Energy Savers Plus Program targets significant energy savings for a Bundaberg Horticulture Farm	POTENTIAL SOLUTION POTENIAL ENERGY SAVINGS
	Key facts
	Farm / Industry
	Horticulture
	Product
	Avocados and Macadamias
	Location
	Bundaberg
Summary	Case study focus
An avocado farm located near Bundaberg could benefit from recommendations in	Solar
a recent energy audit. The audit recommended to install a solar PV system at the	Solution
existing irrigation pump to offset the energy consumption.	Installation of a 20kW solar PV, maintain, and monitor systems

Farm Profile

The farm, near Bundaberg, produces avocados and is irrigated year-round depending on rainfall. Water is supplied from underground aquifers. The farm is starting to replace older avocado orchards with macadamias and as a result changes to energy and water consumption will occur.

Current Energy Demand

It is a large farm consuming just over 100,000kWh per year at a cost of \$30,000 at the three meters assessed. They harvest about 800 tonnes per year from 60ha and their current energy benchmarking is approximately 125kWh/tonne.

The infrastructure contributing to the energy consumption onsite consists of:

- 40kW turbine pump which is used to irrigate a smaller section of the farm
- Main 37kW turbine irrigation pump with a VSD which irrigates most of the farm
- Several small fertigation pumps, on the same grid connection point as main pump
- A smaller irrigation turbine pump which is used to irrigate a smaller section of the farm

Action

The energy audit recommended the following changes to improve efficiency and reduce costs:

- Review of existing pumps and efficiencies,
- Installation of a 20kW solar system at the main pump site,
- Tariff analysis moving from obsolete T66 to general supply T20, and
- General management changes such as energy monitoring, cleaning of solar panels and monitoring irrigation leakages.

The Energy Savers Plus Program Extension is funded by the Queensland Department of Energy and Public Works.





Results

Of the energy saving opportunities evaluated, 1 initiative was identified with potential energy savings of 17% of the site total and a combined payback period of around 7 years.

The audit recommended included installing a 20kW ground mounted solar system at the site of the large pump, with a payback period of 7 years and cost savings of \$4,800 per year. The post implementation energy benchmarking would be 104kWh/tonne, which is an

energy reduction of 17% and emission savings of 13 tCO₂-*e* per year.

A tariff analysis was completed on the 3 assessed tariffs and it was found that there were savings of approximately \$400, available by changing the tariff on the largest pump, the pump was on tariff 66, which is being phased out in July 2021. The suggested replacement tariff was Tariff 20, which is a small business flat rate tariff.

The three pumps were assessed and were found to be operating efficiently. It was suggested that when the pumps reached end of life, they should be replaced with high efficiency pumps.

General maintenance on electrical infrastructure is a great way to achieve some low cost quick wins. We recommend to develop a maintenance plan by making sure all electrical infrastructure is covered onsite and sticking to the schedule set.

Outcomes/Recommendations

The energy audit recommendations and potential benefits are summarised below:

Solution	20kW solar at the pump
Estimated Cost to implement (\$)	35,000
Annual Energy Savings (kWh)	17,000 (17%)
Annual emissions savings (†CO ₂ -e)	13.77
Annual operating cost savings (\$)	5,000
Payback Period (years)	7

Following the audit report recommendations, the grower did not proceed with any of the recommendations due to other business pressures.

Energy Audits for your Business

An energy audit is a great way for a business to identify the most effective way to cut costs, reduce emissions and boost productivity.

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 9
 56%
 27.3¹
 20,884^{\$}

 PROPOSED
 energy savings
 co2 savings
 cost savings







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