

# Irrigators Energy Savers Program

targets significant energy savings for a Queensland sugar cane farm

IMPLEMENTED SOLUTION 

Potential energy savings

30%

## Key facts

### Farm / Industry

Sugar cane

### Product

Sugar cane and rice

### Location

Proserpine

### Irrigation

Flood and travelling gun

### Pumps

Centrifugal

### Solution

#### Implemented:

Variable speed control

## Farm profile

The farm, located north of Proserpine, cultivates sugar cane as the primary crop and has recently diversified to rice. Flood irrigation is the preferred method, along with travelling gun irrigators at certain crop stages or locations.

Six irrigation pumps are in use that draw water from the nearby Proserpine River or are used to provide good quality water from bores.

### Current irrigation

The irrigation system comprises:

- Four skid-mounted irrigation pumps ranging from 22kW to 55kW. These pumps can be moved prior to flooding and draw river water using suction spears.
- Two fixed bore pumps of 37kW each.

### Action

An energy audit of the pumping systems evaluated:

- installation of variable speed controls
- replacing pumps and pipelines
- changing the irrigation method.

### Results

Of the energy saving opportunities evaluated, one initiative was identified with potential savings of up to 30% and a payback period of 2 years (approx).

The energy audit report identified the potential for installing a variable speed control panel on five of the six irrigation pumps, two of which would have payback periods of less than three years. These two are some of the larger skid pumps at 55kW and 45kW. The remaining three pumps could be considered for upgrade to high efficiency pumps when they are due for replacement.

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





# Energy savings

The energy audit recommendations are summarised below:

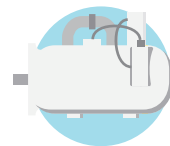
## Solution



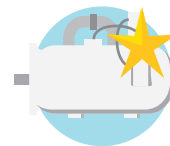
### Install variable speed drives on two 55kW pumps

Est. energy savings (kWh/annum)	38,879
Est. operating cost saving	\$7,338
Est. cost to implement	\$14,500
Payback period (years)	2
Est. demand reduction (kW)	24
Est. energy savings	30%

## Forecast savings in pump operating costs



### Existing system



### Upgraded system



### Reduction in operating costs

Annual operating cost	\$41,011	\$33,673	-
Cost to implement	-	\$14,500	-
Operating costs for first 2 years	\$82,02	\$81,846	\$176
Annual pump operating cost for years 3 to 10	2	\$33,673	\$7,338
<b>Total pumping costs for 10 years</b>	<b>\$41,011 \$410,110</b>	<b>\$351,230</b>	<b>\$58,880</b>

## Farmer feedback

With recent crop diversification to rice and expansion of the crop area serviced by flood irrigation rather than travelling gun, the owner has installed variable speed drives on two pumps to achieve more efficient operation and lower energy costs.

The owner is very satisfied with the improved pump operations which deliver the

required

flow output at the most efficient energy consumption setting. Determination of actual energy savings is subject to completion of measurement and verification.

**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.**