

Energy Savers Program

targets significant energy savings with
Gas and Biogas

**POTENTIAL
SOLUTION**



**AVERAGE
ENERGY
SAVINGS**

1.6%

Key facts

Farm / Industry

Gas

Location

Queensland

Case study focus

Gas

Solution

Install gas saving measures

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 gas and biogas recommendations from 180 audits across the nine agricultural sectors.

The total energy consumption recorded from the 180 farms was 18,666,737kWh, at an annual cost of \$4,187,148, resulting in emissions of 15,120 tonnes of CO₂. Various technology types were identified in the program aimed at improving efficiency on site.

An energy audit is a good investment

An energy audit is a great first step in moving farming industries towards a more efficient future by reducing energy use, costs, and carbon emissions. This category includes the following technology solutions to improve efficiency of gas systems on farm using quick win low cost solutions onsite.

- Gas and solar hot water.
- Insulation of existing pipework.
- Temperature control changes.

The recommendations to improve gas use efficiency consisted of insulation, solar hot water, and temperature control changes. Due to the conversion factor of 1Gj:277.8kWh, small savings can offer large kWh energy savings and significant CO₂-e reductions, with only three recommendations from one site leading to the results shown in the table below.

Table 1. Total Recommendations and Savings for Gas Technology Adoption.

Recommendation	Total	Energy Savings (kWh)	Cost Savings (\$)	Capital Cost (\$)	Average Payback (Years)	Emission Reduction (t/CO ₂ -e)
Gas Findings	3	300,835	46,500	90,600	1.33	244
All Findings	671	7,459,015	3,044,332	12,784,670	6.6	6,042

Only one site contributed to the number of recommendations found. The gas conversion from Gigajoules to kWh is 1:277.8. Therefore small savings can offer large kWh energy savings and significant CO₂-e reductions. The gas savings showed quick paybacks from a low amount of capital expenditure.

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From the three recommendations in the 180 audits, total energy savings of 300,835kWh were discovered with the gas efficient technology. Including production benefits, a saving of \$46,500 and estimated 244 tonnes of CO2-e could be realised per annum. At a capital cost of \$90,600 the average payback was 1.33 years.

Table 2. Pre and Post Audit Metrics.

Metric	Pre-Audits	Post-Audits	% Reduction
Energy Consumption (kWh)	18,666,737	18,365,901	1.61
Energy Costs (\$)	4,187,148	4,140,648	1.11
Emissions (CO2-e)	15,120	14,876	1.61

As installation of the technology is made measurement and verification will take place. The energy savings from the process will be tabled and compared against the total number of farms in the program.

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.

Next Steps

Look to improve energy efficiency on farm by taking action with a regular maintenance plan, quick wins or by conducting a full energy audit that adheres to Australian Standard AS:3598 and implementing new efficient technology.

The recommendations in this case study show how quick win solutions can lead to significant savings, some other quick wins you can implement onsite to improve efficiency include,

- Regularly dust electrical motors and lights.
- Turn of electrical equipment when not in use.
- Minimise irrigation fittings and bends.
- Remove trash from pump inlets and clean filters.
- Utilise solar generation effectively by monitoring with a real time energy meter.



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.