



Solar for piggeries

Why use solar?

With the increasing focus on sustainability, particularly the reduction of greenhouse gas emissions, looking at reducing emissions from energy usage is a great place to start.

Of the direct energy sources required on-farm, electricity is the most pressing need. The Australian pork industry is heavily reliant on reliable and affordable energy supplies.

Solar and other renewables are a great opportunity to invest in becoming partially or fully energy self-sufficient, reducing power costs as well as greatly reducing Scope 2 carbon emissions. Solar is a proven technology that is constantly seeing improvements in longevity, generation potential and ease of installation/maintenance.



What are the options?

There are two standard types of solar – photovoltaic (PV) and solar thermal.

Solar PV generates electricity directly, whereas solar thermal is used to heat water or air which can then be used to generate electricity if needed.

Both have advantages and disadvantages:

Photovoltaic		Solar thermal	
Advantages	Disadvantages	Advantages	Disadvantages
Long lasting	Needs more space	Efficient heat capture	Needs to be replaced faster
Provide direct energy supply	Significant upfront cost	Takes up less space	
Highly effective in summer			

Both systems can be installed on shed rooves or on the ground.

The easiest solar solution may be to look at solar pumping, which can be used for bores, drinking water or effluent water. These can be in 'island mode' - not connected to the grid - which means you don't need approval from your local power company.

Solar thermal systems are another strong option for piggeries to reduce shed and crate heating costs and improve animal welfare. These systems are technically identical to domestic hot water systems commonly installed on many homes and use the sun's rays to heat water in flat plate collectors where it is stored and used for underfloor or radiant heating.

Compared to LPG or natural gas, solar thermal can deliver hot water for between \$2 - \$3 per GJ, for simple payback periods of 2 – 3 years observed in agribusiness.



Other considerations

You will need to consider the size of the system you would like to install and any potential need for storage through battery systems. Smaller systems are good place to start as systems up to 10kW have fast approval times and are a good entry point. However to make the most of the opportunity, larger systems such as 99kW systems allow for the generation of small scale technology credits which can be claimed upfront to reduce the capital costs.

If your energy needs don't align to peak solar generation, you may need to consider energy storage which can be more complicated. You can also consider selling additional energy back to the grid but this rarely pays dividends with high feed in tariffs and low prices paid by electricity companies.

Another option may be to look at peer to peer energy, where you share energy generated with a neighbour. The cost of this is limited to the cabling required and a negotiated agreement between

parties. You may also partner with other local businesses to consider building a microgrid to supply several people if you have the land to dedicate to solar.

It is always important to undertake a detailed feasibility assessment before investing in solar to determine your energy needs (see energy audit factsheet) and identify which type and size of system and any storage you may need.

Determining feasibility

To assist producers to assess the feasibility of solar for their business, APL has partnered with AllEnergy Pty Ltd to provide a solar calculator for producers. This tool helps to identify whether solar PV or solar thermal would be useful based on the producers set up.

The tool should be used as a guidance tool only and not relied on as a sole source of information for making a business decision. The level of accuracy we have targeted is between class 4 and 5

as defined by the American Association of Cost Engineering (AACE) where the user only has to put in between 2-15% of project definition (hence the streamlined user experience where it's easy to get an approximate answer within a couple of minutes) and receives an answer that is +/- 30 - 50% in accuracy. For the majority of people this is enough accuracy to filter out viable projects for subsequent stages of feasibility analysis.

The tool can be accessed here:



Information needed for the calculator

- A copy of a current power bill showing volume (\$/kWh) charges
- A copy of a current gas bill showing volume (\$/MJ, \$/L) charges
- Calculation of daily kWh consumption for both electrical and heating averaged across a year
- Determination of the percentage you would like to offset (a good starting point is 30% of your total usage)