

# Irrigators Energy Savers Program

targets significant energy savings for a  
**North Queensland horticulture farm**

**PROPOSED SOLUTION** 

Potential energy savings 

## Key facts

### Farm / Industry

Horticulture

### Product

Produce crops and sugar cane

### Location

Burdekin

### Irrigation

Drip and micro irrigation

### Pumps

Centrifugal

### Solution

**Proposed:**  
Variable speed control

## Farm profile

The farm and retail store operate inland from Ayr on the Burdekin River. With a mean annual rainfall of 763mm, the farm cultivates various produce crops as well as sugar cane.

A trickle irrigation system with one main electric pump is used on the home block and a diesel pump on the back block. Water is accessed from SunWater.

### Current irrigation

The irrigation system comprises:

- One 18.5kW centrifugal pump that pumps water from the irrigation supply channel to the irrigation system on the home block. A bank of three sand filters is installed to prevent silt from entering the system and is cleaned on a regular back flush cycle.
- One diesel pump that supplies water to the back block irrigation system from the supply channel. The diesel pump also has a filter installed to prevent silt from entering the irrigation system.

### Action

An energy audit for the pumping systems evaluated:

- installing variable speed control
- upgrading the pump
- installing a solar photovoltaic system.

### Results

Of the energy-saving opportunities evaluated, several initiatives were identified with short-term savings up to 50% and a payback period of 2 years (approx).

Two options for potential energy savings were analysed in the audit report:

- Replacing the 18.5kW centrifugal pump with a higher efficiency model. This option would cost around \$8,000 to implement with a payback period of 2.2 years.
- Installing a variable speed drive to the existing 18.5kW centrifugal pump. This option would cost approximately \$8,000 to implement with a payback period of 2 years.

With the lower payback period, the variable speed drive option is therefore preferred.


The audit report also included the option of installing a solar photovoltaic system to offset some of the pumping energy demand. With a payback period of 5.9 years, this has not been prioritised.

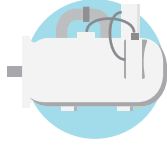
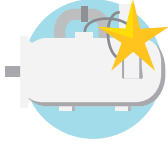

*The Irrigators Energy Savers Program was funded by the Queensland Department of Agriculture and Fisheries*



# Recommendations

The energy audit recommendations are summarised below:

Solution	 <b>Variable speed drive</b>
Est. energy savings (kWh/annum)	16,310
Est. operating cost saving	\$3,980
Est. cost to implement	\$8,000
Payback period (years)	2
Est. demand reduction (kW)	7
Est. energy savings	50%

Forecast savings in pump operating costs	 <b>Existing system</b>	 <b>Upgraded system</b>	 <b>Reduction in operating costs</b>
Annual pump operating cost	\$8,060	\$4,080	-
Cost to implement	-	\$8,000	-
Operating costs for first 3 years	\$24,180	\$20,240	\$3,94
Annual pump operating cost for years 4 to 10	\$8,060	\$4,080	0
<b>Total pumping costs for 10 years</b>	\$80,600	\$48,800	\$3,98 \$31,800 0

## Farmer feedback

The farm owner has been sourcing quotes to upgrade the electric pump to a variable speed drive unit and assessing the opportunity to install a larger pump and variable speed drive unit to accommodate further expansion of farming activities. Timing for implementation is yet to be confirmed.

**This case study was originally developed during 2017-18 as part of the Queensland Government funded Irrigators Energy Savers Program, delivered by the Queensland Farmers' Federation.**