

Energy Savers Program

Bec Tkal, Queensland Farmers' Federation





The Energy Savers programs are being funded by the Queensland Government and delivered by Ergon Energy in partnership with the Queensland Farmers' Federation and its member bodies.





Energy Savers Programs



Irrigators – 34 Level 2 Audits



Plus –100 Level 2 Audits



Case Studies



Irrigators Energy Savers Program

targets significant energy savings for a **Central Queensland sugar cane farm**

PROPOSED SOLUTION

Potential energy savings **16%**

Key facts	Farm profile
Farm / Industry	The farm, near Bundaberg, produces sugar cane and macadamias, and draws water from the Burnett River to irrigate the crops.
Broadacre crops	
Product	Irrigation is via travelling gun irrigators with five discrete pumping stations to distribute and disperse water across the farm. The main irrigation period is from September to April when irrigation is mainly undertaken overnight and runs an average of 16 hours per day.
Sugar cane and macadamias	
Location	
Bundaberg	
Irrigation	
Travelling gun	
Pumps	
Centrifugal	

Current irrigation

The irrigation system comprises:

- Two submersible turbine pumps that draw water from the river to supply the high-pressure travelling gun irrigators. They are both powered by 93kW electric motors and one is fitted with a variable speed controller.
- A pump station that consists of two

Results

Of the energy-saving opportunities evaluated, several initiatives were identified with savings up to 16% and a payback period of 1.3 years (approx). These initiatives include modifying existing pump pipework

- resolving pressure losses
- resizing pumps.



Irrigators Energy Savers Program

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

PROPOSED SOLUTION

Potential energy savings **18%**

Key facts	Farm profile
Farm / Industry	The farm is a 100 hectare citrus producer located in the Mundubbera area with water sourced for irrigation from the underground aquifer.
Citrus	Citrus trees are irrigated using sprinklers beside each tree and the areas are divided into zones with water supply controlled by an irrigation management system which can be adjusted according to the season and weather conditions.
Location	Electricity consumption on-site is driven mainly by the irrigation pumping, packaging operations as well as refrigeration cold rooms, which are used during April to October.
Current irrigation	
The irrigation system comprises:	
- Two 45kW bore pumps that supply water to the irrigation system and are located 66 metres below ground level. - A third smaller bore pump of 5.5kW is used to supply water to the packing shed and is controlled by a variable speed drive (VSD).	
Results	
Of the energy saving opportunities evaluated, several initiatives were identified with energy savings of up to 26% and a payback period of 3.2 years (approx).	
Action	
An energy audit of the pumping systems evaluated:	
Installation of variable speed controls	

Current irrigation

The irrigation system comprises:

- Two 45kW bore pumps that supply water to the irrigation system and are located 66 metres below ground level.
- A third smaller bore pump of 5.5kW is used to supply water to the packing shed and is controlled by a variable speed drive (VSD).

Results

Of the energy saving opportunities evaluated, several initiatives were identified with energy savings of up to 26% and a payback period of 3.2 years (approx).

The energy audit included recommendations to install VSDs on the two 45kW irrigation pumps which are currently run with the discharge throttled to provide the correct pressure to the irrigation sprinklers. The use of VSDs as an alternative to throttling would reduce energy use by slowing down the pumps.

Another initiative recommended was to



Irrigators Energy Savers Program

targets significant energy savings for a **Queensland cotton farm**

PROPOSED SOLUTION

Potential energy savings **29%**

Key facts	Farm profile
Farm / Industry	The farm produces cotton and is located just outside St George, approximately 500km west of Brisbane.
Cotton	Two pumping stations, with two electric pumps each, transfer water around the farm for flood irrigation all year round. A dam is maintained on-site for water supply, and a series of reticulation channels transports water around the farm.
Location	
St George	
Current irrigation	
The irrigation system comprises:	
- Pump Station 1 has a 75kW centrifugal pump and a 250kW pump that transfer water from the main dam to the irrigation channels. - Pump Station 2 has a 230kW mixed flow pump that lifts overland flow from the property into a large dam. A secondary pump can be driven with a tractor shaft, if required.	
Results	
Of the energy-saving opportunities evaluated, two initiatives were identified with potential short-term savings of 29% and a payback period of 1.3 years (approx).	
Action	
An energy audit of the pumping systems evaluated:	
- pump and motor replacements - installation of variable speed control - pipework modifications.	

Results

The energy-efficiency opportunities identified in the audit included changing the pump operation at Pump Station 2 so that the 230kW electric pump can operate closer to its best efficiency point. The tractor shaft pump can then be operated to make up for the difference in supply at a cheaper rate.

The other opportunity identified in the audit, with short-term savings, is to install a variable speed drive on the 75kW pump at Pump Station 1 and replace the pump impeller with a full-size version. This would increase the pump efficiency from 76% to 86%.

The audit report also suggests a review of the tariff pricing structure for each pump's electricity account to save up to \$3,500 per annum.

QUICK REFERENCE TABLE

	Energy Efficiency Loans				Energy Services Model
	Clean Energy Finance Corporation Co-Financing Partnerships		CEFC CLEAN ENERGY FINANCE CORP	QRAA	Private Financiers
Program name	 Equipment Finance Energy Efficient Bonus	 Energy Efficient Equipment Finance	 Energy Efficient Finance	QRAA Sustainability Loan – Primary Producer	Energy Services Agreement or “Turnkey Solutions”
Description	...Simply apply for an Equipment Loan, Hire Purchase or Finance Lease from NAB – if the equipment meets CEFC criteria for energy efficiency, 0.70% will be deducted from the finance rate...	...Partnering with the Clean Energy Finance Corporation, the CBA provides discounted financing to help businesses fund energy efficient vehicles, equipment and projects...	...Westpac is helping Australian businesses reduce their energy costs and environmental footprint by providing financial solutions for energy efficient equipment...	Sustainability Loans provide you with up to \$1.3M to cover capital costs to achieve a more productive and sustainable primary production enterprise.	An Energy Services Company may design, install, commission, finance and maintain new energy efficient or renewable energy equipment, with service charges designed to be less than energy savings.
Benefit	Bonus 0.70% p.a. off your equipment finance rate, on qualifying assets for the life of the financing.	0.70% discount off standard asset finance rates.	You may be entitled to 0.70% p.a. discount on the interest rate when you purchase certain	Low interest rate fixed for 1, 3 or 5 years (Interest rates are subject to change in January and July each	Generally no up-front costs (Some providers prefer a partnership where the site makes a small up-front



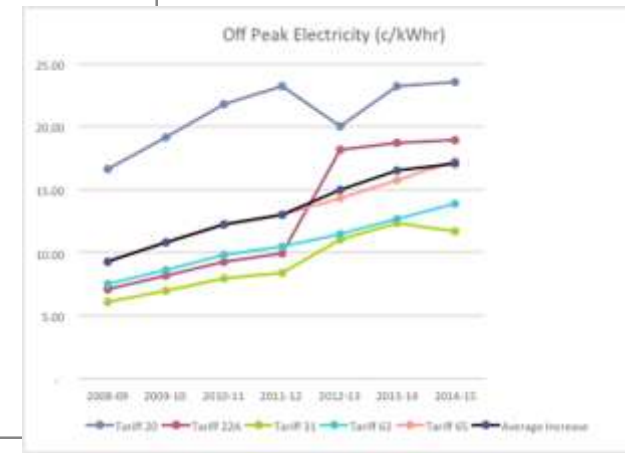
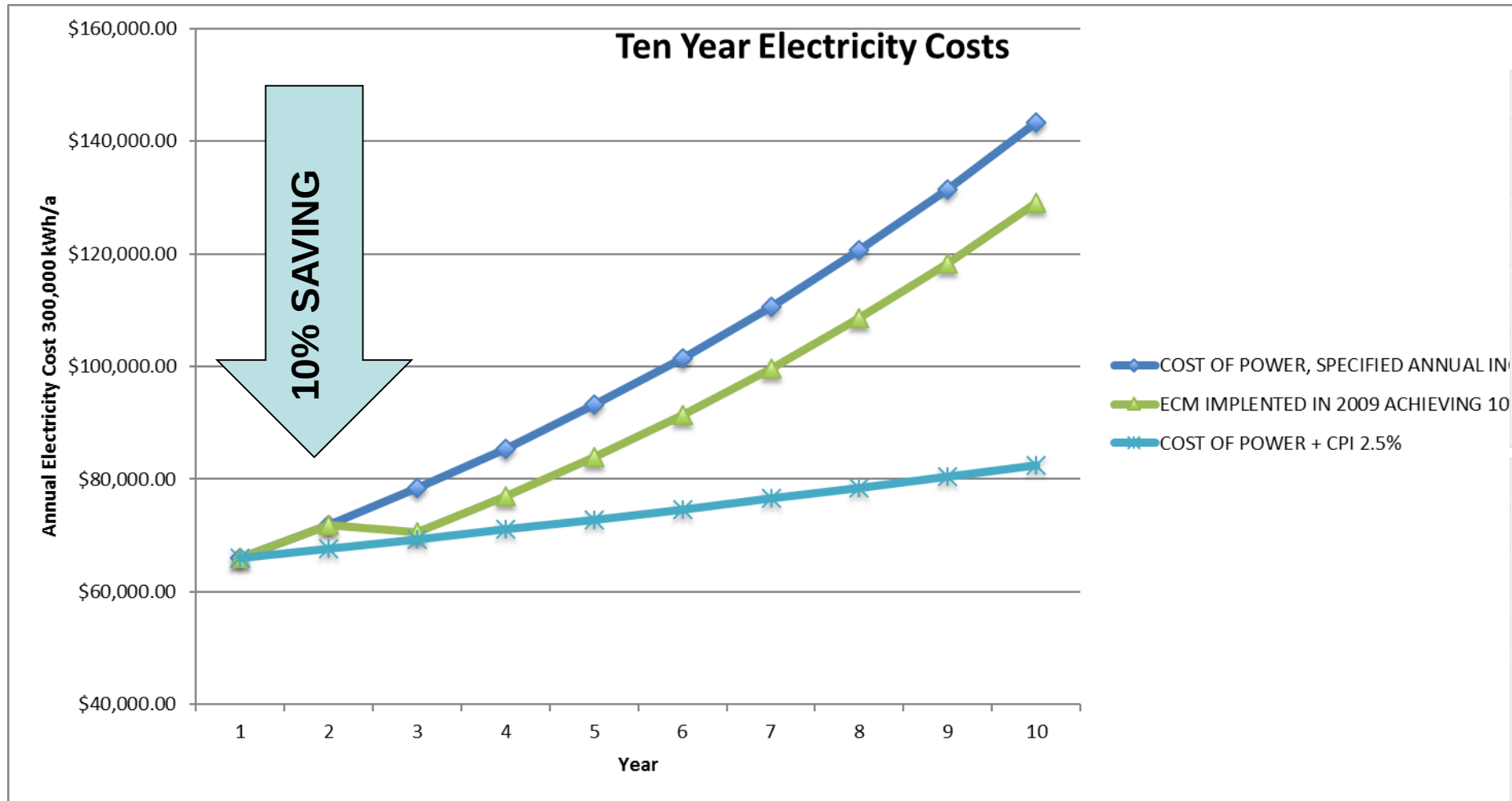
Website & e-news

The screenshot displays the QFF (Queensland Farmers' Federation) website's 'Energy Savers' section. At the top, the QFF logo is on the left, and navigation links for 'ADVOCACY', 'NEWSROOM', 'PROJECTS', 'EVENTS', 'FARMING IN QLD', 'About', 'Our Members', and 'Contact' are on the right. Below the navigation is a 'FILTER CASE STUDIES BY SECTOR' button followed by a row of icons representing various agricultural sectors: grains, sugarcane, dairy, horticulture, livestock, and others. Underneath the icons are four filter dropdown menus: 'LOCATION', 'PUMP TYPE', 'IRRIGATION TYPE', and 'TECHNOLOGY'. The main content area features three case study cards. Each card includes a location pin icon, the location name, the case study title, a checkmark icon, the word 'IMPLEMENTED', and the percentage of 'actual energy savings'.

Location	Case Study Title	Actual Energy Savings
MUNDUBBERA	MUNDUBBERA CITRUS FARM	54%
CAIRNS	CAIRNS COLD STORE	30%
BURDEKIN	LOWER BURDEKIN WATER	40%

www.qff.org.au/energysavers

To Implement or not to Implement



Annual % Price Increase	10 YR TOTAL COST WITH NO ECM	10 YR TOTAL COST WITH ECM YR 3	SAVING
0	\$660,000.00	\$607,200.00	\$52,800.00
CPI of 2.5%	\$739,423.20	\$670,229.90	\$69,193.29
9	\$1,002,733.36	\$916,254.03	\$86,479.34



Summary

1. Energy Efficiency Projects have led to product quality and productivity improvements, reduced maintenance costs.
2. Efficiency and renewables technologies are improving and becoming cheaper.
3. Innovative Financing models are available.
4. www.qff.org.au/energysavers for case studies and technology information and the Energy Savers e-news



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member bodies.

