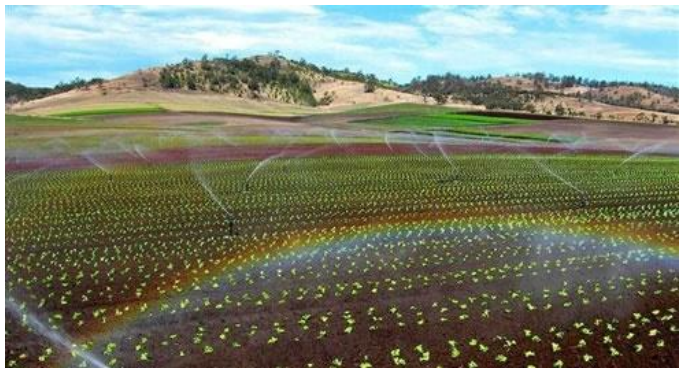
Energy Savers Program

Andrew Chamberlin, 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 / Industry
Broadacre crops

Product
Sugar cane and macadamias

Location
Bundaberg

Irrigation
Travelling gun

Pumps
Centrifugal

Farm profile

The farm, near Bundaberg, produces sugar cane and macadamias, and draws water from the Burnett River to irrigate the crops.

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.

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.

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%

Farm profile

The farm is a 100 hectare citrus producer located in the Mundubbera area with water sourced for irrigation from the underground aquifer.

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.

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).

Action

An energy audit of the pumping systems evaluated:

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
gy savings for a
farm

PROPOSED SOLUTION
Potential energy savings 29%

Farm profile

The farm produces cotton and is located just outside St George, approximately 500km west of Brisbane.

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.

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.

Action

An energy audit of the pumping systems evaluated:

- pump and motor replacements
- installation of variable speed control
- piping modifications.

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).

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.

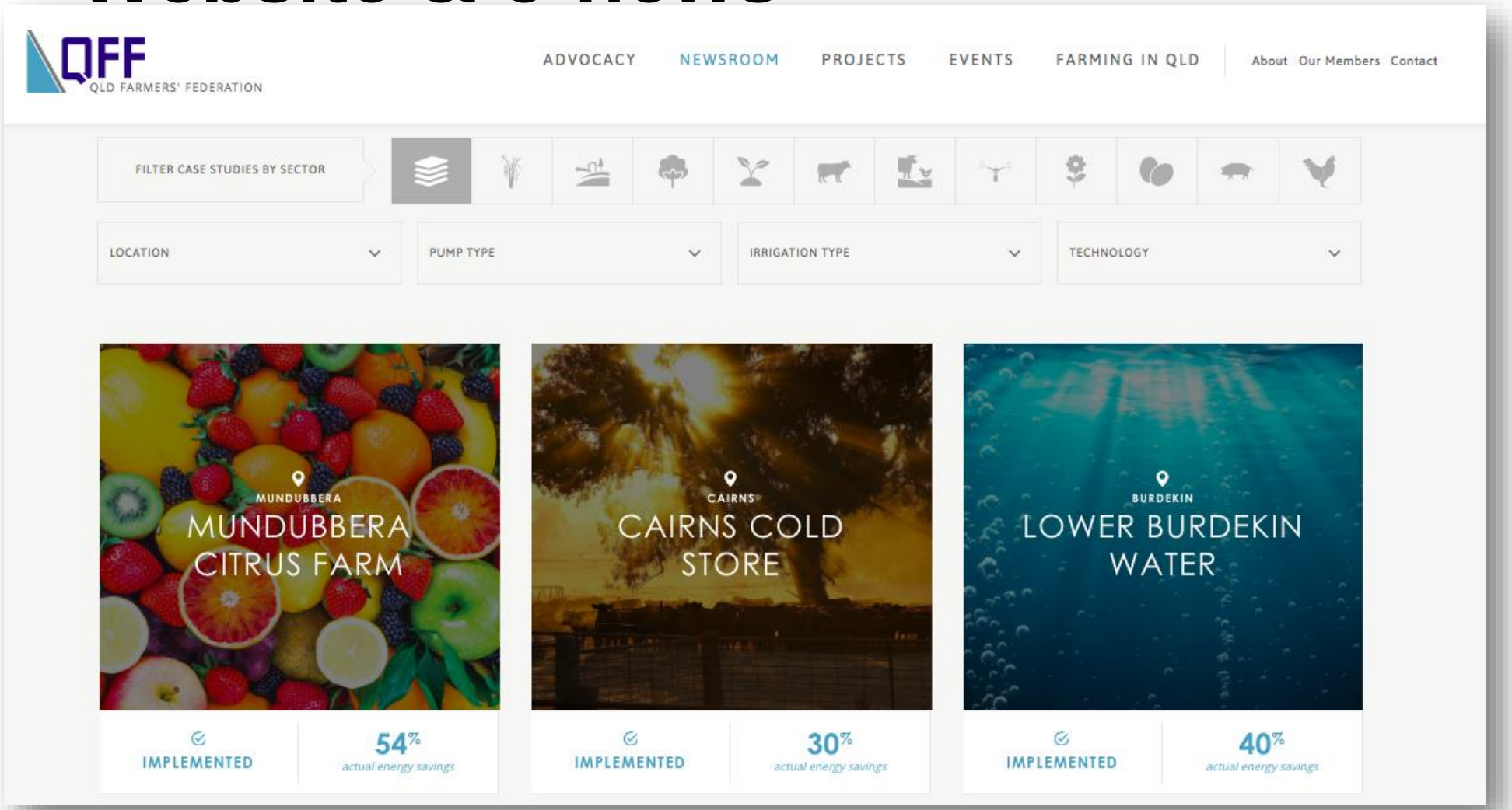
The other opportunity identified in the audit, with short-term savings, is to install a variable speed drive on the 75kW pump at Pump Station 1 and replace the pump impeller with a full-size version. This would increase the pump efficiency from 76% to 86%.

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

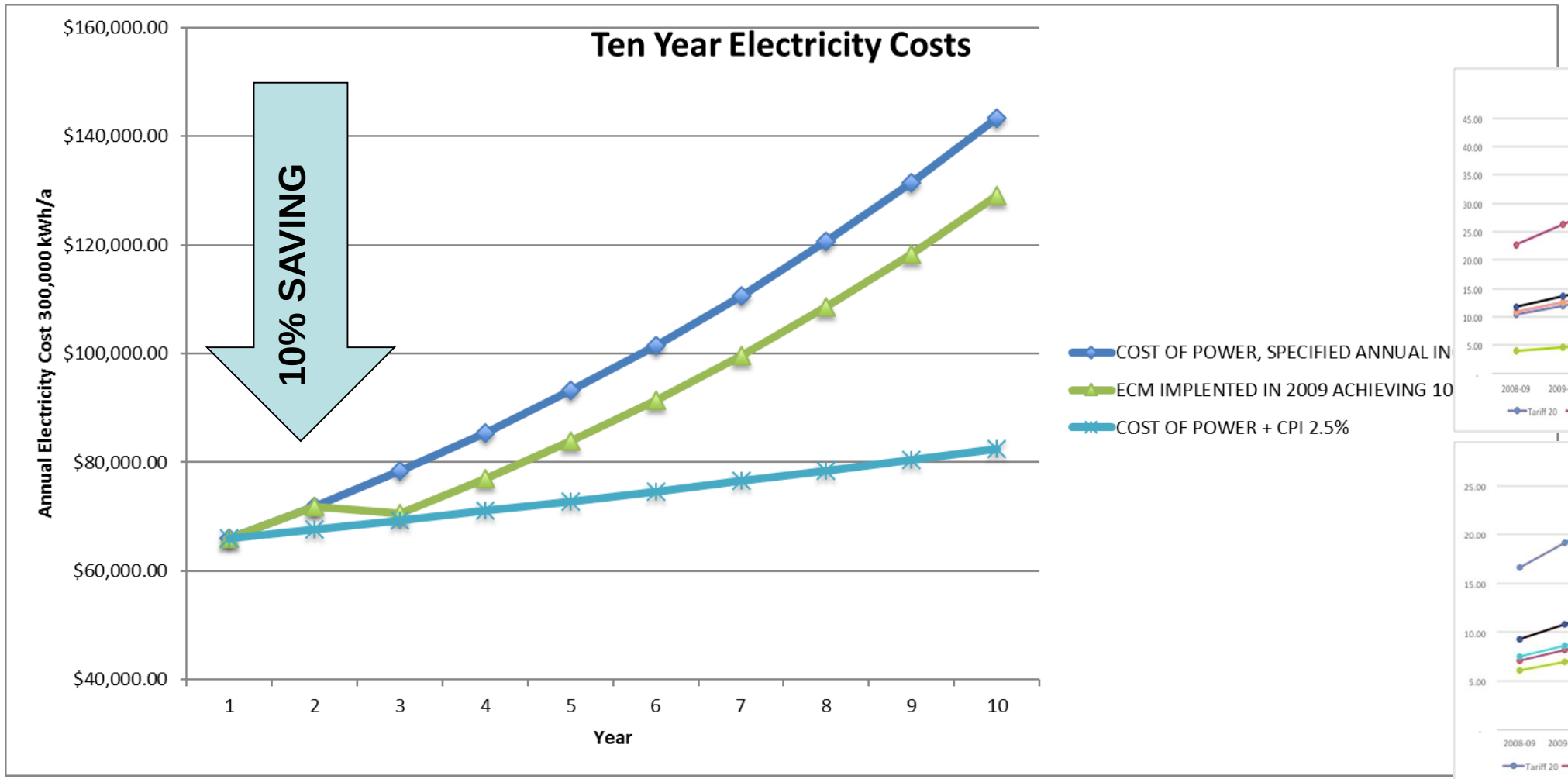
	Energy Efficiency Loans				Energy Services Model
	Clean Energy Finance Corporation Co-Financing Partnerships		CEFC CLEAN ENERGY FINANCE CORP	QRAA	Private Financiers
Program name	nab **Equipment Finance Energy Efficient Bonus**	CommonwealthBank **Energy Efficient Equipment Finance**	Westpac **Energy Efficient 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

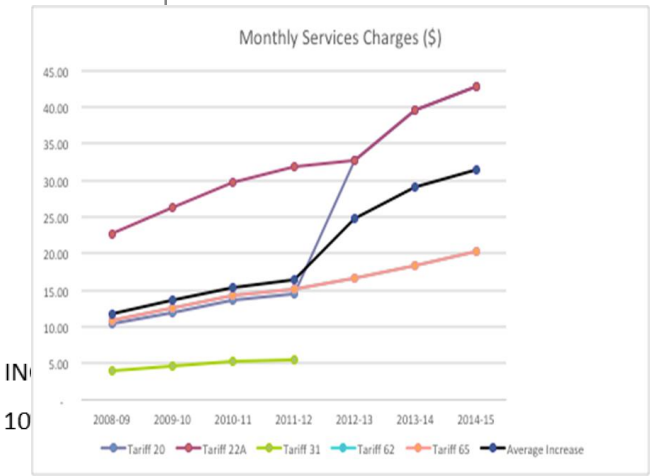
Website & e-news

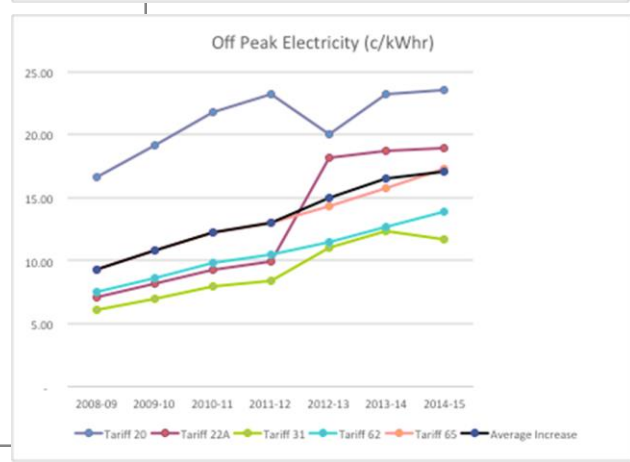


www.qff.org.au/energysavers

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

Andrew Chamberlin
Project Manager - Energy
Queensland Farmers' Federation

Tel: 07 3837 4729
Mob: 0412 242 316
Email: andrew@qff.org.au

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.