

Fact sheet 5: Electricity tariffs

The 'Watts in Your Business' project has completed energy audits of 30 packhouses and orchards Australia-wide. This fact sheet shows how understanding tariffs in a packhouse/orchard can save money.

In Australia there are three types of organisations involved in providing energy:

Generators produce electricity.

Networks distribute electricity to customers and own and maintain the electricity network wires and poles.

Retailers purchase electricity from the Networks and on sell it to customers.

Your electricity rate

Electricity Retailers calculate electricity billing rates based on the type of contract and/or the type of supply meter. There are four main categories of electricity tariffs (billing rates):

Single rate tariff: used when a customer's account is charged the same rate for the electricity regardless of the time of day or day of the week it is used or the quantity (also known as 'flat rate tariffs').

Block rate tariff: used when a customer's account is charged at different rates depending on the quantity used. For example an account may pay \$0.36/kWh for the first 1,500 kWh, \$0.33/kWh for the next 1,000 kWh and \$0.30/kWh thereafter.

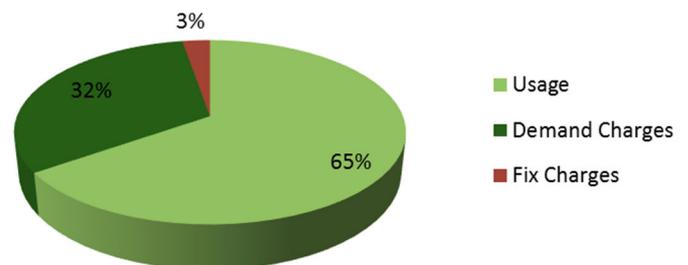
Time-of-use (interval tariff): used when a customer's account is billed based on the time of electricity use. Often an account is charged peak rates during the day and off-peak rates during the night and on weekends.

Controlled load rates: used for customer's accounts with specific appliances, such as hot water heating, that can be controlled to use electricity during off-peak times when electricity demand is at the lowest.

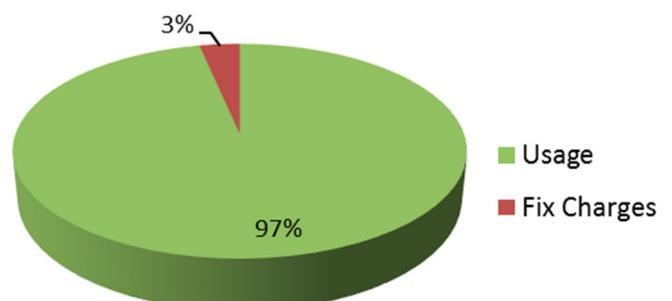
Top tips to cut energy costs:

- Shift electricity use to a time period when tariffs are lower.
- Research the most suitable electricity retailer and contract that will best suit your business.
- Install power factor correction.
- Install a solar panel system.
- Use energy efficient equipment.

For sites **WITH** Demand Charges: breakdown of average Usage, Fixed and Demand Charges for audited businesses.



For sites **WITHOUT** Demand Charges: Breakdown of average Usage, Fixed and Demand Charges for audited businesses.



Electricity tariffs

Types of tariff charges

Tariff Charge	Tariff Source	Tariff Explanation	National Average
Usage (per kWh charges)	Retailer	These charges are based on the kWh use of electricity. Depending on the electricity contract, the charge can be a flat rate or broken into peak/off-peak and shoulder rates.	
	Network	These charges are based on the kWh use of electricity. Depending on the electricity contract, the charge can be a flat rate or broken into peak/off-peak and shoulder rates. Network, Retailer, and government charges are combined into one price on invoices at small sites and some irrigation meters.	<u>Cold Storage Facilities</u> Peak: \$0.27 Shoulder: \$0.23 Off-peak: \$0.13
	Government	These rates are federal and state environmental and market charges which fund various energy related programs. On bills they are often referred to as: <u>Environmental Charges</u> LRET- Large Renewable Energy Target SRES- Small-scale Renewable Energy Scheme These charges fund the programs which provide rebates for installation of solar PV systems. <u>Australian Energy Market Operator (AEMO) Charges</u> AEMO Ancillary AEMO Market Fees to AEMO are for market participation and ancillary services on customers behalf. These include activities undertaken to ensure safe and secure power delivery. <u>State Environmental Charges</u> VEET- Victorian energy Efficiency Target (VIC) ESS- Energy Saving Scheme (NSW) These are state funded programs to provide incentives for business to become more energy efficient. Network, Retailer and Government charges can be combined into one price on invoices at small sites and some irrigation meters.	<u>Irrigation Pumps</u> Peak:\$0.31 Off-peak: \$0.15
Fixed (per day/month/year charges)	Retailer and/or Network	Often Retailer and Networks have various fixed charges that are applied over a time period rather than usage. On invoices they are often referred to as: Service charge Network Standing Charge Meter Charge Service Fee	<u>Cold Storage Facilities</u> \$1,791 per annum <u>Irrigation Pumps</u> \$1,128 per annum
Demand (per kW or kVA charges)	Network	Demand is the largest amount of electricity being consumed at any one point in time across an entire system. This charge is used to deter customers from consuming large demands of electricity at a single time from a network to prevent interruptions in supply across the entire network. Depending on a customer's site this charge can be per kW or per kVA. Depending on a customer's contract, this charge can be based on a 12 month rolling fee or on a month by month basis.	<u>Cold Storage Facilities</u> \$13.53 kVA or KW

Tariff reduction techniques

There are various techniques that can reduce a customer's electricity bill, including:

Shift electricity use to lower tariff time

Load shifting involves shifting electricity usage to another time period, typically when tariffs are lower. This can be useful in reducing demand charges and/or usage charges. For example, if a site has peak/off-peak tariff pricing and the peak tariff is from 7:00am to 7:00pm, the customer can shift some of their electrical load (i.e. irrigation pumps or refrigeration compressors) to run from 7:00pm to 7:00am to take advantage of the lower off-peak tariff. In addition, if a customer's peak demand consistently occurs during a specific time period, the customer can reduce this charge by shifting the electrical load away from the peak demand periods.

Negotiate a good contract

Tips for contract management

- Ensure that you have all the relevant data available including site details, contact details, annual consumption data, existing rates and charges, and interval data.
- Lay out the information in a concise format.
- Investigate retailers that would be most appropriate for your energy consumption profile.

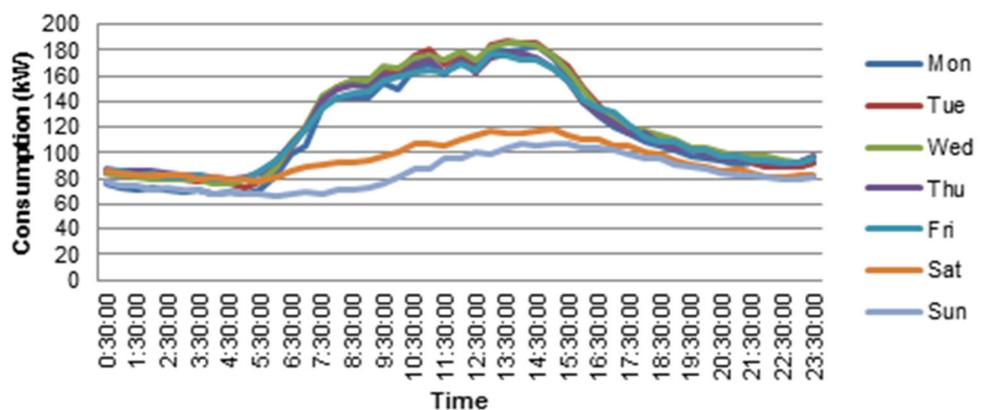
- Monitor energy markets to select the most appropriate time to go to tender.
- Prepare a report that accurately compares all the rates and charges on a like-for-like basis. Offers from various retailers will look different.
- Once the charges are assessed and the retailers' terms and conditions appraised, choose a retailer.
- Upon contract, ensure that the selected retailer has nominated the site for transfer.
- Check first invoice for correct charges .
- Monitor consumption and expenditure on an ongoing basis.

Tips for using an energy consultant/broker

- Use an experienced energy consultant because they:
 - ⇒ Monitor the energy market daily and are aware of market movements and can advise when is or isn't a good time to contract.
 - ⇒ Advise on contract terms and length of contract.
 - ⇒ Tender to all relevant energy retailers giving you a number of comparative offers.
- Ensure the energy consultant will give you a 'full circle' level of service. They will not only guide you through the tender and procurement process but they will provide outstanding account management throughout the lifetime of your energy contract.

Interval data

Interval data provides 15, 30 or 60 minute breakdowns of energy use for a site. A site can call their electricity provider to request interval data (generally for free). This data can be used to understand the daily and seasonal profile of a business. The graph below is an example of the type of graphs that can be developed with interval data.



- Understand the other services they offer.
- Use forward contracting: you can lock in your energy contract for up to 3 years at today's market rates, which can be very cost effective. It also helps with company budgeting and forecasting.
- Look out for any 'hidden' charges such as service charges, commissions and metering. Ensure that these charges are included in any comparison.

Install power factor correction

If a customer has a demand charge that is billed per kVA (not per kW), then Power Factor Correction (PFC) can be utilised to reduce the demand charge. The kVA demand is a function of the customer's power factor and it impacts the ability of the site to achieve a lower demand charge.

Power factor is the ratio of the active (or useable) power measured in kilowatts (kW), to the total (active and reactive) power measured in kilovolt amperes (kVA). The optimum power factor is a value of 1.0.

Inductive loads (i.e. motors and fluorescent lighting) can cause poor power factor due to the difference between the voltage and current at the load terminals. Power Factor Correction capacitors act as a 'reactive power generator', providing the magnetizing power an inductive load requires to operate - rather than the motor having to draw it from the network. Therefore, improving power factor will reduce the amperage draw from the network, which will result in a reduced demand charge.

Set up a solar photovoltaic system

Installing a solar photovoltaic system can reduce electricity costs by generating electricity through solar panels to off-set the purchase of electricity from the network. It is possible to also reduce a customer's demand charge by installing solar, however this is highly dependent on weather conditions.

Use energy efficient equipment

By upgrading aspects of the facility to be more energy efficient, a customer can reduce energy consumption and therefore associated costs. Common ways to reduce energy usage include:

- Upgrade to energy efficient lighting.
- Upgrade to energy efficient motors (irrigation and refrigeration).
- Install variable speed drives on evaporative fan motors and irrigation pump motors.
- Install automated cool room doors.
- Implement head pressure reduction or variable head pressure on the refrigeration system.
- Insulate hot and cool pipework.
- Reduce air compressor leaks.
- Install voltage power optimisations—generally only viable for a site that uses 500,000kWh or more a yr.

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Disclaimer: The views expressed herein are not necessarily the views of the Commonwealth of Australia, Apple and Pear Australia Ltd, KMH Environmental, Summerfruit Australia Ltd or the Cherry Growers of

Watts in Your Business is supported by the following organisations to help fruit businesses cut energy use and costs:



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