

3.8.1.2 Energy and tariffs

Although many electricity users are able to negotiate a price with an electricity supplier, other consumers will use one of the tariffs published by the regional electricity companies (RECs). The most common commercial and industrial payment systems fall into two categories, quarterly and monthly.

Quarterly tariffs are applicable to most domestic, commercial and small industrial customers. They are relatively simple in structure, comprising a standing charge and one or more unit rates. As an alternative to the standard tariffs, customers may opt for a day/night tariff with different day and night rates but a higher standing charge.

Monthly tariffs are more complex and are generally applicable for large supplies. The most widespread is the maximum demand (MD) tariff, which typically comprises a standing charge, an availability charge linked to the capacity of the supply required, maximum demand charges in the winter months, and one or two unit rates. Also available is a seasonal time of day (STOD) tariff, which may have up to six rates but no MD charges. The RECs will offer advice on the most appropriate tariff for specific applications.

Control of the lighting load profile by switching or dimming, so that unnecessary lighting is not used, will reduce the units consumed. Maximum demand often occurs in the middle of the day, when daylight is available, and MD charges can be reduced if it is possible to shed lighting load at such times. Conversely, it is often possible to add all-night security lighting without increasing the daytime maximum demand, incurring only the appropriate unit cost.

3.8.1.3 Energy use

Designers should ensure that their designs do not waste energy. However, the most important consideration about energy consumption is usually financial. Few users are willing to invest extra money to achieve energy savings unless the savings offer a reasonable rate of return on that investment.

If the design objectives call for particular conditions to be created, these should be provided. If they are not provided, then although the design may use less energy it will not be effective and cannot, therefore, be regarded as satisfactory.

Section 2.4, Energy efficiency recommendations, gives ranges of installed power densities appropriate for various applications. These effectively set limits to the installed load, but other means are required to control energy use and improve operational efficiency.

The load factor for a lighting installation, during a specified period of time, is the ratio of the energy actually consumed to the energy that would have been consumed had the full connected load been operated throughout the specified period. Thus if 25 per cent of the lights in an installation are switched off on average throughout the working day, the load factor will be 0.75. For many installations the load factor will be determined by the ability of the lighting control system to switch the lighting in response to daylight availability. To compare the effectiveness of alternative control systems, the designer will need to estimate the probable annual use of electric lighting under each system.