

kVA Demand Charges for Large Customers



positive energy

From 1 July 2015, Energex will calculate demand charges for all demand-based network tariffs in kVA.*

For some tariffs, demand charges calculated in kVA (kilovolt ampere) will replace the kilowatt (kW)-based demand charges that are currently applied.

Which customers are charged demand?

Customers who:

- have annual electricity consumption greater than 100 megawatt hours (MWh), **or 100,000 kWh**
- are classified 'Large' in accordance with the requirements of the National Electricity Rules; and,
- are assigned to a demand-based network tariff.

What are demand charges?

Demand Charges are an element of a tariff that reflects the network augmentation costs associated with a specific customer's demand.

Demand charges signal to customers that they can reduce their electricity costs by reducing their peak demand, and therefore potentially reducing future augmentation.

Why is Energex moving towards kVA?

Demand charges based on kVA (or Apparent Power) are a more accurate measure of the impact a customer's peak demand has on the network, relative to a tariff based on kW (or Real Power) alone.

Not only does kVA better reflect the physical capacity and costs of the network required to provide adequate electricity supply to a site, the pricing provides an opportunity for the customer to take steps to improve the efficiency of electricity use at their site and, in turn, reduce their electricity costs.

This approach is similar to that of other Australian electricity distribution network companies.

What's the difference between kVA and kW?

Apparent Power, measured in kVA, reflects the true amount of current through electrical lines and apparatus, and dictates the capacity of the lines, cables, switches and transformers required to safely supply electricity to a specific site.

Apparent Power (kVA) is calculated using a formula. To calculate kVA, Real Power (kW) and Reactive Power (kVAr) values are required:

- Real Power (kW) is the component of the Apparent Power that can be converted into energy and work, for example lighting, heating and motor energy; and,
- Reactive Power, known as kVA-reactive (kVAr), is an indication of the inefficiency in converting true power flow to useful energy.

What components of my network charges are calculated in kVA?

From 1 July 2015 for all demand-based network tariffs, kVA-based demand pricing will apply to:

- Energex's Distribution Use of System (DUOS) charges
- Powerlink's Designated Pricing Proposal Charges (DPPC) (formerly Transmission Use of System charges).*

During 2014/15, some network tariffs will also have a DUOS Capacity Charge; this charge will be kVA-based.

How will my kVA-based demand charges be calculated?

Demand charges are based on the maximum kVA demand recorded in any half hour of the associated billing period and are calculated as follows:

- Demand Charge
= Peak kVA demand in the billing period x \$rate.

* The only exception to kVA-based demand charging is Powerlink's DPPC Locational Demand charge that applies to Energex's largest customers (annual consumption greater than 40 gigawatt hours) and will remain kW-based.

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How is kVA calculated?

Type 1-4 Communication-Enabled (Comms) meters at Large customer sites currently record Reactive Power consumed (kVAh) and Real Power consumed (kWh), for every 15 or 30 minute period.

For each 30 minute period, kVA is calculated as follows:

$$kVA = \sqrt{kW^2 + kVAh^2}$$

Where:

- kW is twice the recorded real energy consumption (kWh) in any 30 minute period;
- kVAh is twice the recorded reactive energy consumption (kVAh) in any 30 minute period; and
- Any Real or Reactive Power that is exported from the site into the network (that is, kWh generated or kVAh 'leading') is not included in the kVA calculation.

Where a premise has multiple meters, the real (kWh) and reactive (kVAh) consumption values on each meter will be aggregated for each 30 minute period.

The maximum kVA demand recorded or calculated for a billing period (generally one month) will form the basis of the Demand Charges in that period.

What impacts my kVA demand?

The largest component of the kVA demand at a site is the Real Power (kW) demand. As such, reducing peak demand is the most effective way of reducing kVA demand.

Where reducing peak demand is not an alternative, the kVA demand at a site may be reduced by improving the ratio of Real Power consumption to that of Apparent Power, referred to as the site's 'power factor' (pf = kW / kVA). Ideally, a site's power factor should be at unity (1), meaning no Reactive Power is used.

How can I improve my power factor?

A site's power factor can be improved by installing power factor correction equipment, such as capacitors. Energex encourages customers to consider installing power factor correction equipment where they have a power factor of less than 0.88.

How will my kVA charges be represented on my bill?

There is no standard way of representing your kVA charges on your bill and the approach from different electricity retailers varies. Please contact your retailer for more information.

Glossary

| Term | Description |
|----------------|--|
| Apparent Power | Calculated using Real and Reactive Power |
| Reactive Power | The inefficient component of electricity supply |
| Real Power | Electricity turned into work |
| kW | Kilowatt; a measure of Real Power |
| kVA | Kilovolt Ampere; a measure of Apparent Power |
| kVAh | Kilovolt Ampere Reactive; a measure of Reactive Power |
| kWh | Energy consumed in kilowatt hours |
| GWh | Energy consumed in gigawatt hours (i.e. 1 GWh = 1,000 kWh) |
| kVAh | Energy consumed in kilovolt ampere reactive hours |

Contact Energex

To report loss of supply:

- 13 62 62

For electricity emergencies:

- 13 19 62

For general enquiries:

- energex.com.au
- custserve@energex.com.au
- 13 12 53 (8am to 5:30pm, Monday to Friday)
- Telephone interpreter service 13 14 50



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