Department of Primary Industries

Climate Change Research Strategy - Energy Efficiency Solutions

Feasibility Case Study – Haddon Rig Stud, Warren

Haddon Rig Stud is a mixed farming business in Warren, NSW. A study was conducted at Haddon Rig's sheep feedlot to assess the feasibility of using a grid connected solar photovoltaic and battery back-up system to supply electrical equipment and improve the reliability of the electricity supply 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 Haddon Rig feasibility study.

Haddon Rig

Context

Founded in 1882, Haddon Rig is a mixed-farming business located in Warren, Central West NSW. The sheep feedlot was the focus of this feasibility study and the primary opportunity investigated was using grid connected solar photovoltaic (PV) with a battery back-up system to supply electrical equipment and improve the reliability of the electricity on site.

Proposal

As there are three electricity supplies on site, the proposed project consists of three independent systems. These are:

- *North Supply – 86 kW Solar PV & 180 kWh net battery*

  An 86 kW single-axis tracking array will be used in conjunction with a 180 kWh net battery. This will reduce grid dependence by 89% and provide an uninterrupted power supply with a minimum two hours of back-up power. Simple payback of 9.1 years.

- *South Supply and Hanger Supply – 8 kW Solar PV each*

  8 kW Solar PV system for each supply. Simple payback of 5.1 and 4.8 years for the South Supply and Hanger Supply, respectively.

Estimated costs and benefits

Project cost	$426,612
Energy cost savings	$33,083 p.a. (69%)
Other operating cost savings	$16,052 p.a. (82%)
Energy use reduction	483 GJ p.a. (71%)
Emissions reduction	148.7 tCO2e p.a. (97%)
Simple payback period	8.7 years

There are substantial co-benefits associated with the project, including:

- Improved energy reliability
- Improved staff safety
- Increased site productivity
- Improved energy security
- Improved social licence to operate.

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, 2XE.

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