Reducing Electrical Demand

In controlling any operating budget, facilities professionals should consider reducing electrical-demand charges through the implementation of a demand-control program. The goal: to reduce the facility's peak demand charge without disrupting operations. In most cases, the load is turned off – through either manual load shedding, automatic load shedding, or on-site generation – for only a short period of time.

According to the Handbook of Facility Management Tools and Techniques, Formulas and Tables (available at the Buildings Bookstore at [www.buildings.com] and clicking on "Bookstore"), determine if your facility would benefit from peak shaving by using the following worksheet to estimate the savings that would result from the use of an electrical-demand control program.

Demand-Control Savings

1. Application Data

Summer Production Charge ($/kW):	_____	Winter Production Charge ($/kW):	_____
Summer Distribution Charge ($/kW):	_____	Winter Distribution Charge ($/kW):	_____
Number of months at summer rate:	_____	Number of months at winter rate:	_____
Summer Controllable Load (kW):	_____	Winter Controllable Load (kW):	_____

2. Summer Demand Savings

	Summer Demand Charge ($/kW)		Summer Controllable Load (kW)	X	Load Factor	X	Number of Months at Summer Rate	=	Summer Demand Savings ($)

3. Winter Demand Savings

	Winter Demand Charge ($/kW)		Winter Controllable Load (kW)	X	Load Factor	X	Number of Months at Winter Rate	=	Winter Demand Savings ($)

4. Total Demand Savings

Summer Demand Savings ($)	+	Winter Demand Savings ($)	=	Total Demand Savings ($)	

Step 1 From the rate schedule in effect for the facility, determine the summer production charge, summer distribution charge, the number of months the summer rate schedule is in effect, the winter production charge, the winter distribution charge, and the number of months that the winter rate schedule is in effect. Enter the values in Section 1 of the worksheet.

Step 2 In order to reduce the level of demand on the utility system, non-critical electrical loads will have to be temporarily disconnected. For the facility, identify the loads that can be interrupted and total their connected kW. Enter the value in Section 1.

Step 3 The non-critical winter electrical load will differ from the summer load, primarily as a result of air-conditioning systems not operating. Identify the non-critical winter electrical loads and total their connected kW. Enter the value in Section 1.

Step 4 The summer demand charge is the sum of the summer production charge and the summer distribution charge. Add the two charges and enter the value in Section 2.

Step 5 Enter the summer controllable load from Section 1 into Section 2.

Step 6 Not all non-critical electrical loads will be able to be disconnected at the same time. Typically, only 25 to 50 percent will be turned off at the time the peak demand is experienced. Estimate this load factor and enter the value in Section 2.

Step 7 Enter the number of months that the facility is on the summer rate schedule from Section 1 into Section 2.

Step 8 Multiply the summer demand charge by the summer controllable load, the load factor, and the number of months at the summer rate to determine the summer demand savings. Enter the value in Section 2.

Step 9 The winter demand charge is the sum of the winter production charge and the winter distribution charge. (Note: There may be no winter production charge in some rate schedules. Add the two charges and enter the value in Section 3.)

Step 10-13 Follow steps 5-8, but apply to the winter-load data.

Step 14-15 Enter the summer demand savings from Section 2 into Section 4; enter the winter demand savings from Section 3 into Section 4.

Step 16 Add the summer and winter demand savings to determine the total demand savings. Enter the value in Section 4 of the worksheet. B

SOURCE: HANDBOOK OF FACILITY MANAGEMENT TOOLS AND TECHNIQUES, FORMULAS AND TABLES, AVAILABLE FROM THE BUILDINGS BOOKSTORE AT (www.buildings.com); CLICK ON "BOOKSTORE"