Power Factor Correction

Frequently asked questions

What is power factor?

Power Factor is a measure of how effectively your site uses its electricity supply. Power factor is the ratio of real power (kW) which is actually consumed by the equipment, to apparent power (kVA) which is what must be supplied by the network.

What is low power factor?

A site with poor power factor draws more apparent power than real power. A low power factor is classed as less than 0.9. A power factor of anything less than 1 means you may be paying more than you need for electricity supplied. You are charged more for this supply if you have a tariff with a kVA demand charge.

How does my business correct low power factor?

There are a number of measures your business can put in place to improve low power factor. The most effective is to install power factor correction equipment. You may need to install approved Power Factor Correction equipment at your main switch board. If you already have this equipment installed and it is not operating correctly, you may need to repair it.

Do I need approval to install Power Factor Correction equipment?

Yes you do. As per The Service and Installation Rules of NSW, section 4.17.1, you must seek Ausgrid's approval prior to installing equipment if it is being installed in the Ausgrid network area. These requirements are further outlined in Ausgrid's ES1 Premises Connection Requirements, Section 2.1.

Who can help correct low power factor?

Power Factor Correction measures can be quoted through your preferred electrical or power factor service provider.

What if I don't correct low power factor?

You will continue to pay a higher capacity charge than necessary and more than you need to for your electricity. It is also a mandatory user requirement in The Service and Installation Rules of New South Wales that electricity users must maintain a power factor of 0.9 or above.

What does Power Factor Correction cost?

The cost of new Power Factor Correction equipment and installation depends on a number of factors including:

- the size of the equipment required
- the condition and capacity of the main switchboard
- whether there is space within the main switch room.

Where a site has existing power factor equipment that has failed or been turned off, a repair or replacement can be very cost effective.

What can I save by improving low power factor?

Savings depend on a number of factors including the existing site kVA demand and power factor. You can request your meter data from us for up to the previous 2 years and you can calculate this for yourself or pass it onto your electrical service provider to calculate your power factor levels. The interval meter data does not provide power factor information directly but this can be calculated from the data (real KWH and reactive KVARH) that is collected in the meter.

What is the typical payback period?

If the switchboard condition is satisfactory, the cost of the new Power Factor Correction equipment might be paid back in as little 1-3 years. The payback period is also dependent on the existing power factor. The lower the existing power factor, the quicker the payback.

What does the installation involve?

In most cases, a new Power Factor Correction unit will be pre-assembled with all components before being brought to site. Units can weigh several hundred kilograms, so a lifting device may be needed to unload the equipment and put it in place. Electrical connections are then made to new or existing switches and current transformers on the main switchboard.

Installation may require a power outage affecting part or all of your business. The outage can be organised with Ausgrid for a charge. The duration of the outage may range from 15 minutes to 12 hours or more. The installation can be done outside work hours to minimise site disruptions. Installation of Power Factor Correction equipment in Ausgrid's network area requires approval by Ausgrid inspectors. You must seek our approval prior to energising equipment (refer to FAQ point 4.)

What does Power Factor Correction equipment look like?

Power Factor Correction equipment is usually contained in a cabinet within or near the main switchboard. The size of the cabinet will depend on the load and original power factor at the site. It can range from the size of a bar fridge to cabinets the size of several family sized refrigerators, or even larger for high voltage sites.

What do I need to do once installation is completed?

If you are installing a Power Factor Correction unit your service provider is required by law to provide you with a copy of the Certificate of Compliance Electrical Work (CCEW) for all work they carry out on your electrical installation. A Notification of Service Work (NOSW) may also be required, depending on the work, for instance if you are installing a Service Protection Device.

In addition, Ausgrid must inspect all but the smallest Power Factor Correction units before they are energised. These requirements are outlined in Ausgrid's ES1 Premises Connection Requirements.

How do I claim my financial savings?

To achieve financial savings as soon as possible following commissioning, you must submit a Network Tariff and Threshold Change Application Form. This is contained in Appendix A of Ausgrid's ES7 Application of Network Use of System Charges. Tick item 3B for Power Factor Correction installation and submit the form as described, including getting endorsement from your retailer. If notification is not provided, existing capacity charges may take up to 12 months to adjust. By submitting this form, we will reset your capacity charge. Submit form to Ausgrid National Electricity Market Support Group (NEMS) via email: nemsrpops@ausgrid.com.au

Once your capacity has been reset you should monitor the capacity charge on your electricity bill.

What is a service protection device?

This is a device, usually a circuit breaker which has two main purposes:

1. to interrupt the fault current to your installation (protecting it from catastrophic damage); and
2. to form a point of isolation between your main switchboard and the Ausgrid network.

Many older switchboards were installed without a service protection device before it was a requirement in The Service & Installation Rules of NSW. There are costs associated with purchasing and installing this device, which may vary according to site conditions. We recommend that you obtain a quote from an Accredited Service Provider.

Refer to supplementary advice for Service Protection

Why does my switchboard need a Service Protection Device?

When making alterations to your electrical installation, you must ensure that it has adequate protection installed, regardless of whether or not Power Factor Correction equipment is installed.

In most cases, installing a Service Protection Device is a mandatory compliance requirement of The Service & Installation Rules of NSW, Section 4.7, regardless of whether or not Power Factor Correction equipment is installed.

If you don't install a Service Protection Device due to the installation of Power Factor Correction equipment, it is highly likely that you will be required to for any future work requiring an outage or addition to your main switchboard.

For further information

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