Energy Use: Making Savings on Farms

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Why should you understand energy use on farms?

Understanding energy use is crucial for businesses as it can have a significant impact on their operations, sustainability, and income.

Here are some key reasons why it is important to monitor energy use:

- **Cost savings:** identifying and reducing energy waste can lead to substantial cost savings. Monitoring energy use allows businesses to pinpoint areas where energy efficiency improvements can be made, ultimately lowering bills.
- **Operational efficiency:** understanding when and how energy is consumed enables businesses to optimise their operations. This knowledge can help with scheduling energy-intensive tasks during off-peak hours or implementing energy-efficient technologies and practices.
- **Environmental impact:** monitoring energy use is a vital aspect of a business's environmental sustainability efforts. By reducing energy consumption, a business can decrease its carbon footprint and contribute to environmental conservation.
- **Equipment maintenance and performance:** regular monitoring can reveal abnormalities in energy consumption patterns, which might indicate equipment malfunctions or inefficiencies. Identifying these issues early can lead to proactive maintenance, preventing downtime and extending the life of equipment.

Ways to make energy savings on farms

Energy tariffs

Energy tariffs refer to the pricing structures that determine how consumers are billed for the energy they use. These tariffs outline the rates, terms, and conditions under which energy is supplied.

The structure of energy tariffs can vary based on factors such as the type of energy (electricity or gas), the region, and the specific policies of the energy provider. Some common types of energy tariffs include:

- **Single rate:** the rate remains constant for a period regardless of price fluctuations. This rate is cheaper than the peak rate or a time-of-use tariff. The single rate is typically suited to those who use most of their electricity during weekday evenings.
- **Time of use:** different rates during different times of the day and night. This usually involves peak, off-peak and shoulder times:
  - Peak is usually in the evenings from Monday to Friday. Electricity will cost the most during this time.
  - Off-peak is usually overnight and on the weekend. Electricity will be the cheapest during this time.
  - Shoulder: usually occurs between peak and off-peak times. Electricity will cost a bit less than during peak times but will be more expensive than during off-peak times.
  - Time of use can be valuable if you can run equipment when energy is cheaper (i.e. load shifting).

In Australia, there is high rooftop solar penetration, which means that during the day when the sun is shining, there are large amounts of renewable energy on the grid. Businesses can take advantage of this surplus by shifting their energy load to these times.

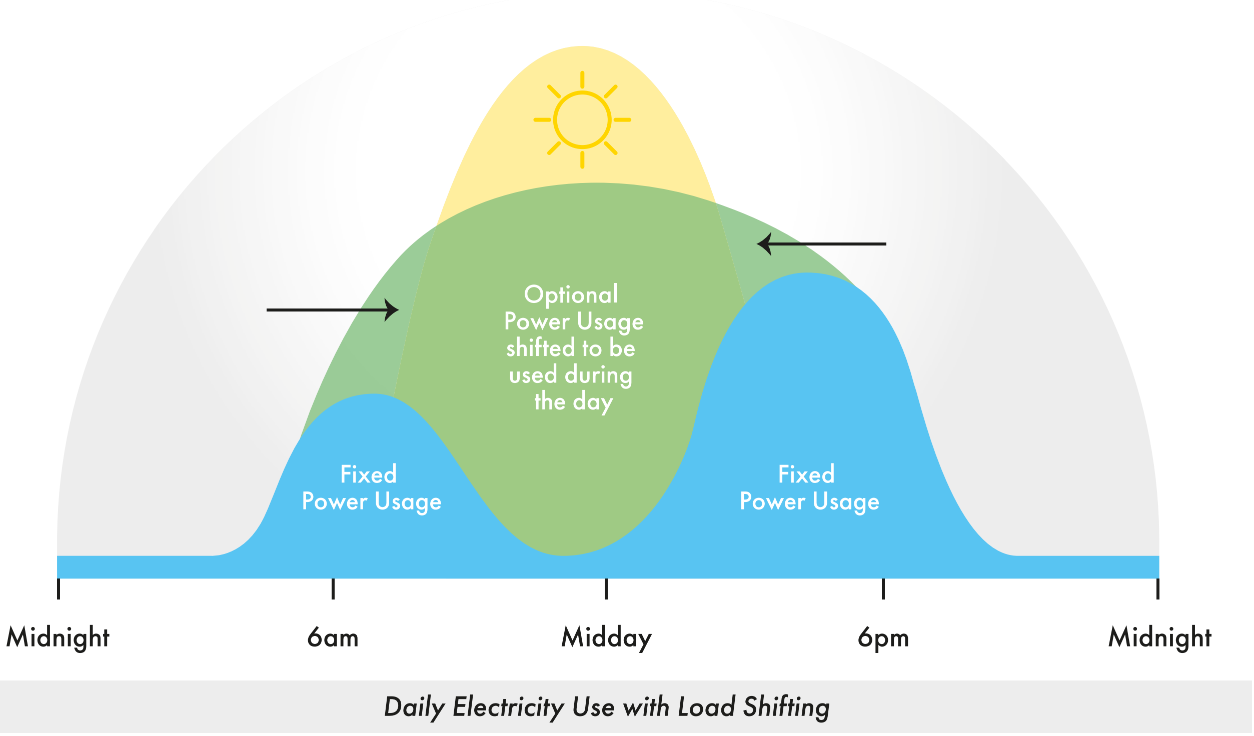

Figure 1. Shifting power usage to off peak times i.e., during the middle of the day can have savings when using certain tariffs.

In some cases, this could mean shifting your optional energy use into the middle of the day to access a cheaper rate or a rebate (known as 'Solar sponge' incentives) (Figure 1).

- **Solar sponge tariffs:** works by charging customers different rates for electricity use, depending on the time of day. Typically, customers will be charged less for usage during off-peak times but a considerable amount more during peak times. This is measured with a smart meter, and therefore, it is only possible if you have a smart meter to measure the time of use. Solar sponge tariffs are only worthwhile if most energy consumption occurs from 10.00am to 3.00pm. Currently Solar sponge tariffs are only available in South Australia, Victoria, Queensland and some parts of NSW.

Get the best deal with your energy service provider

Many energy providers offer different deals and price plans. It is a good idea to regularly compare quotes and check available offers. To check your options, visit www.energymadeeasy.gov.au, a free and independent price comparison website run by the Australian Energy Regulator. Each offer must be displayed in the same format so you can easily compare them.

Measure energy usage

Without a clear picture of how much energy a business consumes, it is very difficult to assess where improvements are possible and where savings can be made. Monitoring energy use will identify opportunities for reducing energy use, managing energy costs and repairing equipment as soon as it stops working effectively.

Ways to measure energy usage on farms

There are 3 ways to measure your energy use. Measure at the:

1. **business level** to understand how much energy your whole facility is using
2. **system level** to understand how much energy each system uses
3. **subsystem level** to understand how much energy specific pieces of equipment use

Different types of meters

- Smart meters measure and monitor your facility's gas and electricity use and display it online
- Smart clamp-on energy meters measure motor electricity use
- Smart submeters measure gas and electricity use of specific equipment
- Circuit-breaker meters measure electricity use for a specific piece of equipment or area

Measuring the energy consumption of a pumping system can be very straightforward. Simply installing an electric meter ahead of the main line that supplies electricity to an entire pumping system can indicate the power used by all electric components in the system, such as electric motors, controls, and valves.

A licenced electrician or plumber will be able to find the right metering for your needs.

Monitoring for performance

There is no point in monitoring energy usage if you are not looking at the data regularly.

To successfully monitor and assess performance, you need to:

1. Allocate someone responsible for reviewing and analysing the monitoring data
2. Look for abnormalities in the energy usage data
3. Compare the data to your baseline and business activity
4. Regularly look for unexpected spikes, which could indicate equipment needs repairing or maintaining

Summary

Understanding energy use on farms is crucial for cost savings, operational efficiency, environmental impact reduction, and equipment maintenance. Strategies for saving energy on farms include optimising energy tariffs, taking advantage of solar sponge tariffs, securing the best deals with energy providers, measuring energy usage at various levels using smart meters and other monitoring tools, and regularly monitoring for performance. By implementing these strategies, farms can achieve significant savings, improve efficiency, reduce their environmental footprint, and ensure the proper functioning of equipment.

References and further reading

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