4.5 years (approx).



The energy audit report included initiatives to install a 2kW solar PV system on the packing sheds to offset base load demand as well as replacing the refrigeration compressors with more efficient units for the three cool rooms used for capsicums.

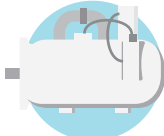


The audit report also included a recommendation to change electricity tariffs for two accounts with potential savings of \$763.



Recommendations

The energy audit recommendations are summarised below:

Solution	 Install solar PV system	 Compressor upgrade
Est. energy savings (kWh/annum)	3,168	7,696
Est. operating cost saving	\$777	\$4,648
Est. cost to implement	\$3,278	\$21,251
Payback period (years)	4.2	4.6
Est. demand reduction (kW)	-	-
Est. energy savings (% of site total)	2%	4%

Forecast savings in operating costs	 Existing system	 Upgraded system	 Reduction in operating costs
Annual operating cost	\$45,000	\$39,575	-
Cost to implement	-	\$24,529	-
Operating costs for first 5 years	\$225,000	\$222,404	\$2,596
Annual operating cost for years 6 to 10	\$45,000	\$39,575	\$5,425
Total electricity costs for 10 years	\$450,000	\$420,279	\$29,721

Farmer feedback

Great process being involved with audit. I am a big believer in calculating the numbers and this process has gone a long way to identifying opportunities which we will look to implement. In conjunction with a focus on extending the growing season, upgrades of cold storage, lighting upgrades and PV installation will be delivered over next 12-18 months.