

Climate Change Research Strategy - Energy Efficiency Solutions Feasibility Case Study – JBS Australia, Yanco

JBS operates an abattoir and feedlot at Yanco, NSW where a study was conducted to assess the feasibility of installing a covered anaerobic lagoon and a biomass boiler to generate energy on-site.

The NSW DPI Energy Efficiency Solutions project conducted feasibility studies to assess the technical and commercial feasibility of proposals that would address the cost, reliability and sustainability of energy use on farms. Proposals were sought through public advertisements and more direct engagement with associations and networks. An independent advisory group identified ten priority proposals through a merit selection process, then an independent expert assessor was matched to each priority proposal to undertake a detailed feasibility study. This case study summarises the context, proposal and results of the JBS Australia feasibility study.

5MW biomass boiler



Image courtesy of Justen Pacific

Context

JBS Australia is Australia's largest meat packer, marketer and exporter, supplying grain-fed and pasture-fed meats to export and domestic customers for more than 20 years. With

approximately 12,000 employees spread across their offices, processing plants and feedlots, JBS Australia exports to more than 50 countries around the world.

JBS's Riverina Beef Feedlot is licenced for more than 53,000-head capacity. It is situated on a 2,000-hectare property located 12 kilometres southeast of Yanco, NSW. The site currently burns natural gas from a pipeline in a boiler and dryer for processing and feed milling.

Proposal

This proposal entails replacing part of the pipeline gas with biogas generated from waste on site. The remainder of the pipeline gas would be replaced with heat generated in a new boiler using a combination of on-site feedlot waste and local farm and harvesting waste such as nut hulls and grape waste. The two technologies investigated were a covered anaerobic lagoon (CAL) for the generation of biogas from water borne abattoir waste and a biomass boiler for steam generation from biological wastes.

Estimated costs and benefits

	CAL	Biomass boiler
Project cost	\$2.6 m	\$6.3m
Gas cost savings	\$350,000 p.a.	\$1.5m p.a.
Gas use reduction	32,000 GJ p.a. (20%)	140,000 GJ p.a. (80%)
Emissions reduction	7%	31%
Simple payback period	7.4 years	5.2 years

Co-benefits of the proposal include:

- The CAL improves output water quality enabling more use on site.
- The biomass boiler would result in reduced labour and processing costs in the composting operation that were not included in the economic assessment.

As an aside to this proposal JBS is also exploring the implementation of a large-scale solar photovoltaic (PV) system to provide renewable electricity and offset a further 60% of the Scope 1 and 2 greenhouse gas footprint. The combined effect is a very significant (98%) reduction in the Scope 1 and 2 greenhouse gas footprint.

Acknowledgments

The Climate Change Research Strategy (CCRS) is an initiative of the NSW Department of Primary Industries (DPI), supported by an investment from the NSW Climate Change Fund. The Energy Efficiency Solutions project is one of seven CCRS projects. More information is available online here: <https://www.dpi.nsw.gov.au/climate-and-emergencies/climate-change-research-strategy>

The objective of the Energy Efficiency Solutions project is to help energy-intensive farms identify options to improve their energy efficiency and reduce costs. The project is led by NSW DPI, advised by a steering committee. NSW DPI contracted the Australian Alliance for Energy Productivity (A2EP) to provide management services for the conduct of ten feasibility studies. This case study summarises the findings of a detailed study that was undertaken by independent expert consultants, pitt&sherry.



pitt&sherry

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