Chapter 1: Overview

What is NetPower Billing

NetPower Billing is a PowerNet Software application. PowerNet Software is a suite of energy management programs by Cutler-Hammer.

NetPower Billing is a billing software package that generates bills for energy consumers based on energy provider metrics (such as rate schedules, rate periods, and seasons) and energy user profile information (such as group charges, individual charges, and individual billing formulas).

NetPower Billing is designed to distribute energy costs incurred by a single institution to individual users within the institution using the same cost-per-utilization scheme as the energy provider.

Example

Suppose the manager of a shopping mall receives a monthly bill from the utility company. The manager can use NetPower Billing to bill the individual tenants in the mall for their individual energy utilization, as if the utility company billed them directly.

How Does It Work?

An energy billing system must have the following information in order to generate bills:

♦ How much to charge for energy utilization.

♦ How much energy is used.

♦ Who used it.

How Much to Charge

NetPower Billing determines how much to charge for energy based on how you configure the system. You configure NetPower Billing to match the billing scheme used by your energy provider to charge for energy.

How Much is Used

NetPower Billing determines energy utilization for billing based on meter data gathered directly from IMPACC meters or energy utilization data read from conventional meters and entered into the system via the keyboard (virtual meters). Energy utilization is measured in terms of kilowatt-hours and peak kilowatts.

Important
NetPower Billing always uses kilowatt-hours (kWh) to calculate kilowatts and kilovolt-amp-hours (kVAh) to calculate kilovolt amps.

IMPACC meters are devices attached to an IMPACC PowerNet System that can monitor energy utilization. By measuring your energy user's consumption with IMPACC meters, you can use Energy Logging to log the data. NetPower Billing can read Energy utilization data logged with Energy Logging. NetPower Billing can use meter data from either source or both within the formula for a single energy user.

Who Used It?

NetPower Billing maps the energy utilization data associated with virtual and IMPACC meters to individual users through user billing formulas. NetPower Billing maintains a distinct billing formula for each user. Both virtual and IMPACC meters can be used in a billing formula.

NetPower Billing Integration with IMPACC PowerNet System

The IMPACC PowerNet System is Cutler-Hammer's system of integrated metering, protection, and control for devices and the communications network and software used to monitor and control those devices.

NetPower DeviceServer records the energy utilization data of IMPACC meters to a database file that can be read by NetPower Billing.

NetPower Billing is integrated with PowerNet Software through the data format of this database file, as well as through the NetPower Security Manager and the NetPower License Manager.

Note
For detailed information about PowerNet Software, see the *PowerNet Software User's Guide*.

Supported Devices

Currently, NetPower Billing supports the following IMPACC devices:

♦ Digitrip 800, 810, 910, and Optim.

♦ DP 4000.

♦ IQ Analyzer.

♦ Data Plus II device version 8 and higher.

♦ Data Plus II HV limited support (without demand calculation) for up to version 2.

♦ IQ Energy Sentinel.

For more detailed information, see *Appendix D: NetPower Billing Supported Devices.*

How Utility Companies Bill for Energy

Utility companies must cover two distinct costs involved in generating electricity:

♦ Energy usage
The cost of generating each unit of consumption.

♦ Demand usage
The cost of maintaining capacity.

Energy Usage

The basic unit of energy usage is the kilowatt-hour (kWh) or the kilovolt-amp-hour (kVAh). A kilowatt-hour is a rate of consumption: 1 kilowatt per hour. The kilovolt-amp hour is a rate of consumption: 1 kilovolt-amp per hour.

Demand Usage

A utility company must be able to deliver all the energy required to power all of the devices attached to the power system that are likely to be used at the same time. The utility company cannot ask its customers to take turns using its generating capacity; therefore, capacity must reflect the possibility that all energy users will use all of their devices at the same time. This results in a lot of excess capacity most of the time.

Utility companies use two strategies for offsetting the cost of demand:

♦ A charge for demand

All users are assessed a charge for the most energy they use at one time during the billing period. This is known as Peak Demand and is measured in kilowatts or kilovolt-amperes. Demand is a continuous property of energy utilization; it can vary from one second to the next or even one-hundredth of a second to the next. Monitoring demand at this level would result in an astronomical quantity of data for each user, so demand is determined using a demand window. A demand window is an interval of time during which a number of demand readings are recorded. Demand windows typically range from 15 to 60 minutes. The demand over the interval of the demand window, therefore, is the average of the data points within the interval.

♦ Differential rates

Another strategy that utility companies use to offset the cost of demand is to adjust rates to encourage energy users to defer consumption to times when overall consumption is low and generating capacity is abundant. Energy consumption falls into definite patterns. Consumption is higher during the day, for example, than at night. Other variations occur between weekdays and weekends, from season to season, and on holidays. Utility companies usually discount energy consumption during these predictable periods of lower demand.