



Energy Savers Program

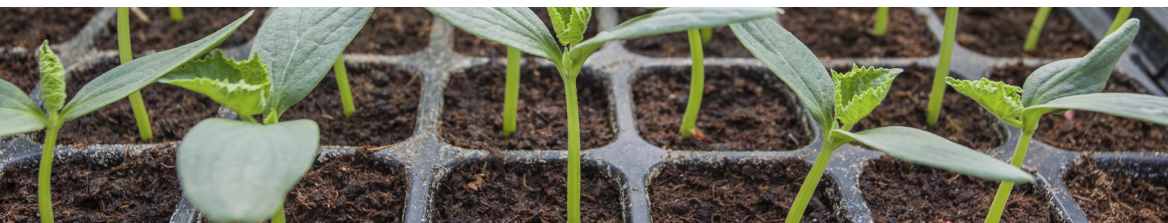
targets significant energy savings for

Queensland Nursery Farms

POTENTIAL SOLUTION



AVERAGE ENERGY SAVINGS



Key facts

Farm / Industry

Nursery

Product

Plants

Location

Queensland

Case study focus

Industry and Technology

Solution

Install solar systems, and make changes to pumping, gas and HVAC systems.

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 24 Queensland Nurseries.

Collectively the total energy consumption consumed from the measured areas on the 24 nurseries farms was 3,541,751kWh at an annual cost of \$449,783, resulting in emissions of 3,258 tonnes of CO₂-e.

Opportunities

The main opportunities identified in the Nurseries include:

- **Pumping and Irrigation**- Variable Speed Drive installation, pump replacements and maintenance, and changes to irrigation design
- **Heating Ventilation and Cooling (HVAC)**-Cooling upgrades, condenser motors with VSD, ventilation fans and heating upgrades.
- **Lighting and General**- Replacement and retrofitting of lights with LEDs, infrastructure and general changes.
- **Solar and Batteries**- Grid connect and standalone
- **Gas**- Hot water, insulation and general heating.
- **Solar Systems**- Ranging in size from 5-100kW systems.

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

Recommendation	Total	Energy Savings (kWh)	Cost Savings (\$)	Capital Cost (\$)	Average Payback (Years)	Emission Reduction (CO ₂ -e)
Pumping and Irrigation Upgrades	10	29,653	16,789	62,318	13.5	24
HVAC	18	102,480	32,198	169,846	5.1	83
Lighting and General	30	73,251	22,538	94,773	5.2	59
Solar and Batteries	1	7,053	24,198	24,168	8.3	6
Solar Systems	20	483,696	527,384	527,384	4.7	392
Total	79	696,133	199,520	878,489	7.3	564
Total Recommendations	665	7,459,015	2,817,342	12,784,670	6.85	6,042

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



Table 1 highlights that total energy savings of 689,080kWh were discovered from the audit process.

Including production benefits, a saving of \$199,520 and estimated 564 tonnes of CO₂-e could be realised per annum. At a capital cost of \$878,489 the average payback was 7.3 years.

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

Table 2. Pre and Post Audit Metrics.

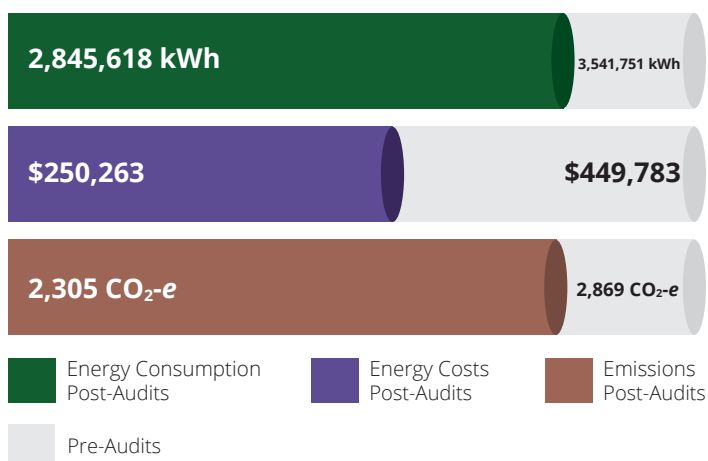
Metric	Pre-Audits	Post-Audits	Reduction (%)
Energy Consumption (kWh)	3,541,751	2,845,618	20
Energy Costs (\$)	449,783	250,263	44
Emissions (CO ₂ -e)	2,869	2,305	20

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.

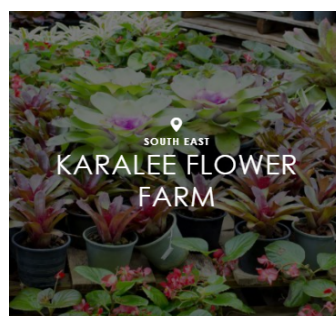
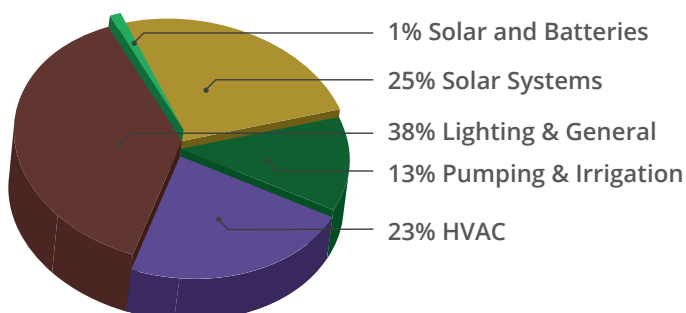
Energy Audits for your Business

- An energy audit is a great way for a business to identify the most effective way to cut costs, reduce emissions and boost productivity.
- See other case studies including sector case studies and technology case studies at the website: www.qff.org.au/newsroom/case-studies/

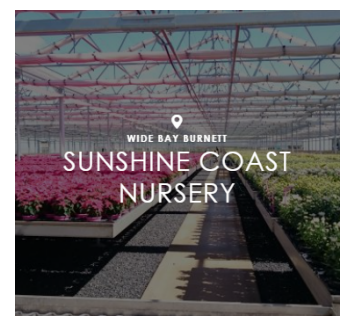
Graph 1: Energy Savings Pre vs Post Audits



Graph 2: Energy Saving Opportunities in nursery



IMPLEMENTED 21% energy savings 40.1^t CO₂ savings 15,367^{\$} cost savings



IMPLEMENTED 162% energy savings 17.1^t CO₂ savings 4,700^{\$} cost savings