

## Chapter 5: Generating Bills and Reports

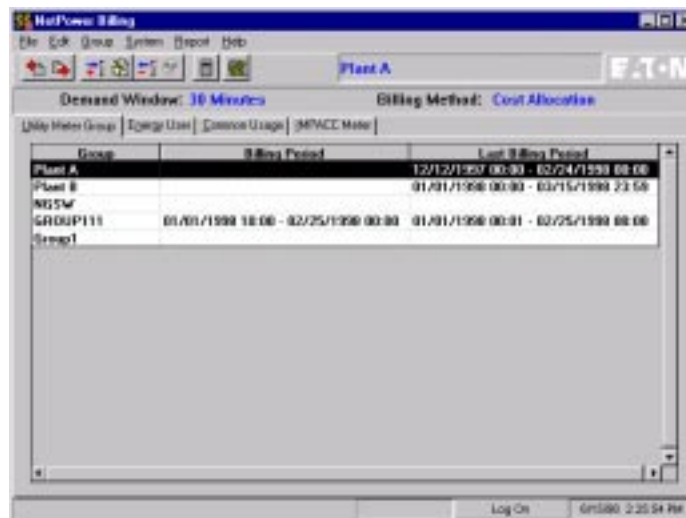
### Setting the Billing Period

The billing period sets the time interval of energy utilization for which to bill the selected utility meter group. All energy data and charges are date coded; when NetPower Billing generates a bill for a given user in this utility meter group, it only applies charges and energy utilization data that occur within the billing period. Typically, billing periods are on a monthly basis, but you can set the billing period to any length of time, as long as the billing period does not span any seasons you defined, because different seasons can use different rates.

To define a billing period for a utility meter group, do the following:

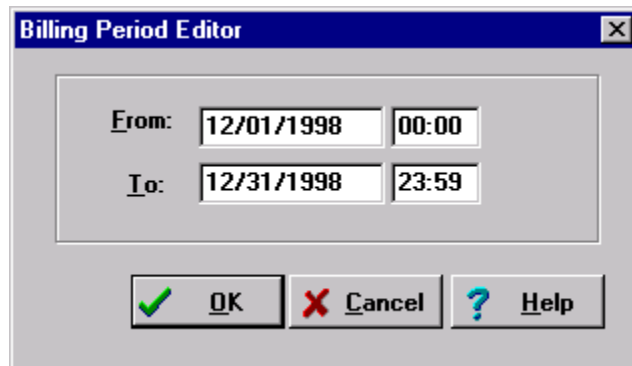
1. On the NetPower Billing main window, click the Utility Meter Group tab.

The Utility Meter Group tab displays.



2. In the group list, select the group for which you want to define a billing period.

- From the Group menu, select Set Billing Period.  
The Billing Period Editor dialog box displays.



- Enter the beginning date and time of the billing period in the From fields and the end date and time of the billing period in the To fields.
- Click OK.

NetPower Billing sets the billing period of the selected utility meter group

### Billing Group Charges Error Messages

The following are error messages you may encounter when entering charges along with a problem diagnosis and corrective action.

#### **Please enter Date/Time of Peak.**

*Problem:* Group Billing Charges depend on a peak demand charge and you have not entered the date and time of the peak.

*Corrective Action:* Enter the date and time of the peak demand or use the Peak >> button to search the database for the peak.

#### **Date/Time must be within Billing Period.**

*Problem:* The date and time that you entered do not occur within the billing period; therefore, the peak is not applicable.

*Corrective Action:* Enter the date and time of the peak demand that occurred during the billing period. Use the Peak >> to search the database.

**Date/Time not valid for “...”.**

*Problem:* The date or time you entered is not valid for the billing period.

*Corrective Action:* Enter a date and time that occurs during the billing period.

## Entering Charges

In order to bill your energy users, you must enter the charges from your energy provider into NetPower Billing.

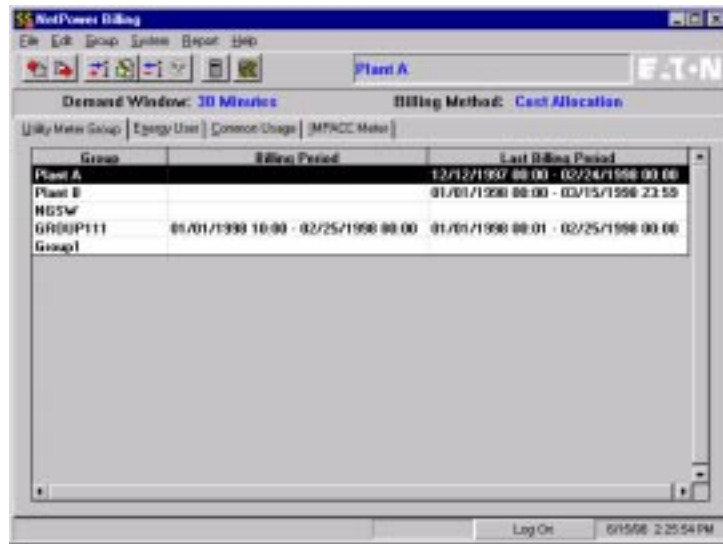
NetPower Billing performs validation on many fields when you enter charges. Consequently, you cannot enter invalid information. For example, you cannot enter a peak demand time in a rate period that is not in effect at the time.

## Cost Allocation Billing Method

To enter charges, do the following:

1. On the NetPower Billing main window, click the Utility Meter Group tab.

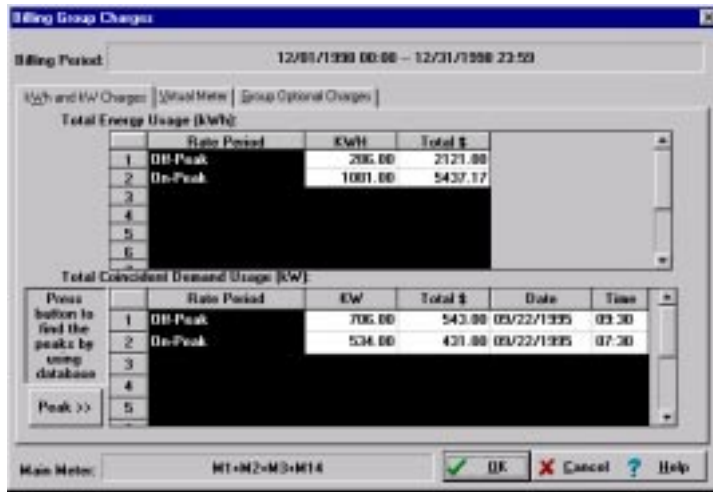
The Utility Meter Group tab displays.



2. In the group list, select the group for which you want to enter kWh and kW (or kVA and kVA) charges.
3. From the Group menu, select Enter Charges.

The Billing Group Charges dialog box displays. The first tab in the Group Charges dialog box is the kWh and kW Charges tab.

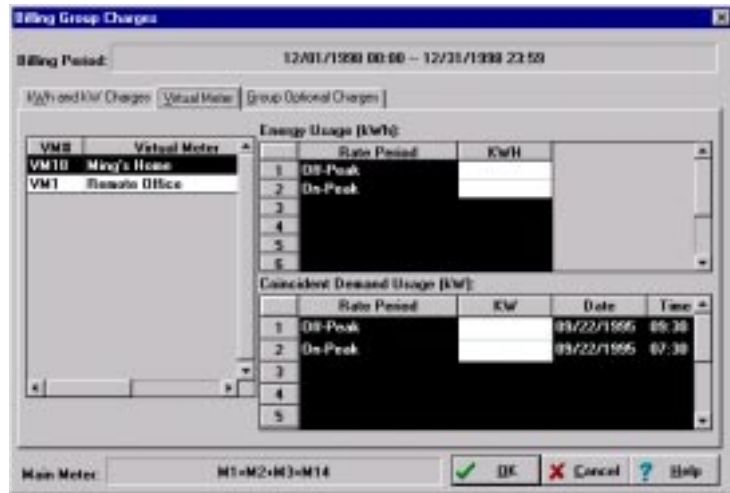
**Note**  
The kVAh and kVA Charges tab is displayed if you selected Direct Billing (kVA) for your billing method.



NetPower Billing calculates the charges for energy usage by distributing the total cost you entered on this tab from the energy provider bill among your energy users.

4. In the KWH (or KVAH) column of the Total Energy Usage (kWh or kVAh) list box, enter the total group kWh (or kVAh) usage for each rate period
5. In the Total \$ column of the Total Energy Usage (kWh or kVAh) list box, enter the total dollar amount.
6. In the KW (or KVA) column of the Total Coincident Demand Usage (kW or kVA) list box, enter the total group kW (or kVA) usage at peak for each rate period.
7. In the Total \$ column of the Total Coincident Demand Usage (kW or kVA) list box, enter the total amount of the peak for each rate period.
8. In the Date column of the Total Coincident Demand Usage (kW or kVA) list box, enter the date of the peak for each rate period.
9. In the Time column of the Total Coincident Demand Usage (kW or kVA) list box, enter the time of the peak for each rate period.
10. Click the Virtual Meter tab.

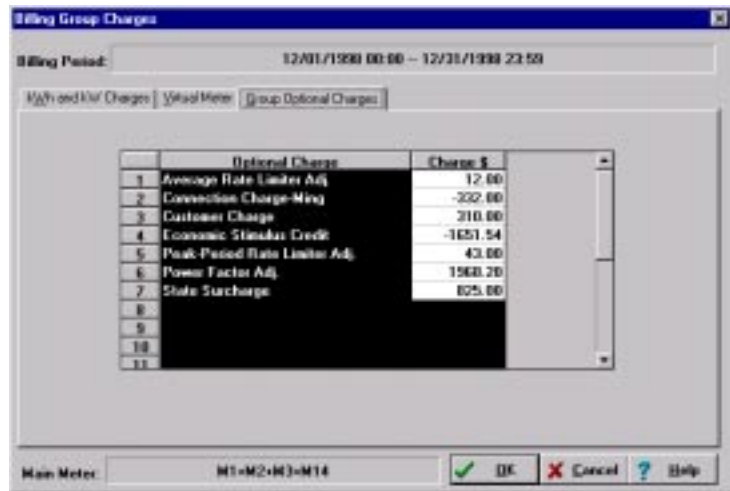
The Virtual Meter tab displays.



11. For each virtual meter, do the following:
  - ◆ In the KWH (or KVAH) column of the Energy Usage (kWh or kVAh) list box, enter the number for kWh measured during each rate period.
  - ◆ In KW (or KVA), Date, and Time columns of the Coincident Demand Usage (kW or kVA) list box, enter the amount of demand (kW or kVA) at peak demand, the date, and time (respectively) for each rate period.

12. Click the Group Optional Charges tab.

The Group Optional Charges tab displays.



13. For each optional charge, enter the *total* amount to be billed to the utility meter group.

14. Click OK.

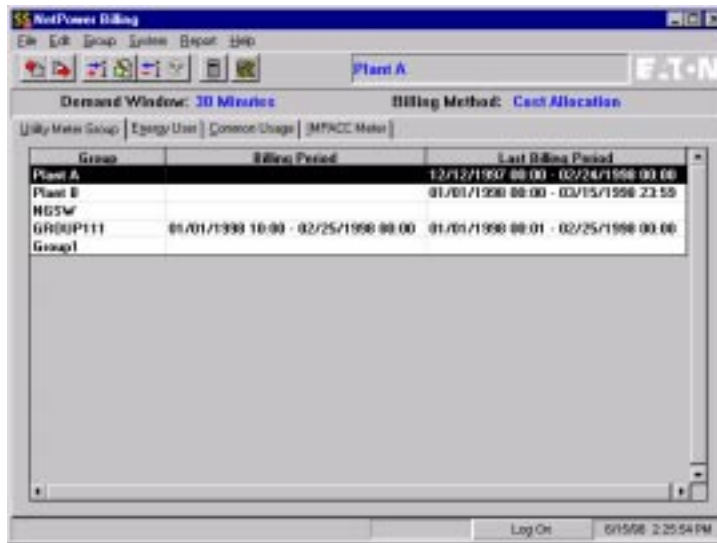
NetPower Billing performs some validity checks on the information you entered. If the information is valid, NetPower Billing enters the charges. If you entered the charges correctly, you can now perform the bill calculation. For information on bill calculation, see the section *Calculating Billing Charges*.

## Direct Billing Method

To enter charges, do the following:

1. On the NetPower Billing main window, click the Utility Meter Group tab.

The Utility Meter Group tab displays.

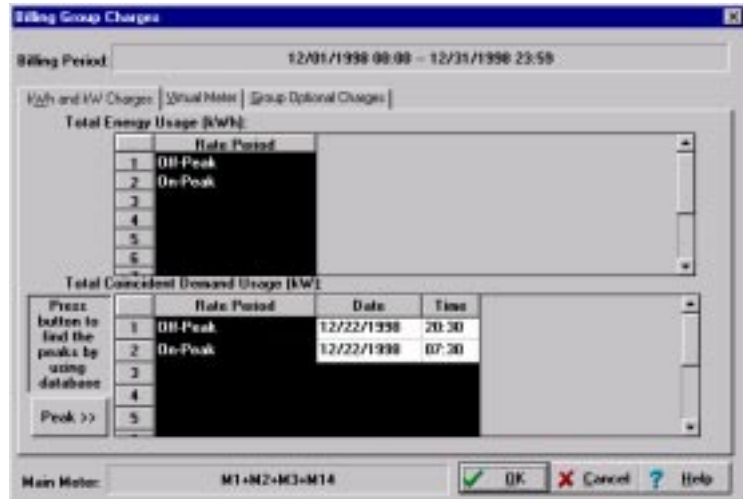


2. In the group list, select the group for which you want to enter kWh and kW (or kVA and kVA) charges.
3. From the Group menu, select Enter Charges.

The Billing Group Charges dialog box displays. The first tab in the Group Charges dialog box is the kWh and kW Charges tab.

### Note

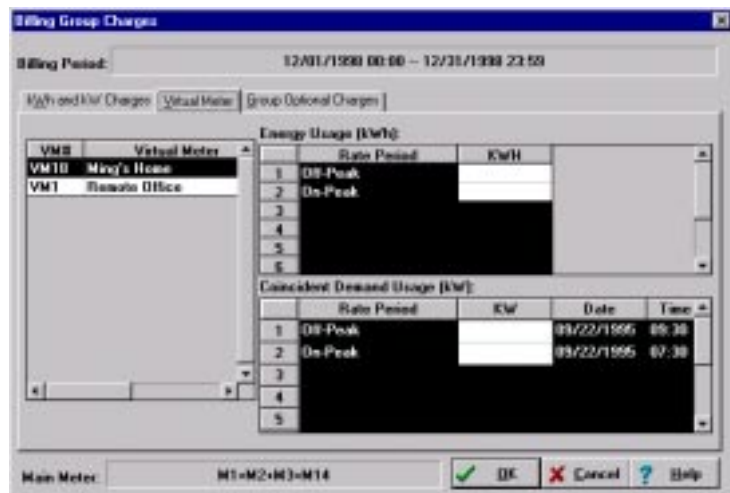
The kVAh and kVA Charges tab is displayed if you selected Direct Billing (kVA) for your billing method.



NetPower Billing calculates the charges for energy usage by distributing the total cost you entered on this tab from the energy provider bill among your energy users.

4. In the Date column of the Total Coincident Demand Usage (kW or kVA) list box, enter the date of the peak for each rate period.
5. In the Time column of the Total Coincident Demand Usage (kW or kVA) list box, enter the time of the peak for each rate period.
6. Click the Virtual Meter tab.

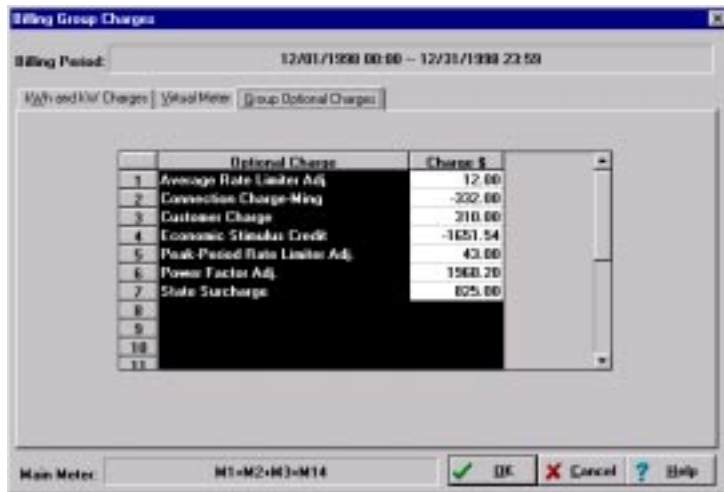
The Virtual Meter tab displays.



7. For each virtual meter, do the following:

- ◆ In the KWH (or KVAH) column of the Energy Usage (kWh or kVAh) list box, enter the number for kWh (or kVAh) measured during each rate period.
  - ◆ In KW (or KVA), Date, and Time columns of the Coincident Demand Usage (kW or kVA) list box, enter the amount of demand (kW or kVA) at peak demand, the date, and time (respectively) for each rate period.
8. Click the Group Optional Charges tab.

The Group Optional Charges tab displays.



9. For each optional charge, enter the *total* amount to be billed to the utility meter group.
10. Click OK.

NetPower Billing performs some validity checks on the information you entered. If the information is valid, NetPower Billing enters the charges. If you entered the charges correctly, you can now perform the bill calculation.

## Calculating Billing Charges

This procedure calculates billing charges and identifies errors in formulas, cost allocation schemes, and energy data.

### Important

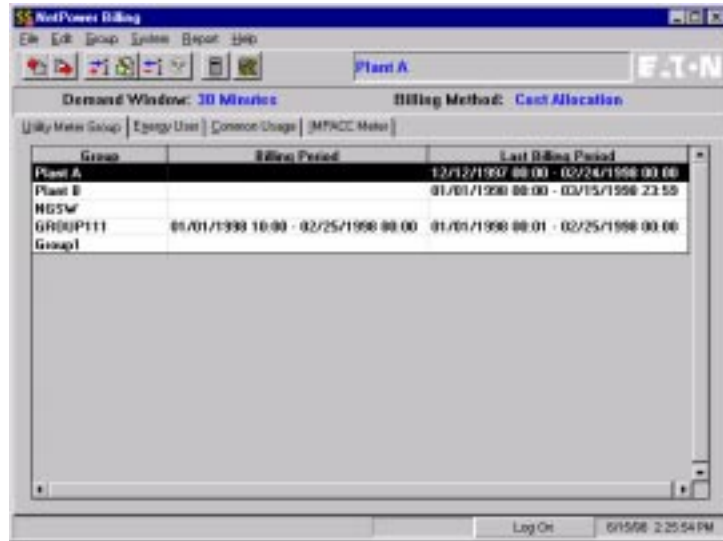
NetPower Billing always uses kilowatt-hours (kWh) to calculate kilowatts.

To calculate billing charges, do the following:

1. On the NetPower Billing main window, click the Utility Meter Group tab.

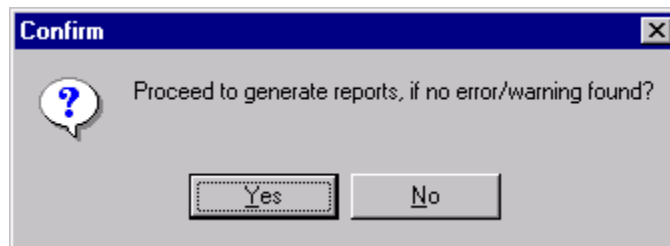


The Utility Meter Group tab displays.



2. Select the group for which you wish to perform bill calculations.
3. From the Group menu, select Billing Calculation.

A Confirm dialog displays, asking you if you want to generate reports if no errors or warnings are found.

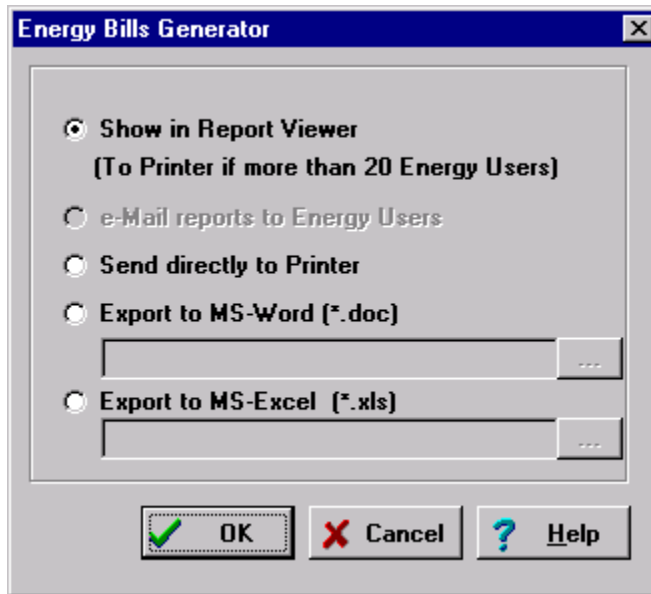


4. Click Yes if you want NetPower Billing to generate reports after validating the bill calculation for each energy user.

**OR**

Click No to cancel the bill generation process.

If you click Yes, the Energy Bills Generator dialog box displays.

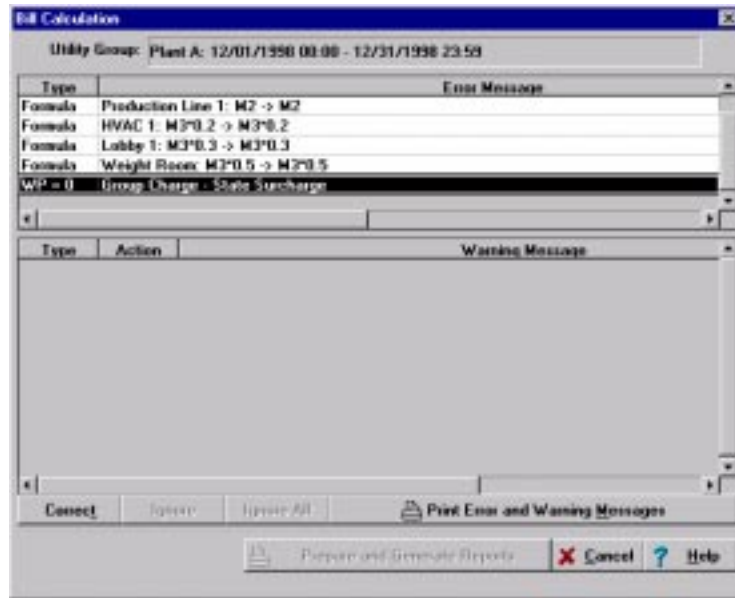


In this dialog box, you can specify the form of output you want for the reports you are generating. In addition to displaying the reports in the report viewer, you can distribute them as e-mail, send them to the printer, or export them as Microsoft Word or Excel files.

**Note**

To use the e-mail option, your energy users must have valid mailboxes and you must log NetPower Billing on to the mail system. For more information, see *Chapter 3: Configuring the System*.

5. When you have selected the output option you want, click OK.  
The system validates bill calculation for each user in the group based on the configuration, entered charges, and IMPACC meter data.  
If errors occur, they display in the Bill Calculation dialog box:



The type of error is indicated in the Type column. The affected objects (energy user, group charge, common usage, individual charge, etc.) display in the error message column.

Before you can generate bills, you must correct the errors. For information about specific errors, see the section *Bill Generator Error Messages*.

6. If no errors occur, the system checks for any warning conditions and displays warning messages in the Warning Message area of the Bill Calculation dialog box. Warning messages do not prevent you from generating bills, however, if warning messages occur, you can do the following:
  - ◆ You can correct the conditions that generate warning messages by selecting the warning message, and then clicking Correct.
  - ◆ You can ignore a warning message by selecting the warning message, and then clicking Ignore.
  - ◆ You can ignore all warning messages by clicking Ignore All.
7. If no warning messages occur, or if you corrected or ignored all the warning messages, you can now generate the bills by clicking Prepare and Generate Reports.

NetPower Billing generates bills and reports.

## Bill Generator Error Messages

You may encounter the following error messages when generating bills. Each error is listed along with a problem diagnosis and corrective action.

### **Billing Period spans more than one season.**

*Problem:* NetPower Billing does not allow a billing period to span two seasons, because each season has its own rates.

*Corrective Action:* Generate a bill for each season that is spanned by the dates for which you want to bill.

### **Cannot generate report.**

*Problem* Either Report files are missing, or the NetPower Billing database needs to be repaired.

*Corrective Action* If one or more report files is missing, re-install NetPower Billing. If the NetPower Billing database file needs to be repaired, use the ODBC Administrator to repair the database.

### **Contract Period Out of Range.**

*Problem:* The billing period you specified includes dates that fall outside the contract period you have specified. You can receive this error only with direct billing.

*Corrective Action:* You must obtain a new contract, update the rate schedule, and recalculate the bill or enter a billing period that falls within the contract period.

### **Demand Window < Logging Interval**

*Problem:* You have defined a demand window in NetPower Billing that is smaller than the interval you are using with the energy logging feature of the NetPower DeviceServer. NetPower Billing does not allow this condition, because it would result in demand windows with no data.

*Corrective Action:* For existing data, you must increase the size of the Demand Window to at least the size of the energy logging interval. (Changing the energy logging interval after the data is already captured will not provide the missing data.) If you wish to use the smaller Demand Window in the future, you must change the energy logging interval to be the same or smaller than the Demand Window.

### **Disk I/O error.**

*Problem:* NetPower Billing encountered a disk I/O error while attempting to read from the Energy Logging database.

*Corrective Action:* Shut down NetPower Billing, repair and/or compact the NetPower Billing and Energy Logging databases, and restart NetPower Billing.

### **Missing Date/Time for peak.**

*Problem:* The date and time of peak utilization are essential components in the bill calculation.

*Corrective Action:* Redo the procedure in the section *Entering Charges* and be sure you enter the information.

### **No Energy User Defined.**

*Problem:* The Utility Meter Group for which you attempted to generate bills does not have any energy users defined for it.

*Corrective Action:* You must either select a group that has energy users defined or define energy users for the current group.

### **Non-existing Meters.**

*Problem:* The formula of one or more energy users has virtual meters that have not been defined or have been deleted.

*Corrective Action:* Define the meters or change the formula of all affected users to include only meters that are defined in the system.

### **Out of Memory.**

*Problem:* An internal system problem caused an out-of-memory error.

*Corrective Action:* An out-of-memory error is unlikely; however, if one occurs, you will need to reboot your system. If possible, note the conditions and sequence of events that lead up to the error and report them to Cutler-Hammer.

### **User Canceled.**

*Problem:* An energy user for whom energy data exists was deleted from the group.

*Corrective Action:* You can either purge the energy data for the IMPACC meter that was associated with the formula of the deleted energy user or re-enter the energy user and formula in the group and regenerate the bill.

### **WP=0**

*Problem:* The total number of weight points that you have assigned to energy users for a common usage or group charge is zero (or you have not assigned any).

*Corrective Action:* You can either assign the weight points or change the cost allocation method (to a method that does not use weight points).

### **Wrong Symbols.**

*Problem:* The formula of one or more energy users has a symbol that is not one of the legal symbols for NetPower Billing formulas.

*Corrective Action:* Edit the formula to remove any invalid symbols or characters.

**You need at least ...MB of hard disk space to generate bill. Please free up hard disk space first.**

*Problem:* NetPower Billing needs a minimum of 30 MB to generate a bill with the commercial version of NetPower Billing, and 70 MB to generate a bill with the Industrial version of NetPower Billing (5MB of disk space to generate a bill in Demo Mode).

*Corrective Action:* The error message provides an estimate of the disk space requirements beyond what is available. Clear at least that amount of disk space and try to generate the bill again.

## **Bill Generator Warning Messages**

Bill calculation warnings are indications of anomalies that you should be aware of, and not necessarily errors. NetPower Billing will list any warnings, but will not prevent you from generating bills when they occur. The following are possible warnings and the likely interpretation of the reason they were generated.

### **Roll Over**

*Problem:* A billing value exceeded the maximum value possible with the particular IMPACC meter you are using in a formula. When this occurs, the value “rolls over” to zero and a flag is set to show that the rollover occurred. As a result, the value shown is not the actual value, but the actual value - maximum value.

*Corrective Action:* To correct this problem, NetPower Billing generates a dialog box to allow you to enter the value you want to use. You can calculate the value by looking up the maximum value for the energy parameter for the IMPACC meter that generated the warning and adding the value shown. Alternatively, enter an estimate the amount or use two or more smaller billing periods and generate two (or more) bills.

### **Total mismatched and greater than the allowable range**

*Problem:* The total you entered in the bill calculation as the total from the energy provider does not match the total computed by NetPower Billing and the discrepancy is greater than the percentage value you set (in the Utility Meter Group Editor).

*Corrective Action:* If the amount of the discrepancy is acceptable, you need not take any action. If the discrepancy is too large, you can change your formulas to more accurately reflect incurred costs or add an energy-cost adjustment (a group charge based on consumption) to bring the total amount billed to your energy users closer to the amount of the bill from your energy provider.

### **Formula**

*Problem:* The formula for an energy user or for a form of common usage has some anomaly, such as a meter with no data or an inactive meter.

*Corrective Action:* Examine the formula in question. If there is an error, correct it. If the formula is correct, you need not do anything.

### **User Entered Data**

*Problem:* One or more values in the bill were not generated by the system, but were entered via a dialog box by a NetPower Billing user. This can be caused by a rollover in an IMPACC meter or a missing cost allocation parameter.

*Corrective Action:* Examine the value in question and determine the reason for the user-entered data. If the reason is acceptable and the amount is correct, you need not do anything. Otherwise, change the formula or billing period so that you get the correct amount without NetPower Billing requiring user input.



### **Demand - Missing energy data**

*Problem:* The energy data NetPower Billing uses for computing demand is not logged in the database.

*Corrective Action:* Restore the missing energy data (from backups) and regenerate the bill, or use a user-entered value for demand.

### **You have ... configured, but only ... is allowed. Please upgrade NetPower Billing by contacting Cutler-Hammer. Maximum number of Energy Users exceeded!**

*Problem:* You have configured at least one more energy user than your software license allows.

*Corrective Action:* Remove the corresponding number of energy users from your database and attempt to generate the bill again.

## **Sample Energy Bills**

NetPower Billing generates the following types of bills:

- ◆ Bill(s) for Last Billing Period  
This is a normal bill for an energy user defined in the system.
- ◆ Bill Summary  
This is also a bill for an energy user, but is in a summarized format.

The following reports are samples of each type of energy bill:

## Bill(s) for Last Billing Period

**Energy User:** Production Line 2  
123 Testing Rd.  
Pittsburgh, PA 15275-1234

**Payment To:** Cutler-Hammer  
170 Industry Drive, R1DC Park West  
Pittsburgh, PA 15275-1234

**Billing Period From:** 9/10/98 7:00:00 AM  
**To:** 9/10/98 9:30:00 AM

**Billing Date:** 9/24/98  
**Due Date:** 10/4/98

### Billing Capacity Charge

Rate Period	Peak At	KW	Charge
Off-Peak	9/22/95 9:30:00 AM	424.07	326.16
On-Peak	9/22/95 7:30:00 AM	318.42	257.00
<b>Sub Total:</b>			<b>583.17</b>

### Billing Energy Charge

Rate Period	KWh	Charge
Off-Peak	212.03	1,274.01
On-Peak	640.04	2,947.25
<b>Sub Total:</b>		<b>4,221.26</b>

### Apportioned Common Usage

Common Usage	Method	Shares
Off-Peak: HVAC 1	Weight Points	30.6%
Off-Peak: Lobby 1	Weight Points	35.5%
Off-Peak: Weight Room	kW and kWh Usage	61.7%
On-Peak: HVAC 1	Weight Points	30.6%
On-Peak: Lobby 1	Weight Points	35.5%
On-Peak: Weight Room	kW and kWh Usage	60.1% , 59.6%

### Other Charges

Description	Method	Unit	Charge
Average Rate Limiter Adj.	% of Total kWh	55.6%	6.67
Change Meter Labor	Per kWh: Maximum	640.04 kWh 0.22	142.23
Connection Charge-Ming	Weight Points	64.5%	-214.19
Customer Charge	Equal Share	50.0%	155.00
Economic Stimulus Credit	% of Total kWh	55.6%	-917.50
Peak-Period Rate Limiter Adj.	% of Total kWh	55.6%	23.89
Power Factor Adj.	% of Total kWh	55.6%	1,093.42
Special Charge	Per kW: On-Peak	318.42 kw 0.12	39.31
State Surcharge	Weight Points	57.7%	475.96
<b>Sub Total:</b>			<b>804.78</b>

**Total Charge: 5,609.21**

## Bill Summary Report

<b>Billing Period From:</b> 9/22/95 7:00:00 AM <b>To:</b> 9/22/95 9:30:00 AM					
<b>Customer (Energy User)</b>				<b>kWh</b>	<b>Total Charge</b>
Production Line 2	Production Line 2	123 Testing Rd.	Pittsburgh	852.07	5,609.21
Production Line 1	Production Line 1	124 High Land View	Pittsburgh	681.70	4,312.16
<b>Grand Total:</b>				<b>1,533.77</b>	<b>9,921.37</b>

## Sample Energy Reports

NetPower Billing generates the following reports:

- ◆ Data For Energy Users
- ◆ Data For All Common Usage
- ◆ Data For All IMPACC Meters
- ◆ Meter Peak Demand

The following reports are samples of each type of energy management report that you can generate with NetPower Billing.

## Data for Energy User(s)

The following report is the Energy Data for Energy User report. This report lists the individual energy usage and allocated common usage (percent share and usage) for a user according to rate period. The report subtotals common usage according to rate period and totals all common, demand, and energy usage for the user in this billing period.

<b>Energy User: ProductionLine 2</b> <b>Direct Energy Formula: M1+M14</b> <b>Billing Period From: 9/22/95 to 9/29/95</b>				
Rate Period		Demand Usage (kW)		Energy Usage (kWh)
On-Peak		310.00		411.93
	HVAC 1	30.56%	1.10	30.56%
	Lobby 1	35.48%	1.92	35.48%
	Weight Room	60.08%	5.41	59.62%
	<b>Common Usage Subtotal:</b>	<b>8.42</b>		<b>228.11</b>
		<b>318.42</b>		<b>640.04</b>
Off-Peak		386.00		193.00
	HVAC 1	30.56%	4.89	30.56%
	Lobby 1	35.48%	8.52	35.48%
	Weight Room	61.66%	24.66	61.66%
	<b>Common Usage Subtotal:</b>	<b>38.07</b>		<b>19.03</b>
		<b>424.07</b>		<b>212.03</b>

## Data for All Common Usage

The following report is the Energy Data for All Common Usage report. This report lists each form of common demand and energy usage according to rate period and totaled for the type of common usage. It also totals all demand and energy usage for all forms of common usage in the group.

Billing Period: 9/22/95 To 9/29/95			
<hr/>			
<b>HVAC 1 (Weight Points)</b>	<b>M3+0.2</b>	<b>kW</b>	<b>kWh</b>
Off-Peak		16.00	8.00
On-Peak		3.60	97.97
	<b>Sub total:</b>	<b>19.60</b>	<b>105.97</b>
<hr/>			
<b>Lobby 1 (Weight Points)</b>	<b>M3+0.3</b>	<b>kW</b>	<b>kWh</b>
Off-Peak		24.00	12.00
On-Peak		5.40	146.96
	<b>Sub total:</b>	<b>29.40</b>	<b>158.96</b>
<hr/>			
<b>Weight Room (Demand &amp; Energy Usage)</b>	<b>M3+0.5</b>	<b>kW</b>	<b>kWh</b>
Off-Peak		40.00	20.00
On-Peak		9.00	244.93
	<b>Sub total:</b>	<b>49.00</b>	<b>264.93</b>
<hr/>			
	<b>Grand Total:</b>	<b>98.00</b>	<b>529.86</b>

## Data for All IMPACC Meters

The following report is the Energy Data for All Meters report. This report lists the demand and energy usage of each IMPACC meter according to rate period and total for the device. It also totals all demand and energy usage for all IMPACC meters in the group.

Billing Period: 1995/09/22 07:00:00.00 To 1995/09/22 09:30:00:00.00						
Device Description	Dev#	CommVer	IMPACC Station		kW	kWh
M 1 IQA-Office 1	1	5	Cutl			
Off-Peak					252.00	126.00
On-Peak					200.00	311.94
				<b>Sub to tal:</b>	<b>452.00</b>	<b>437.94</b>
M 2 ES-Building 1	2	3	Cutl			
Off-Peak					240.00	120.00
On-Peak					206.00	278.98
				<b>Sub to tal:</b>	<b>446.00</b>	<b>398.98</b>
M 3 IQA-Office 2	3	5	Cutl			
Off-Peak					80.00	40.00
On-Peak					18.00	489.86
				<b>Sub to tal:</b>	<b>98.00</b>	<b>529.86</b>
M 14 D I-810	16	3	Cutl			
Off-Peak					134.00	67.00
On-Peak					110.00	99.99
				<b>Sub to tal:</b>	<b>244.00</b>	<b>166.99</b>
				<b>Grand Total:</b>	<b>1,240.00</b>	<b>1,533.77</b>

## Meter Peak Demand

The following report is the Meter Peak Demand report. This report lists the date and time of peak demand measured by each individual meter and the peak demand (kW or kVA).

Billing Period: 09/22/1995 07:00 To 09/22/1995 09:00				
Device Description	Dev#	CommVer	IMPACC Station	
M 1 IQA-Office 1	1	5	Cutl	kW
On-Peak	09/22/1995 07:00			200.00
Off-Peak	09/22/1995 09:00			252.00
			<b>Sub to tal:</b>	<b>452.00</b>
M 2 ES-Building 1	2	3	Cutl	kW
On-Peak	09/22/1995 07:30			238.00
Off-Peak	09/22/1995 09:00			240.00
			<b>Sub to tal:</b>	<b>478.00</b>
M 3 IQA-Office 2	3	5	Cutl	kW
On-Peak	09/22/1995 07:30			246.00
Off-Peak	09/22/1995 09:00			80.00
			<b>Sub to tal:</b>	<b>326.00</b>
M 14 D I-S10	16	3	Cutl	kW
On-Peak	09/22/1995 07:00			110.00
Off-Peak	09/22/1995 09:00			134.00
			<b>Sub to tal:</b>	<b>244.00</b>
<b>Grand Total:</b>				<b>1,500.00</b>

## Using the Report Viewer

The Report Viewer is an output browser for Crystal Reports® that allows you to review the billing output before sending it to a printer. The user interface makes it easy to examine all the visual aspects of a report regardless of the size of the report.

The Report Viewer supports conversion of the bill output to a variety of output formats to provide you with flexibility in integrating NetPower Billing into your billing processes.

### Report Viewer Toolbar

The Report Viewer toolbar is located at the top of the Report Viewer window.



The following table describes functions of the toolbar icons and elements.

Icons and Elements	Description
	These navigation buttons allow you to move easily through large reports. The left-most arrow button moves from anywhere in the report to the first page. The right-most arrow button moves from anywhere in the report to the last page. The inner arrow buttons move one page in the direction the arrows indicate. The square button is not used.
	Allows you to choose a variety of magnification levels.
	Sends the report to your default printer.
	Allows you to export the report to a file or send the report as e-mail.