

Energy Savers Program

targets significant energy savings for
Queensland Cotton Farms

POTENTIAL
SOLUTION



AVERAGE
ENERGY
SAVINGS

40%

Key facts

Farm / Industry

Cotton

Product

Cotton

Location

Queensland

Case study focus

Industry and Technology

Solution

Install solar systems, efficient pumps and new irrigation infrastructure

Summary

The Energy Savers program aims to assist farmers to reduce energy costs by supporting the accelerated adoption of improvements in on-farm energy use. This case study summarises the outcomes from audits conducted on 8 Queensland Cotton farms.

Collectively the total energy consumption consumed from the measured areas on the eight cotton farms was 886,171kWh at an annual cost of \$239,405, resulting in emissions of 718 tonnes of CO₂-e.

Opportunities

The main opportunities identified on Cotton farms include:

- Pumping and Irrigation**- Savings from Variable Speed Drive installation, pump replacements and maintenance. Changes to irrigation design and automation.
- Lighting and General**- Replacement and retrofitting of lights with LEDs, infrastructure, and general changes.
- Solar Systems**- Ranging in size from 5-100kW systems

Table 1. Technology Recommendations and Savings in the Cotton Industry.

Recommendation	Total	Energy Savings (kWh)	Cost Savings (\$)	Capital Cost (\$)	Average Payback (Years)	Emission Reduction (CO ₂ -e)
Pumping and Irrigation Upgrades	11	154,415	32,282	177,610	6.6	125
Lighting and General	1	N/A	1,000	1,000	0.4	N/A
Solar Systems	13	198,325	71,707	309,630	3.9	161
Total	25	352,740	106,589	488,240	3.6	286
Total Recommendations	665	7,459,015	2,817,342	12,784,670	6.85	6,042

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



Table 1 highlights that potential energy savings of 352,740kWh were discovered from the audit process.

Cost savings of \$106,589 and an estimated 286 tonnes of CO2-e could be removed per annum. At a capital cost of \$488,240 the average payback was 3.6 years.

Additional value adding from the energy audits showed how an increase in water delivery, could increase production and profit with a reduction of energy consumed per unit of output.

Table 2. Pre and Post Audit Metrics.

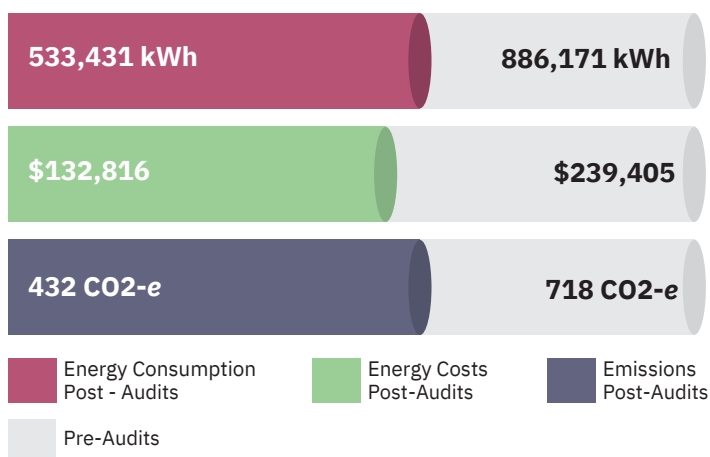
Metric	Pre-Audits	Post-Audits	Reduction (%)
Energy Consumption (kWh)	886,717	533,431	40
Energy Costs (\$)	239,405	132,816	45
Emissions (CO2-e)	718	423	40

As installation of the recommendations is made within the industry, measurement and verification will be undertaken, and case studies will be updated to include the actual energy savings.

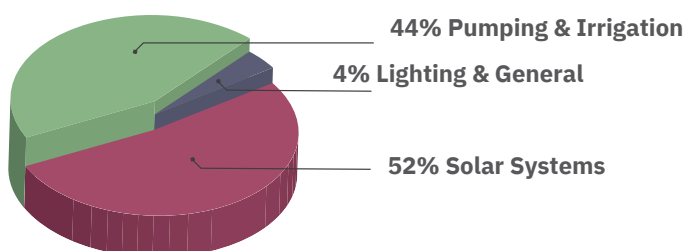
Energy Audits for your Business

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

Graph 1: Energy Savings Pre vs Post Audits



Graph 2: Energy Saving Opportunities in cotton



This case study was originally developed in 2021 as part of the Queensland Government funded Energy Savers Plus Program Extension, delivered by the Queensland Farmers' Federation.