

Appendix A: How NetPower Trend Calculates Data Points

Overview

There are six distinct data points cases that NetPower Trend must calculate:

- ◆ Meter/Demand
- ◆ Energy User/Demand
- ◆ Meter/Coincident Peak Demand
- ◆ Energy User/Coincident Peak Demand
- ◆ Meter/Energy
- ◆ Energy User/Energy

Meter/Demand Data Points

If the trend plot type is Meter/Demand, NetPower Trend obtains the data from the appropriate Energy Logging device table. For specific information on the Energy Logging tables, rollover values, and software version compatibility, see *Appendix D: NetPower Trend/Energy Logging Supported Devices*.

NetPower Trend computes the following:

$$h = t_{\text{current}} - t_{\text{previous}}$$

Where: t_{current} is the log time of the current log entry
 t_{previous} is the log time of the previous log entry

$$kW = \frac{kWh_{\text{current}} - kWh_{\text{previous}}}{h}$$

$$kVA = \frac{kVAh_{current} - kVAh_{previous}}{h}$$

Where: *kWh_{current}* is the forward kWh value (dFwdKWH*) for the current log entry
kWh_{previous} is the forward kWh value (dFwdKWH*) for the previous log entry
kVAh_{current} is the forward kVAh value (dkVAh) for the current log entry
kVAh_{previous} is the forward kVAh value (dkVAh) for the previous log entry
 (*For the Data Plus II and Data Plus HV, the corresponding table field is fKWH.)

If the forward kWh value for a device is a rollover value (reached maximum and started over at zero), NetPower Trend computes kW or kVA as follows:

$$kW = \frac{kWh_{current} - kWh_{previous} + \text{roll-over_value}}{h}$$

$$kVA = \frac{kVAh_{current} - kVAh_{previous} + \text{roll-over_value}}{h}$$

Where: *roll-over_value* is the maximum kWh or kVAh value for the device. For the specific valid range of each device, see *Appendix D: NetPower Trend/Energy Logging Supported Devices*.

Some devices zero-out stored data at power-up. When NetPower Trend detects a power-up event for a device, the demand (kW or kVA) is computed as follows:

$$kW = kWh_{current}$$

$$kVA = \frac{kVA_{current}}{h}$$

In NetPower Billing, you have the ability to replace the kWh or kVAh roll-over values with the demand kW or kVA for the time period since the previous log. This formula is computed in NetPower Trend as follows:

$$kW = \frac{dUserkW}{h}$$

$$kVA = \frac{dUserkVAh}{h}$$

Where: $dUserkVAh$ is the demand user kVAh (dUserKWH) for the current log entry.

Energy User/Demand Data Points

If the trend plot type is Energy User/Demand, NetPower Trend obtains the meters associated with the energy users being plotted from the NetPower Billing Energy User Formula table (ENG_USER.szFormula). The values for all the virtual meters are set to zero. The value for kW or kVA is computed for each meter in the user's formula as described previously for Meter/Demand. The kW or kVA value for the user, then, is the result calculated by the formula of the kW or kVA values for each meter in the energy user's formula.

Energy utilization for energy users is based on a formula that can include more than one meter. It is possible that some meters in a formula report energy consumption and others do not for any given period of time. Since this represents an invalid reading in terms of the formula, NetPower Trend represents this condition as a "skip" in the trend line.

Note

If you have configured NetPower Trend for meter replacement, any meters without data for the entire time-period are replaced with the value 0kW (or 0kVA) in any formulas.

Meter or Energy User/Coincident Peak Demand or Energy Data Points

For each meter or energy user, NetPower Trend determines which billing periods fall within the specified From and To date-time as follows:

$HIST_BILL.timeBP1 \geq From_date_time$ AND $HIST_BILL.timeBP2 \leq To_date_time$

For kWh/kW: HIST_BILL.iMethod=0 or 1

For kVAh/kVA: HIST_BILL.iMethod=2 or 3

For each meter or energy user, NetPower Trend plots the values entered in NetPower Billing for kW/kWh or kVA/kVAh in the specified rate zone (i.e., such as on-peak, off-peak, etc.) versus the end date-time of the billing period (timeBP2 values).

If the rate zone is Total, NetPower Trend adds the dkW/dKWH or dkVA/dkVAh values for each rate zone in the billing period and plots that value versus timeBP2.

The following table shows the database fields from which NetPower Trend takes data for each type:

Note
The dkVA values are found in the dkW fields and the dkVAh values are found in the dkWh fields.

Trend by	Trend Type	Database Field
Energy User	Coincident Peak Demand	HIST_USER_ENG.dKW
	Energy	HIST_USER_ENG.dKWH
Meter	Coincident Peak Demand	HIST_MET_ENG.dKW
	Energy	HIST_MET_ENG.dKWH