



REDUCING UTILITY DEMAND CHARGES

This is a brief explanation of an important subject matter. If you want to know more about changes you can make that can save you money on your electric bills, get in touch with your electric utility representative.

How your utility charges for electricity

There are three basic types of charges that you may see on your electric bills:

- **kilowatt hour (kWh) charges**, which cover the total amount of electricity used during the billing period. The kWh charges may be at a flat rate, or at a declining block rate (the more you use, the less each kWh costs);
- **fuel adjustment charges**, for increases in fuel costs (the oil or other fuel your utility may buy to generate the electricity) over the same base level, usually added at a flat rate per kilowatt hour; and
- **demand charges**, for the greatest amount of electrical power (in kilowatts, kW) supplied to you by your electric utility.

Demand charges are the way your utility pays for maintaining the excess capacity it must have to meet peak demands that occur from time to time. The demand charge you pay is calculated on the basis of your highest demand over a short period of time (usually 15 to 30 minutes) during the past month. Your utility then assumes that, during the following month, you are likely to need that amount of peak power again, at some undetermined time, and bills you accordingly for the cost of maintaining extra generating capacity so it can meet your demand at any time during the entire month. Some utilities have a “demand ratchet” that sets your demand charge for the entire year on the basis of the highest demand during a single month, even though you never approach that level of demand at any other time of the year. Your utility may also charge for high demand on the basis of “hours used.”

How to reduce demand charges

Assuming that you will do everything you can to reduce your use of electricity, once you have reached a basic level of kWh of electricity needed for your operation you can still work on the demand charge portion of your bill. To reduce peak demand, you will want to do **electrical load planning and management**. What this means, simply, is scheduling the use of electrical equipment to get the work done at the lowest possible electric load at any one time. For instance, if you have electric dryers, electric ranges, parking lot lights, air conditioners, motorized or other electrical equipment *that might be used simultaneously*, you will want to see if you can schedule their use at *different* times of day and night to minimize peak loads. Knowledge of how much each piece

of equipment uses, together with some experimentation, should give you some ideas.

To do the scheduling, you may need an EMS (energy management system) or demand controllers for individual pieces of equipment. Some investment is required, but the returns can be very high. On the other hand, by pinpointing the major causes of your demand charges, you may find that a major reduction can be achieved just by simple manual rescheduling of the use of a few pieces of equipment.

- **Low Power Factor.** It is unlikely, but possible, that your facility has a “low power factor” – that is, the equipment draws more in current (kVA) than in power (kW). If the power factor is below 80-90%, your electric utility may be billing you extra. If this is so, ask your utility for advice about what to do.

Alternative rates

Your utility may have alternative rates which could save you money on your electric bills. To take advantage of these, you have to work out an agreement with your utility representative.

First, there may be a **flat rate** which is much higher per kilowatt hour but when used eliminates the possibility of demand charges. If your use of electricity is considerable but infrequent (perhaps totaling less than 100 hours a month), choosing a flat rate may save you money.

If you can schedule much of your use of electricity to occur during “off peak” hours – evening, night or early morning – you may find there are lower **time of use (TOU)** rates which would be to your advantage. Rates may also vary by season – for instance, electric rates may be different in the heating season than during the air conditioning season – but you may have trouble doing seasonal rescheduling of electric use to take advantage of lower rates.

Finally, your operation may be flexible enough to allow you to use **interruptible rates**. Your electric utility, in return for the right to require that you reduce your use of electricity during peak demand periods, may offer you a rate which sharply reduces demand charges or even eliminates them. If you have high demand charges, interruptible rates can save you a great deal. But you have to carefully weigh possible disadvantages. With interruptible service, a utility representative will call you – perhaps only an hour ahead – and ask you to shut down the equipment you have agreed to shut down for the period of time you have agreed on. If interrupting your electricity use is too much of an inconvenience for your facility, consider purchasing an on-site generator that can provide electricity during times you have agreed to permit interruption. Savings realized from interruptible rates can often more than pay for a generator. Call your utility for assistance.

To get an alternate rate, ask your utility representative what is available. When the two of you meet, you should have with you information about your electric energy consumption – total kWh and kW used per month (your utility may be able to supply the figures), how much electricity is used at various times, and the time changes or interruptions that would be convenient for you.

Any alternative rates your utility has are advantageous to the utility as well, because they encourage customers to help the utility eliminate the expense and inconvenience of maintaining excess capacity. So you may expect your utility representative to be quite helpful in working out an agreement with you.

In electric vehicle applications such as battery-powered forklifts, demand costs can be lowered by proper selection of battery chargers and their control options. SCR type

chargers can be beneficial in demand charge reduction because by their design the initial charge rate is lower than the more widely used ferroresonant chargers. In addition, optional controls such as the Ametek Prestolite AC1000 and AC2000 have a number of energy management features built in.

For more information on the SCR chargers or AC1000 and AC2000 control, go to the [Industrial Chargers Application Guide](#) on our website.