



ALCAP EDUCATIONAL DOCUMENT | ENERGY COST

How to Read Your Energy Bill

A practical guide to consumption, demand, tariffs, power factor, fixed charges, and billing checks

An electricity bill is not only a total amount due. It is a compact record of the tariff, metered quantities, reserved capacity, and charges that converted a site's electrical behaviour into cost.

WHAT YOU WILL LEARN

- How kWh charges differ from kW or kVA demand charges
- Why tariff, season, time period, and supply details matter
- How power factor and notified demand may affect cost
- A repeatable monthly bill-checking method

PRACTICAL. INDEPENDENT. DECISION-FOCUSED.

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01 | THE ESSENTIALS

Build the right mental model

Bill formats vary by electricity supplier and tariff. Start with the quantities and charging rules rather than the layout. A useful review separates energy, demand, fixed, network, reactive, tax, and adjustment items.

Energy charges

Usually based on kWh consumed. The rate may change by season and time-of-use period, so the same kWh can have a different cost depending on when it is used.

Demand or capacity charges

Usually linked to a measured or contracted peak in kW or kVA. One short coincident peak can influence the charge for an entire billing period, and tariff rules may include historical look-back provisions.

Fixed and network charges

Service, administration, network access, capacity, levies, and taxes may not fall when kWh falls. Each line must be linked to the tariff definition before assigning a saving.

START WITH THE BILLING EQUATION

Total before tax = energy charges + demand/capacity charges + fixed/network charges + reactive or penalty charges + adjustments.

The exact components depend on the supplier, tariff, connection, season, and metering arrangement.

A QUICK REFERENCE

Bill item	Check	Why it matters
Billing period	Dates and number of days	Normalises month-to-month comparison
Meter reading	Actual, estimated, or adjusted	Explains jumps and later corrections
Tariff and rates	Match current approved schedule	Confirms calculation basis
Demand/PF	Compare with interval or meter data	Targets peak and reactive cost

02 | PUT IT TO WORK

Turn understanding into action

Create a one-page monthly bill register. It should hold the source values, recalculated charges, key ratios, and notes explaining unusual operations or corrections.

1**Verify identity**

Check account, meter, point of supply, tariff, voltage, and billing dates.

2**Reconcile readings**

Confirm opening and closing values, multipliers, units, and whether readings are actual or estimated.

3**Recalculate**

Multiply each billed quantity by its stated rate, including time and seasonal distinctions.

4**Compare operations**

Link changes to production, occupancy, weather, outages, new loads, and operating schedules.

5**Escalate evidence**

Query anomalies with a concise schedule of dates, values, calculations, and supporting meter data.

ILLUSTRATIVE EXAMPLE: LOWER KWH, HIGHER BILL

A site's energy use falls by 8%, but a new production overlap creates a higher kVA peak during a chargeable period. Demand and network charges rise more than the energy saving. The bill is not necessarily wrong - the load shape changed.

A GOOD DECISION LOOKS LIKE

- Savings estimates use the exact avoided charge, not only an average R/kWh.
- Demand reductions are checked against the tariff's measurement interval and rules.
- At least 12 months are compared to expose seasonality and adjustments.

03 | CHECKLIST AND NEXT STEPS

Use this before you proceed

- ☐ Confirm account, meter, supply point, tariff, and billing dates.
- ☐ Mark readings as actual, estimated, substituted, or adjusted.
- ☐ Check meter multipliers and units.
- ☐ Recalculate energy and demand line items from the stated rates.
- ☐ Compare kWh, kW/kVA, power factor, and total cost with prior periods.
- ☐ Record anomalies and retain source bills and interval data.

RED FLAGS

- Unexpected tariff or rate-code change
- Repeated estimates or unexplained adjustments
- Peak demand inconsistent with site data
- Using a blended R/kWh value to evaluate every project

PLAIN-LANGUAGE GLOSSARY

kWh	Electrical energy consumed over time.
kW	Rate of real power use.
kVA	Apparent power combining real and reactive effects.
NMD	Notified Maximum Demand or contracted reserved demand, subject to tariff rules.
TOU	Time-of-use pricing with rates assigned to defined periods.

SOURCES AND FURTHER READING

- Eskom - Electricity Pricing Definitions
- Eskom - Tariff audit analysis
- U.S. DOE - Evaluating utility rate options

IMPORTANT NOTE

This document is for general education only. It is not a substitute for a site assessment, electrical design, tariff review, safety study, or professional advice. Use the latest applicable standards, utility rules, municipal requirements, and manufacturer instructions. Work on electrical systems must be performed by suitably qualified and authorised persons.

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