

# Energy Savers Plus Program

targets significant energy savings for a

## Bundaberg Sugar Cane

Proposed  
Solution



Proposed  
Energy  
Savings

48%

### Site profile

A sugarcane farming enterprise located in the Bundaberg region, that also grows soybean, fodder and corn as rotational cropping, could benefit from a recent Energy Savers Audit.

The sugarcane cropping lands consists of 101 ha and is serviced by three pumps.

Farming requires constant decision making to maximise production and profit. Crops are often rotated due to season changes, weather variations and higher value products though sometimes the systems in place are outdated and are in need of an upgrade.

### Key Facts

#### Farm/Industry

Sugar Cane

#### Product

Sugar Cane

#### Location

Bundaberg, QLD

#### Case study focus

Pumping, irrigation and production

#### Solution

Installation of VSD and fit for purpose solar PV system to improve efficiency.

### Current system

The current irrigation system is run by two electric pumps supplied from ground water bores and a diesel pump located on a tail water collection dam. Irrigation methods on the property include high pressure travelling gun and low-pressure furrow (flood).

Pump one draws from a borehole depth of 5 m and delivers water via 700m of 150 mm underground mainline.

Pump two draws from a depth of 4 m and delivers water via 1200m of 150 mm underground mainline.

The third pump (the tail water diesel pump) was not included in this audit as its utilisation is sporadic.

Pump two presents the most opportunity. Whilst it is flood prone like pump one, the distance to high ground is only about 100 m where the Ergon grid is located which provides an opportunity to substitute grid energy with solar PV.

### Action

A recent energy audit showed how improving the current systems can lead to energy and cost savings, the recommendations explored in the audit included:

- Install two Variable Speed Drives (VSD) on pump one and two.
- Install 30kW solar PV system to existing pumping system (savings calculated post VSD installation)

### Results

Energy consumption from the two pumps sites showed that a total 85,001kWh at a cost of \$20,716 was used during the 2018-2019 period.

Pump one operates a travelling gun irrigator which services around 30 ha of the total harvested farm area. Installation of a VSD on pump one will reduce the operational cost of the annual irrigation program by an estimated \$2,706. While it is also estimated that the energy cost for pump one will decrease by 25 - 30% once all audit recommendations are made.

The Energy Savers Plus Program Extension is funded by the Queensland Department of Natural Resources, Mines and Energy.



## Results cont.

Pump two supplies water to a travelling gun irrigator and furrow and services around 40 ha. Like pump one, the installation of a VSD will greatly reduce irrigation costs, saving \$12,838.

Energy demand will decline as VSD technology will better manage operational head factors.

While the inclusion of a 30kw solar PV will also greatly reduce costs and energy consumption. It is estimated that a further \$16,465 can be saved through installing a solar PV.

The farm has recently completed works to transition from obsolete farming tariffs and has moved to T33.



## Outcomes

Recommendation	Paddock Area (ha)	Crop	Irrigation Type	Energy Savings (kWh)	Cost Savings (\$)	Payback Period (Years)
Pump 1- Installation of VSD	30	Sugarcane	Travelling gun	11,354	2,706	3.6
Pump 2- Installation of VSD	40	Sugarcane	Furrow & Travelling gun	12,838	12,838	4
Pump 2- Installation of Solar PV	40	Sugarcane	Furrow & Travelling gun	23,440	16,465 (Combined with pump 2 VSD)	2.5
<b>Total</b>	<b>70</b>	<b>N/A</b>	<b>N/A</b>	<b>47,632</b>	<b>19,171</b>	<b>N/A</b>

## Conclusion/Farmer Feedback

An energy audit is a great first step in moving a business towards a more efficient future by reducing energy use, costs and Carbon emissions onsite.

There is no doubt the audit proposals will reduce future operating cost through changing to Tariff 33 (already implemented), installing variable speed drive and solar PV to simultaneously reduce overall operating cost and provide potential for increasing productivity. By installing all the recommendations in the audit, the business could reduce energy consumption by 48%

The long-term cost of establishing the crop increases with less efficient systems. The energy audit provided a long-term forecast of the energy consumption and costs involved. Another factor the audit may consider is current rainfall patterns and future trends which may be shifting out of season.

An energy auditor will review your past energy bills, your equipment and the way your business operates. They'll show you where you're using excess energy and explain what you can do about it.

## Case studies

To see how other agriculture businesses are saving energy and costs, go to [www.qff.org.au/projects/energy-savers/](http://www.qff.org.au/projects/energy-savers/)