



Energy Efficiency

#7 SOLAR PV INSTALLATION

With the price of grid-supplied electricity rising rapidly, alternative sources of electricity are becoming increasingly attractive. Solar photovoltaic (PV) panels provide a practical and relatively affordable option.

There are many options to consider. First of all, solar systems are available in a wide range of sizes; commercial systems suitable for typical horticulture businesses would range between 10 to 100kW peak power output. There are systems that connect to the grid and generate a feed-in credit for the electricity that you export back to the network, or they can be isolated from the grid and used to meet peak demand on the farm. They can be mounted on available roof space or mounted on the ground. Some systems can track the sun's arc during the day, increasing their effective output.

There are many variables and it's not possible to make a simple recommendation that would apply to all growers. The size and timing of daily peak demand relative to peak solar generation capacity will vary enormously among farms. Solar system installers are able to analyse your power consumption, equipment, location and mounting options and then recommend the optimal system for your business.

Even a relatively small system can make a contribution by reducing peak demand and reducing power bills. It's not necessary for the solar system to power your whole farm by itself, and this may not even be possible for farms with high peak demand.

Example installation

A southeast Queensland grower with some on-farm packing facilities has installed a 30kW solar PV system. The grid-connected system has been in operation for over a year and can now provide some very helpful data. For this grower, the solar system takes advantage of a feed-in tariff that provides a handy credit rather than a bill for this metering point. However, rapid changes in the prices of solar PV systems and changes to the various policies involved in encouraging the adoption of renewable energy mean that much of the financial information is no longer relevant. For example, policies that provided a subsidy at the time of installation have been partially wound back and the generous feed-in tariff no longer applies for new customers.

Despite these changes, the data from this system still shows the important contribution a solar system may make to your business.

Figure 1 illustrates the seasonal variation in the energy output generated by the solar system in comparison to the peak and total consumption of the facility. The solar system generates between 4995 and 10 056kWh per quarter (green bars). As expected, the solar generation is greatest during the summer months with longer daylight hours. The solar system covers the peak consumption of the facility in all quarters, often by a substantial margin. Peak consumption (7am-7pm) varies between 715 and 5776kWh per quarter. However, the solar system does not meet the total power needs (red line) of the facility in three of the four seasons.

Disclaimer: The information provided in this fact sheet provides examples of what may be possible in specific circumstances and does not constitute financial advice. We encourage growers to seek specialist financial advice before making significant investments.

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The figure provides a neat illustration of how the seasonality of solar generation may not necessarily meet the seasonality in on-farm energy consumption, depending on the location and crop. For this grower, operations and energy consumption peak during the winter months.

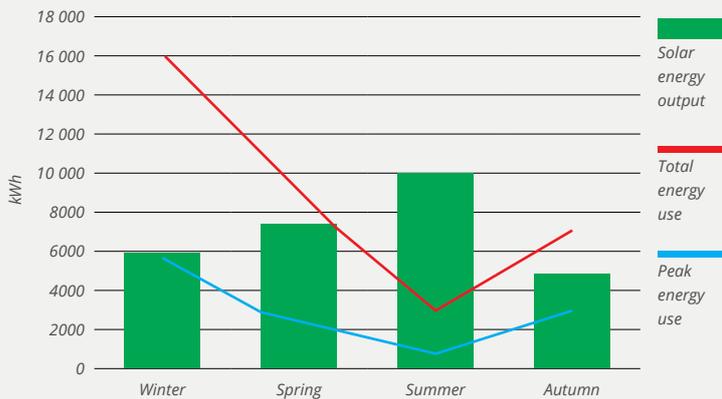


Figure 1: Seasonal variation in solar energy output, peak consumption and total consumption.

More information

This is just one example of a solar system installed in a horticulture business. Solar energy providers can tailor solutions to suit your particular requirements, considering factors such as daily or seasonal variation in peak demand. For more information and contact details, please contact Growcom.