

Energy Savers Plus Program

targets significant energy savings for a Queensland horticulture farm

PROPOSED SOLUTION



Potential energy savings

30%

Key facts

Farm / Industry

Horticulture

Product

Mangoes, capsicum and pumpkin

Location

Mareeba

Irrigation

Drip and micro irrigation

Pumps

Centrifugal

Solution

Proposed:

Variable speed control and pipework modification

Farm profile

The farm, located near Mareeba, is a family business primarily producing mangoes, capsicum and pumpkin. Water for irrigation is supplied from nearby Emerald Creek.

Mango trees are irrigated via sprinklers throughout the dry season at approximately 48 hours per week. Other crops are irrigated by a trickle system scheduled at about 6 hours per week from April to June and about 30 to 40 hour per week from July to November.

Only one of the two pumps on-site is used and has been the sole energy consumer for the last two seasons.

Current energy demand

The site energy consumption consists of:

- One 11kW centrifugal pump that draws water from the creek to supply the site irrigation network.

Action

An audit of site energy consumption evaluated:

- pipework modification
- variable speed control.

Results

Of the energy-saving opportunities evaluated, one initiative was identified with potential energy savings of 30% and a payback period of 3.7 years (approx).

The energy audit report included an initiative to relocate the 11kW irrigation pump to the other redundant pump site to use the larger bore pipework and eliminate a 90-degree bend on the discharge.

This initiative would also involve installation of a variable speed drive on the pump to allow pressure control via regulation of pump speed rather than valve throttling. The throttle gate valve would be removed as well as a downstream pressure reducing station to reduce restrictions in the line.


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

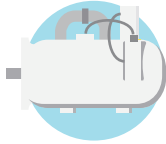
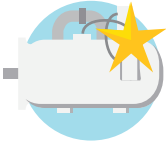



Photo courtesy of the farm

Recommendations

The energy audit recommendations are summarised below:

Solution	 Variable speed control and pipework modification
Est. energy savings (kWh/annum)	5,748
Est. operating cost saving	\$1,392
Est. cost to implement	\$5,200
Payback period (years)	3.7
Est. demand reduction (kW)	-
Est. energy savings	30%

Forecast savings in operating costs	 Existing system	 Upgraded system	 Reduction in operating costs
Annual operating cost	\$4,700	\$3,308	-
Cost to implement	-	\$5,200	-
Operating costs for first 4 years	\$18,800	\$18,432	\$368
Annual operating cost for years 5 to 10	\$4,700	\$3,308	\$1,392
Total energy costs for 10 years	\$47,000	\$38,280	\$8,720

Farmer feedback

The owner has expressed interest in implementing the audit report recommendations, with timing to be confirmed.

This case study was originally developed in 2021 as part of the Queensland Government funded Energy Savers Plus Program, delivered by the Queensland Farmers' Federation.