PNPSCADA

COURSE 141

Engineer Role:
Reports on Plug and Play Scada

PNPSCADA

The NEXT Generation AMR

Gives you the power to configure your own AMR, via an easy to use Web interface

Plug and Play SCADA

Once you are done with this Course, you should be able to:

- Run Meter Account Reports
- Run Meter Account GroupReports

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MODULE 1:
Profile Graph

Requirements

- Meter Account
- Optional: Multiple Tariffs linked to this Meter Account

Access

1. Select Meter Account
2. Go to View ➢ Profile Graph

Usage

- Consumption and Demand usage per half hour is graphed in the center. (Demand is only shown if the tariff actually references it.)
- Non-instantaneous events like power down, is shown as grey blocks behind the graphs.
- Legend is shown on the right.
- Hover mouse over a point in the graph to get the exact values measured at that point shown on the left.
- Below graph:
  - Current date selection
  - Date of cursor (mouse) position
  - Total (sum of) consumption for selected date range
  - Maximum demand along with power factor at maximum demand, time of maximum demand
  - Load factor at both demand and consumption

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MODULE 1:
Profile Graph

- Above graph:
  - Zoom in (first select a range by dragging on the graph).
  - Zoom out: Zooming out of a day, will show a week, out of a week will show a month, etc.
  - Page Left/Right: Moves the range displayed on the graph one full page left/right.
  - Pan Left/Right: Moves the range displayed on the graph one tick left/right.
- Switch between tariffs linked to this meter account using the tariff drop-down on the top right.
- Switch between other meter accounts using the meter account drop-down on the top right (if there are less than 20 meter accounts), or the previous/next links on the top right (if there are more than 20 meter accounts)
- Change to a different date range by clicking on the Choose Dates button bottom right.
- Each half hour can be colored according to seasons and TOU (specified in the tariff).
- Optionally the profile graph can be displayed below the Meter Account from the Edit ➢ Meter Account screen.

NOTES:

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MODULE 1:
Profile Graph

Possible Extrapolations

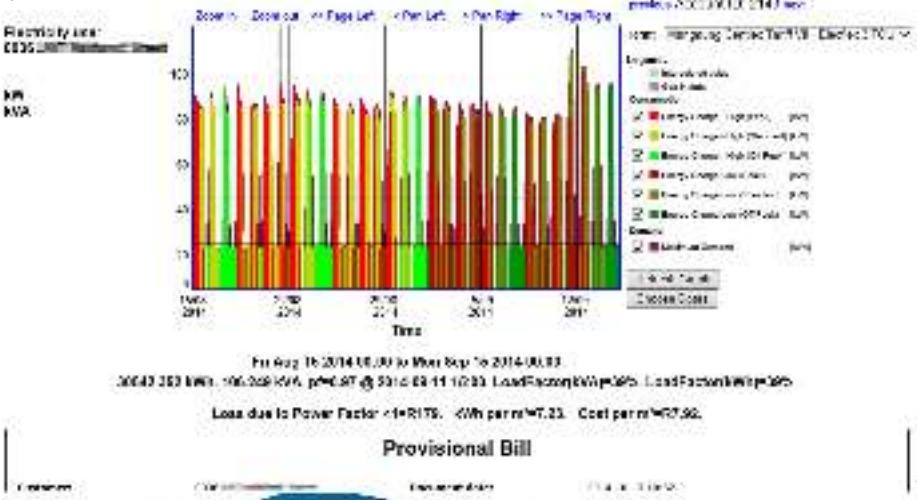
- TOU optimizations
  When the tariff is set up properly with TOU, you can easily see where you might be using too much power during peak times.
- Power Factor
  Consumption can be compared against demand. (We use kW and not kWh for ease of comparison). If power factor is bad, consumption and demand will differ a lot. A power factor of 1 means demand and consumption will be equal.
- Meter bypass/tamper
  The Profile Graph is an excellent tool for finding many problems with metered data. If viewed over a month period, irregularities like a meter bypass can often easily be detected, even for the untrained eye. A meter bypass will usually contain zeroes in areas where consumption would be expected.
- CT blown
  A blown CT will mean the data will read on average 2 thirds of the usual readings. The exact point of a blown CT can therefore often be seen where the consumption graph suddenly drops to 2 thirds of the usual shape.
- Lights/Aircons forgotten on during night time.
  On nights when the consumption does not fall as low as other nights, aircons or lights might have been left on.
- Reversed CTs
  Not the best place to pick up reverse CTs (Phasor Graphs are better for this), but if they are reversed (and should not be), the graph should show zeroes.

MODULE 1:
Profile Graph

Possible Extrapolations (continued)

- Typical Frequent Problems:
  For example when a shop is closed and the manager switches off the power to the shop at the breaker before the meter, the profile graph will show a power down every night.
- Shift usage
  A calendar can be created for each shift, which in turn can be combined with the Meter Account's Tariff (Under Edit ➢ Meter Account). With this you can create a Profile Graph showing only the usage for each shift and also instantaneously calculate the cost for each shift using the optional Provisional Bill at the bottom.

Example 1



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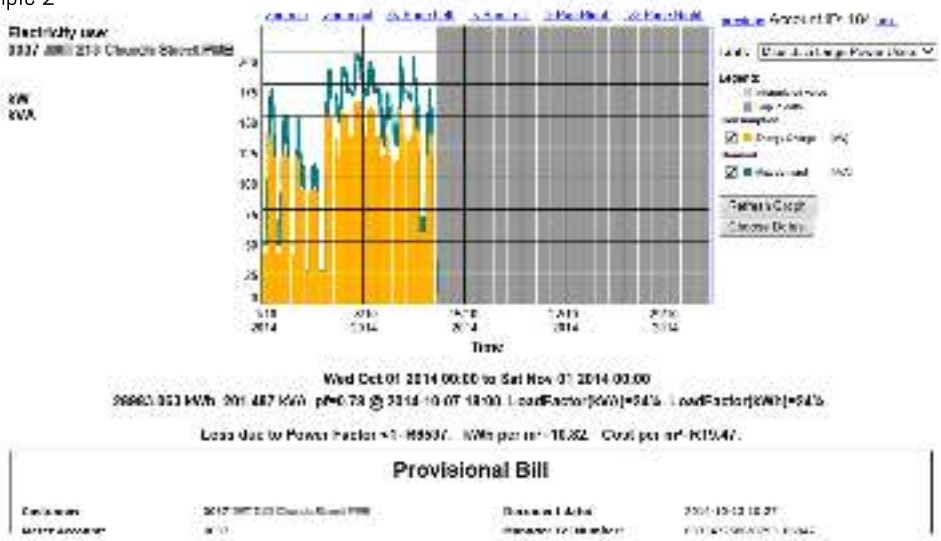
MODULE 1:
Profile Graph

Example 2



NOTES:

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MODULE 1:
Phasor Graph

Requirements

- 3 Phase meter of which PNPSCADA can read the phasors

Access

- Select desired meter in Overview
- View ➢ Phasor Graph

Usage

- The first screen shows a table of phasors that have been read
- Columns:
  - Date
  - Voltage and Currents over all 3 phases
  - Voltage and Current Angles over all 3 phases
  - kW (P), kvar (Q) and kVA (S)
  - power factor (pf)
- If there are more than one page of phasors, you can navigate to the other pages by clicking on next and previous
- Click on a date to open the phasor graph for a specific date
- The phasor graph shows:
  - 3 thin lines in different color depicting voltage:
    1. Red
    2. Yellow (White)
    3. Blue
  - 3 thick lines in different color depicting current, corresponding to the thin voltage lines
  - The length of the thick lines indicate the relative load balance

MODULE 1:
Phasor Graph

- To the right of the graph is a table of actual values with columns for:
  - All 3 voltages and currents
  - All 3 volt and current angles
  - kW (P), kvar (Q) and kVA (S)
  - Power Factor (pf)

Possible Extrapolations

(Examples are on next pages)

- Example 1: This is what a typical 3 phase connection should look like.
- Example 2:
  - Power Factor Correction Equipment have engaged too many capacitor banks
  - Look out for phasor graphs where the currents are small (less than 10A). If the current is small you won't necessarily get a good phasor graph. In this case this is not the problem.
  - If Red CT was moved to White Voltage,
    White CT to Blue Voltage,
    Blue CT to Red Voltage
    and all 3 CT's reversed,
    you'll get a close to perfect Phasor Graph, which might be the problem in this case.
- Example 3: Red CT should be reversed.
- Example 4: An example of a 3 wire connection that is wrong
- Example 5:
  - The phase rotation is the wrong way round, i.e. White and Blue Voltage and CT should be swopped
  - Phase load balancing should be done at this site
- Example 6: An example of a typical 3 wire connection

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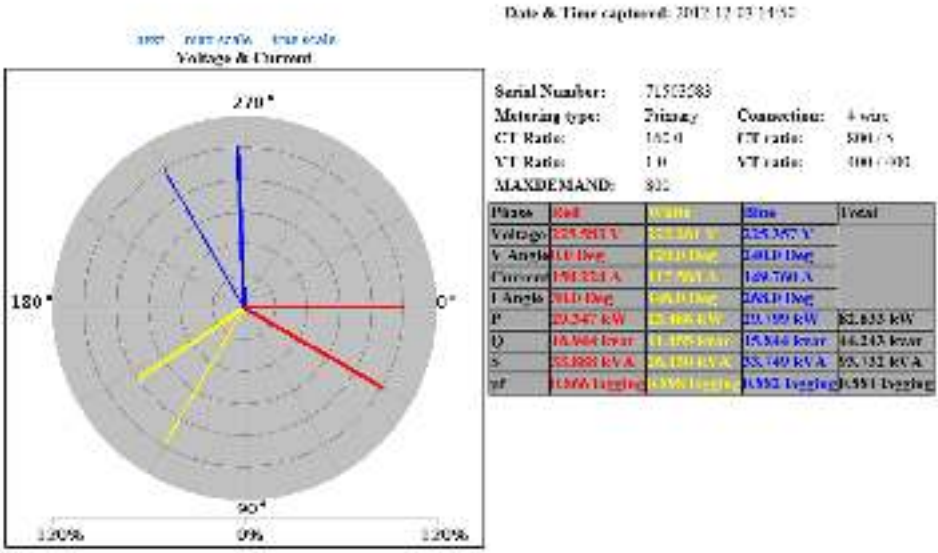
MODULE 1:
Phasor Graph

- Example 7: Not sure what is going on here, but everything seems to be wrong
- Example 8: An example of a typical connection to properly working Power Factor Correction equipment with correction derived from the Blue phase, over-compensating on White and under-compensating on Red phase
- Example 9: An example of overcompensating Power Factor Correction Equipment

Example 1



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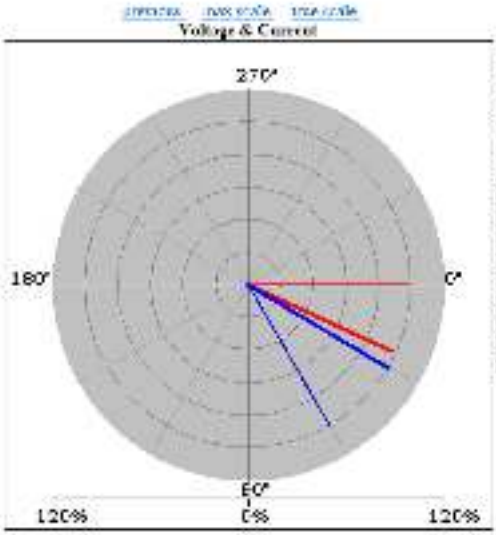
MODULE 1:
Phasor Graph

Example 2

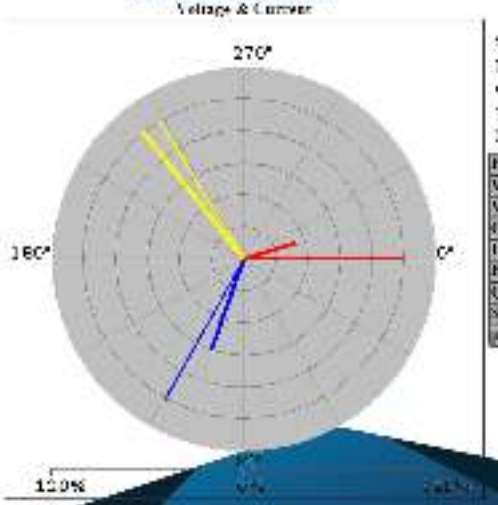


Date & Time captured:

Serial Number:				
Metering type:	Primary		Connection:	
CT Ratio:	1000		CT ratio:	
VT Ratio:	100:1		VT ratio:	
MAXDEMAND:	400			

Phase	Red	White	Blue	Total
Voltage	12226.36 V	0.0 V	12335.91 V	
V Angle	0.0 Deg	0.0 Deg	60.0 Deg	
Current	141.261 A	0.0 A	146.701 A	
I Angle	25.8 Deg	0.0 Deg	85.0 Deg	
P	1665.721 kW	0.0 kW	1678.987 kW	3343.332 kW
Q	739.922 kvar	0.0 kvar	974.950 kvar	1445.058 kvar
S	1727.144 kVA	0.0 kVA	1934.792 kVA	3147.176 kVA
pf	0.916 lagging	0.0%	0.874 leading	0.998 leading

Example 3



Date & Time captured:

Serial Number:				
Metering type:	Primary		Connection:	
CT Ratio:	1000		CT ratio:	
VT Ratio:	1:1		VT ratio:	
MAXDEMAND:	0			

Phase	Red	White	Blue	Total
Voltage				
V Angle				
Current				
I Angle				
P				
Q				
S				
pf				

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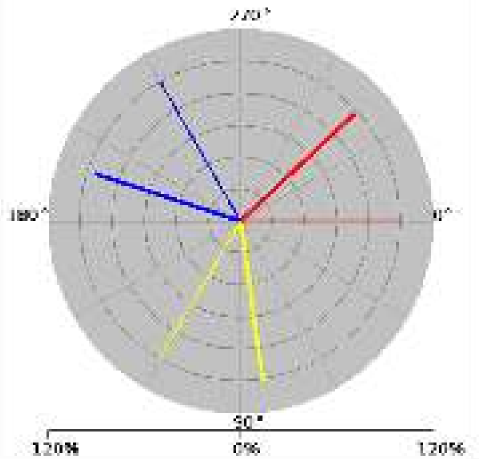
MODULE 1:
Phasor Graph

Example 4

Date & Time captured: 2012 [illegible]

next max scale true scale

Voltage & Current



Serial Number:	71303561		
Metering type:	Primary	Connection:	4 wire
CT Ratio:	80.0	CT ratio:	400 / 5
VT Ratio:	1.0	VT ratio:	400 / 400
MAXDEMAND:	302		

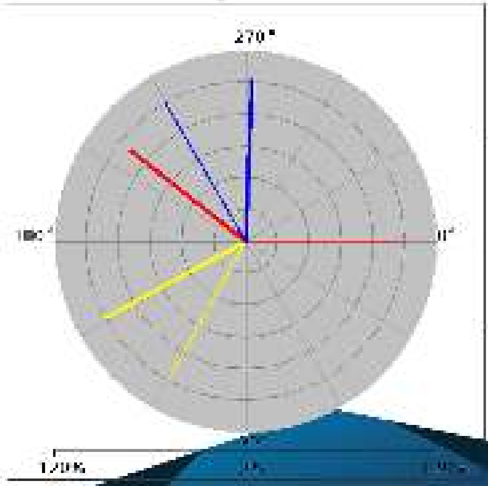
Phase	Red	White	Blue	Total
Voltage	239.842 V	[illegible] V	231.363 V	
V Angle	0.0 Deg	[illegible] Deg	240.0 Deg	
Current	101.184 A	104.708 A	98.632 A	
I Angle	317.0 Deg	[illegible] Deg	198.0 Deg	
P	17.304 kW	[illegible] kW	18.951 kW	55.366 kW
Q	-16.130 kvar	[illegible] kvar	-15.362 kvar	-46.352 kvar
S	24.661 kVA	[illegible] kVA	22.510 kVA	70.707 kVA
pf	0.721 leading	[illegible] leading	0.743 leading	0.759 leading

Example 5

Date & Time captured: [illegible]

next max scale true scale

Voltage & Current



Serial Number:	98241238		
Metering type:	Primary	Connection:	4 wire
CT Ratio:	820	CT ratio:	[illegible]
VT Ratio:	1.0	VT ratio:	400 / 400
MAXDEMAND:	[illegible]		

Phase	Red	White	Blue	Total
Voltage	234.3 V	[illegible] V	226.9 V	
V Angle	0.0 Deg	120.0 Deg	240.0 Deg	
Current	54.7 A	[illegible] A	60.5 A	
I Angle	218.4 Deg	[illegible] Deg	272.6 Deg	
P	10.843 kW	[illegible] kW	12.034 kW	13.896 kW
Q	7.998 kvar	[illegible] kvar	7.696 kvar	7.123 kvar
S	13.[illegible] kVA	[illegible] kVA	14.295 kVA	15.579 kVA
pf	0.7[illegible] leading	[illegible] lagging	0.842 lagging	0.889 lagging

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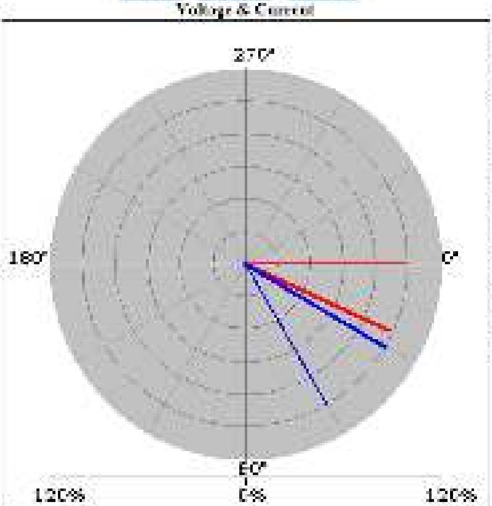
MODULE 1:
Phasor Graph

Example 4

Date & Time captured: [illegible]

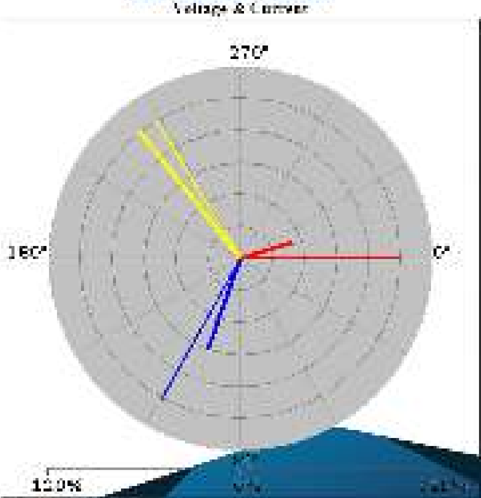


Serial Number:	[illegible]		
Metering type:	Primary	Connection:	3 wire
CT Ratio:	[illegible]	CT ratio:	[illegible]
VT Ratio:	100.0	VT ratio:	11000 / 110
MAXDEMAND:	[illegible]		

Phase	Red	White	Blue	Total
Voltage	12226.36 V	0.0 V	12235.91 V	
V Angle	0.0 Deg	0.0 Deg	60.0 Deg	
Current	161.368 A	0.0 A	148.304 A	
I Angle	25.0 Deg	0.0 Deg	51.0 Deg	
P	1569.[illegible] kW	0.0 kW	1579.987 kW	3143.932 kW
Q	729.922 kvar	0.0 kvar	-874.950 kvar	-145.058 kvar
S	1737.144 kVA	0.0 kVA	1804.792 kVA	3147.270 kVA
pf	0.906 lagging	[illegible]	0.874 leading	0.999 leading

Example 5

Date & Time captured: [illegible]



Serial Number:	[illegible]		
Metering type:	Primary	Connection:	[illegible]
CT Ratio:	[illegible]	CT ratio:	[illegible]
VT Ratio:	[illegible]	VT ratio:	[illegible]
MAXDEMAND:	0		

Phase	Red	White	Blue	Total
Voltage	[illegible]	[illegible]	[illegible]	
V Angle	[illegible]	[illegible]	[illegible]	
Current	[illegible]	[illegible]	[illegible]	
I Angle	[illegible]	[illegible]	[illegible]	
P	[illegible]	[illegible]	[illegible]	72.647 kW
Q	[illegible]	[illegible]	[illegible]	[illegible] kvar
S	[illegible]	[illegible]	[illegible]	[illegible] kVA
pf	[illegible] leading	[illegible] leading	[illegible] leading	[illegible] leading

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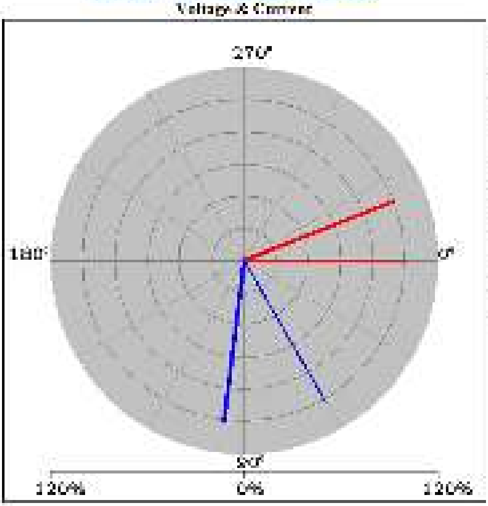
MODULE 1:
Phasor Graph

Example 6

previous next max scale true scale

Voltage & Current



Date & Time captured: [illegible]

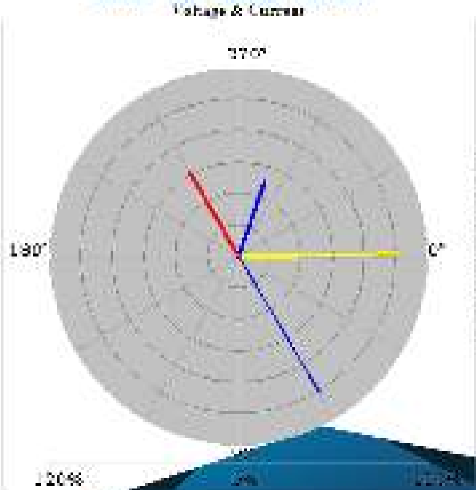
Serial Number:	20774227?	Connection:	3 wire
Metering type:	Primary	CT ratio:	[illegible]
CT Ratio:	120.0	VT ratio:	11000 / 110
VT Ratio:	100.0		

Phase	Red	White	Blue	Total
Voltage	11251.880 V	0.0 V	11321.938 V	
V Angle	0.0 Deg	[illegible]	50.993 Deg	
Current	104.337 A	0.0 A	105.826 A	
I Angle	118.493 Deg	[illegible]	96.996 Deg	
P	1892.246 kW	0.0 kW	253.916 kW	2046.162 kW
Q	-430.483 kvar	0.0 kvar	715.512 kvar	285.111 kvar
S	1172.887 kVA	0.0 kVA	1192.440 kVA	2066.994 kVA
pf	0.938 leading	[illegible]	[illegible] lagging	0.990 leading

Example 7

previous next max scale true scale

Voltage & Current



Date & Time captured: [illegible]

Serial Number:	[illegible]		
Metering type:	Secondary	Connection:	[illegible]
CT Ratio:	[illegible]	CT ratio:	[illegible]
VT Ratio:	[illegible]	VT ratio:	[illegible]
MAXDEMAND:	[illegible]		

Phase	Red	White	Blue	Total
Voltage	[illegible] V	[illegible] V	[illegible] V	
V Angle	0.0 Deg	[illegible] Deg	29.535 Deg	
Current	8.870 A	[illegible] A	7.216 A	
I Angle	[illegible] Deg	[illegible] Deg	[illegible] Deg	
P	[illegible] kW	[illegible] kW	-31.155 kW	[illegible] kW
Q	[illegible] kvar	[illegible] kvar	-41.509 kvar	146.239 kvar
S	[illegible] kVA	[illegible] kVA	[illegible] kVA	158.847 kVA
pf	[illegible] leading	[illegible]	[illegible] leading	[illegible] leading

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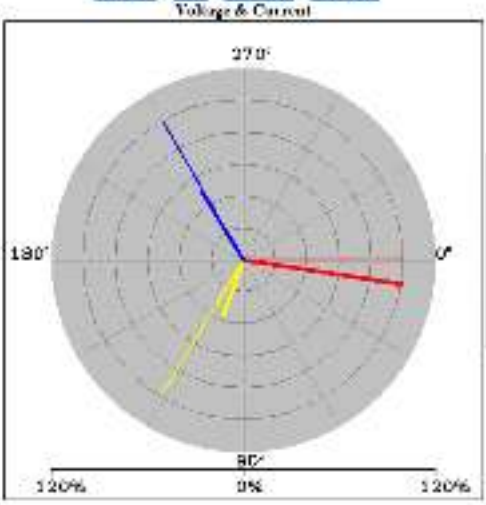
MODULE 1:
Phasor Graph

Example 8

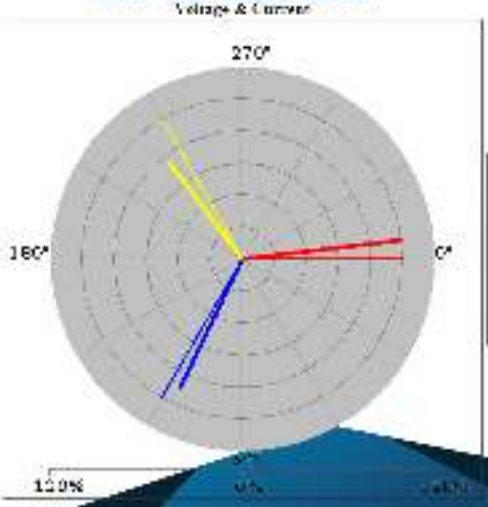


Date & Time captured: 2012-10-28 14:27

Serial Number:	78123912			
Metering type:	Primary	Connection:	4-wire	
CT Ratio:	50.0	CT ratio:	250 / 5	
VT Ratio:	1.0	VT ratio:	400 / 400	
MAXIDEMAND:	100			

Phase	Red	White	Blue	Total
Voltage	231.0 V	231.5 V	231.5 V	
V Angle	0.0 Deg	121.0 Deg	240.0 Deg	
Current	29.4 A	10.8 A	14.2 A	
I Angle	3.8 Deg	108.5 Deg	339.0 Deg	
P	6.711 kW	2.479 kW	3.286 kW	12.477 kW
Q	1.038 kvar	0.513 kvar	0.057 kvar	0.468 kvar
S	6.791 kVA	2.769 kVA	3.287 kVA	12.486 kVA
pf	0.988 lagging	0.895 leading	0.999 leading	0.999 lagging

Example 9



Date & Time captured: [illegible]

Serial Number:	20771418			
Metering type:	Secondary	Connection:	[illegible]	
CT Ratio:	0010	CT ratio:	[illegible]	
VT Ratio:	1.0	VT ratio:	[illegible]	
MAXIDEMAND:	0			

Phase	Red	White	Blue	Total
Voltage	[illegible] V	[illegible] V	229.9613 V	
V Angle	0.0 Deg	[illegible] Deg	120.120 Deg	
Current	[illegible] A	[illegible] A	85.363 A	
I Angle	[illegible] Deg	[illegible] Deg	115.535 Deg	
P	21.849 kW	18.177 kW	19.544 kW	57.571 kW
Q	2.405 kvar	2.[illegible] kvar	1.967 kvar	6.156 kvar
S	21.969 kVA	18.316 kVA	19.807 kVA	57.807 kVA
pf	0.995 leading	0.992 leading	0.996 leading	0.996 leading

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MODULE 1:
Daily Consumption Graph

Requirements

- A meter account linked to a meter with half-hour kWh profile Access
- Select desired meter account
- Go to View ➢ Profile Graph
- Select desired date range for report in Profile Graph
- Go to Reports ➢ Daily Consumption Graph

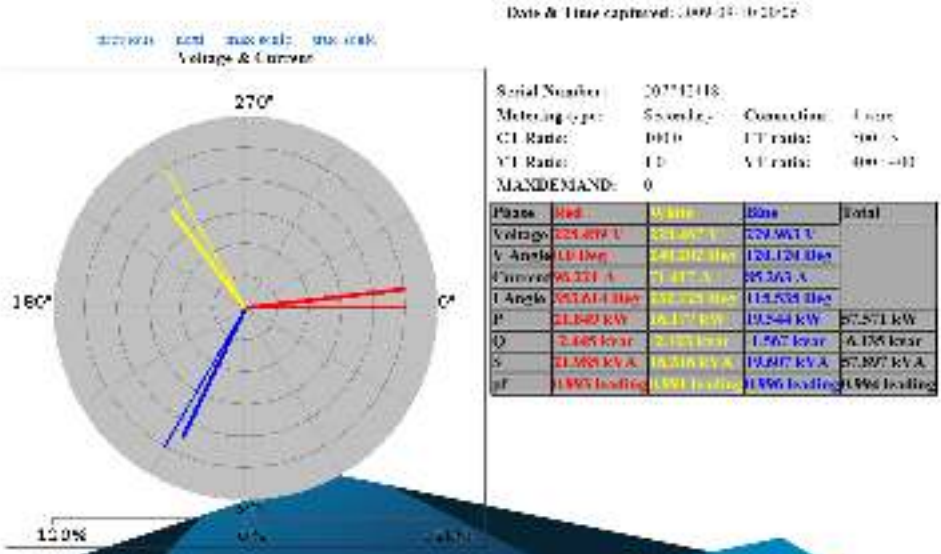
Usage

- Shows kWh (left axis) usage for all meters in the Meter Account summated for each day (bottom axis).

Possible Extrapolations

- Since Profile Graph shows half hour values, this graph is useful as a visual comparison of days.

Example:



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MODULE 1:
Daily Consumption Breakdown Graph

Requirements

- Meter account linked to:
  - Meter with half-hour profile
  - Tariff with TOU calendars

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report in Profile Graph
- Go to Reports ➢ Daily Consumption Breakdown Graph

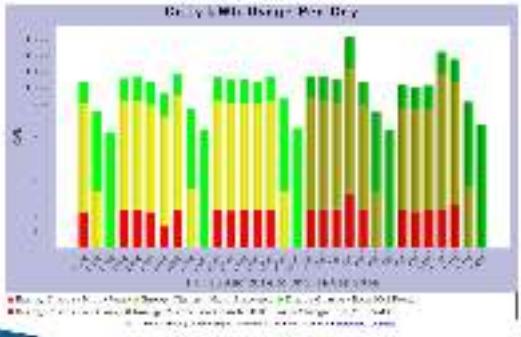
Usage

- Shows summated kWh (left axis) usage for all meters in the Meter Account for each day (bottom axis).
- The kWh for each TOU rate are also individually summated and indicated on the bar.

Possible Extrapolations

- This graph can be used to optimize usage to when it is cheapest.
- Finding out when in a month these optimizations were violated.
- If this graph is combined with a Shift Tariff, you can see which shifts had higher usage fo each day.

Example:



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MODULE 1:
Monthly Consumption Breakdown Pie Chart

Requirements

- Meter account linked to:
  - Meter with half-hour profile
  - Tariff with TOU calendars

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report in Profile Graph
- Go to Reports ➢ Monthly Consumption Breakdown Pie Chart

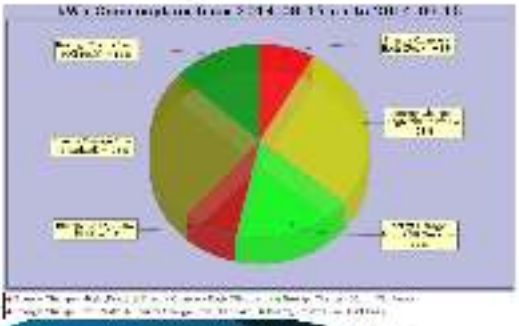
Usage

- Shows usages summated over selected date range for each individual TOU rate.
- Each rate is shown as a percentage.

Possible Extrapolations

- Select a range that spans equal amounts of both Winter and Summer to see how much more electricity is used during Winter times. Provided that your Tariff differentiates between the seasons.
- Select a range that spans a month to see how much electricity is used during Peak, Standard and Off Peak times.

Example:



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MODULE 1:
Monthly Consumption Breakdown Pie Chart

Requirements

- Meter account linked to:
  - Meter with half-hour profile
  - Tariff with TOU calendars

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report in Profile Graph
- Go to Reports ➢ Monthly Consumption Breakdown Pie Chart

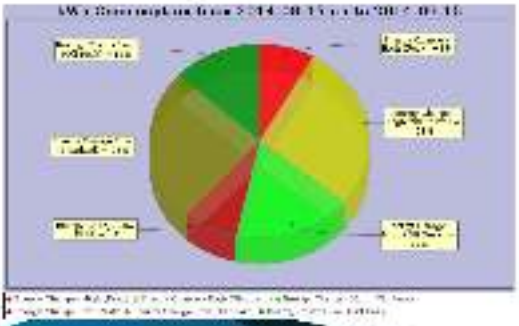
Usage

- Shows usages summated over selected date range for each individual TOU rate.
- Each rate is shown as a percentage.

Possible Extrapolations

- Select a range that spans equal amounts of both Winter and Summer to see how much more electricity is used during Winter times. Provided that your Tariff differentiates between the seasons.
- Select a range that spans a month to see how much electricity is used during Peak, Standard and Off Peak times.

Example:



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MODULE 1:
Year-to-Date Monthly Consumption

Requirements

- Meter Account linked to a meter with data for at least 2 years

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired 2 year date range for report in Profile Graph
- Go to Reports ➢ Year To Date Monthly Consumption

Usage

- This report is typically run on an overall Meter Account for your whole group of stores. It compares your energy use in this year to your energy use in the previous financial year.
  The purpose of this report is to give you a high level overall view around the question, whether you are saving energy or not.
- This year is shown with blue bars
- Previous year is shown with red lines
- Projected usage for the rest of the year is also shown with yellow lines with circles
- Non-comparable consumption is shown with yellow lines with squares
  - Because some stores are new within the last 2 years, some of their data could be noncomparable to the previous financial year.
  - One Meter in the Meter Account's profile is non-comparable if it does not have a full month's consumption for the same month previous year.

Possible Extrapolations

- This report shows if (and how much) your energy initiatives works.
- If a Meter Account is linked to all the Meters in a shopping center, you can see how much consumption is due to new shops by looking at the Non-Comparable values

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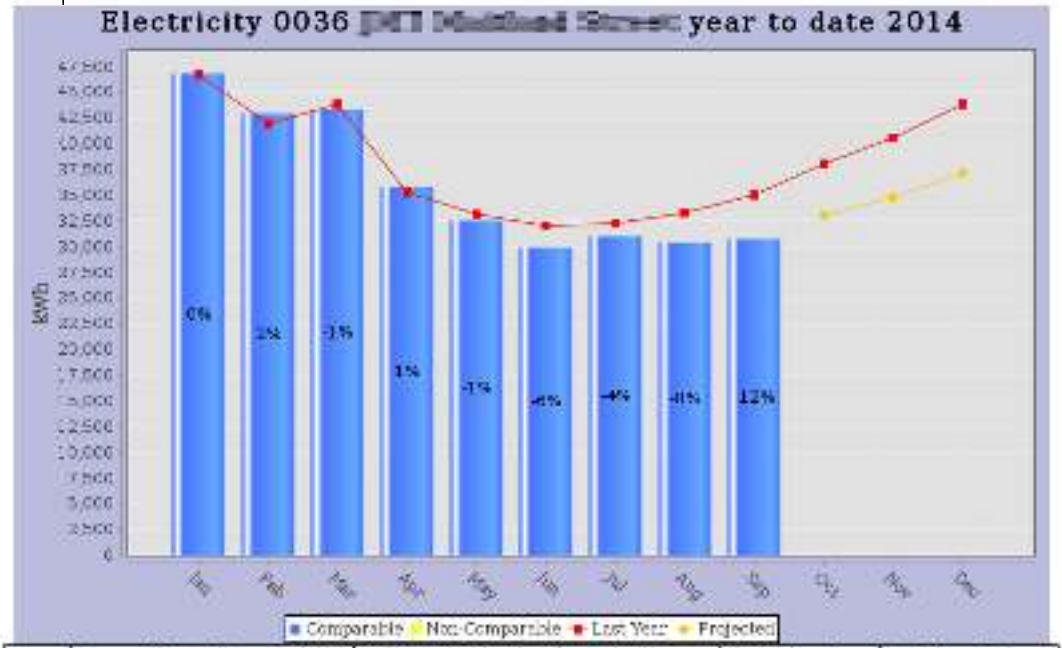
MODULE 1:
Year-to-Date Monthly Consumption

Example



Month	Current Year Total kWh	Current Year Comparable kWh	Current Year Non-Comparable kWh	Last Year Comparable kWh	Projected Comparable kWh	Last Year Projected Comparable kWh
Jan	46852	46852		46723		
Feb	42952	42952		41978		
Mar	43288	43288		43800		
Apr	35869	35869		35250		
May	32546	32546		33181		
Jun	29934	29934		31989		
Jul	31015	31015		32222		
Aug	30406	30406		33264		
Sep	30749	30749		35079		
Oct				38089	35022	38089
Nov				40561	34781	40561
Dec				43887	37222	43887
Total:	323601	323601	0	456120	105025	122537

Year-to_date Carbon Consumption

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MODULE 1:
Year-to-Date Monthly Consumption

Requirements

- Meter Account linked to a meter with data for a year

Access

- Select desired Meter Account in Overview
- Go to View->Profile Graph
- Select desired date range for report in Profile Graph (A year or more is advised)
- Go to Reports->Year To Date Carbon Consumption

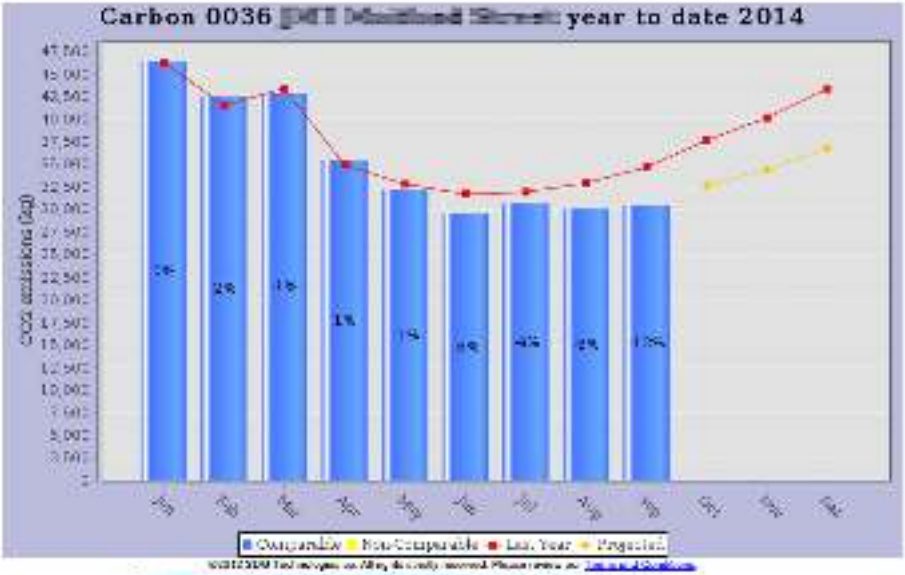
Usage

- Same as the Year to Date Monthly Consumption report, except that consumption of CO2 is calculated and displayed.

Possible Extrapolations

- A visual graph of whether carbon is saved.

Example:



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MODULE 1:
Statistics

Requirements

- Meter Account linked to a meter with data for a month

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report in Profile Graph
- Go to Reports ➢ Statistics

Usage

- Two tables are shown:
  - Energy Consumption and Demand: For each consumption and demand line item in the tariff an average, a maximum and a percentage load factor is shown.
  - Financial: For each consumption and demand line item in the tariff, the number of units, rate and cost (units * rate) is shown.

Possible Extrapolations

- To keep cost low, the highest average consumption should be during off-peak times and the lowest average consumption should be during peak times.
- From Consumption's % Load Factor, you can see how close you get to your breaker's maximum amperage.
- Compare Winter and Summer averages consumption.
- See if your Maximum Demand occurs during Peak, Standard or Off Peak times.
- See cost of consumption and demand.

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MODULE 1:
Statistics

Example

Statistics for 0036 [redacted] 2143

From 2014-05-15 06:00:00.000 to 2014-05-16 20:00:00.000

Energy Statistics

	Tariff Item	Avg	Max	% Load Factor
	[redacted]	[redacted]	[redacted]	[redacted]

Financial Statistics

	Tariff Item	Reading	Units	Rate	Cost
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
				Total	[redacted]

NOTES:

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MODULE 1:
Account Quota

Requirements

- Meter Account linked to a meter with data for more than a year

Access

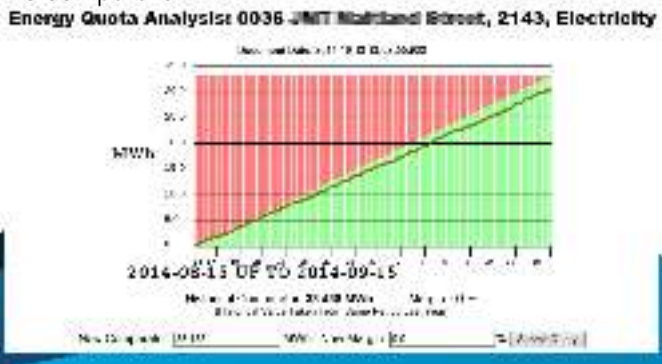
- Select desired Meter Account in Overview
- Go to View->Profile Graph
- Select desired date range for report in Profile Graph, preferably a start date that is already past, and an end date that is still to come, as the graph is used to make predictions. The start of the month to the end of the month is a good range.
- Go to Reports->Account Quota

Usage

- The current date range's incremental consumption is plotted against a comparator that is linearly interpolated.
- At the bottom left, the comparator can be changed and defaults to last year's consumption. Click Submit Query before changes will be applied.
- At the bottom right a margin can also be set. If 20% less consumption should be used, enter -20%, and if 20% more consumption is expected, enter 20% and click Submit Query.

Possible Extrapolations

- If current usage is above the comparator's line (i.e. in the red), projected usage for the end of the period is more than the comparator. If the current usage is below the comparator's line (i.e. in the green), projected usage at the end of the period is less than the comparator.



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MODULE 1:
Savings

Requirements

- Meter Account linked to a meter with data

Access

- Select desired Meter Account in Overview
- Go to Reports ➢ Savings

Usage

- First Screen
  - Choose 2 different date ranges to compare and/or 2 different tariffs
  - Enter the date ranges and tariffs into the inputs provided
  - Select kg of Carbon per kWh as specified by the country or alternatively specify your own constant.
  - Enter any other factors (max 4) that need to be considered. e.g. Your company might have 2 more delivery vehicles this year. You will need to specify for each of these:
    - A name. e.g. Delivery Vehicle
    - Units Description e.g. km
    - Amount used fore each period e.g. 80km and 100km
    - The carbon multiplier e.g. 0.17 kg of Carbon per kilometer traveled
    - Choose an interval or factor to compare against. e.g. if you specify per kilometers, the result will be how many kWh per kilometer you are using more/less since the previous year.
- Second Screen
  - For each of the date ranges selected, shows usage and difference of
  - Consumption
  - Demand
  - Financial
  - Any other factors you have added
  - Carbon impact

MODULE 1:
Enironmental Impact Summary

Possible Extrapolations

- Meter Account

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report in Profile Graph
- Go to Reports ➢ Environmental Impact Summary

Usage

- The report shows environmental impact over the whole selected range, as well as a per day average and a per month average:
  - Ash produced in kg
  - Carbon Dioxide emissions in kg
  - Coal used to generate this amount of electricity in kg
  - Nitrogen Oxide emissions in kg
  - Particulate Emissions in kg
  - Sulfur dioxide emissions in kg
  - Water used in kl
- These values are currently constants as set out by Eskom for South Africa.

Possible Extrapolations

- These are common values used when doing environmental impact studies, and should be used for that.

Example:

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MODULE 1:
View Baseline

Possible Extrapolations

- Meter Account linked to a meter with profile data

Access

- Select desired Meter Account in Overview
- Go to Edit ➢ PCP Baseline then
- Go to Reports ➢ View Baseline

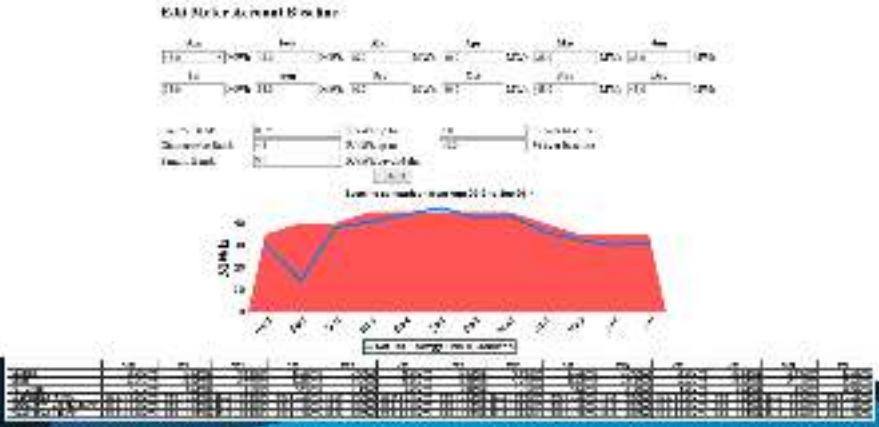
Usage

- Power Conservation Program Report ask specified by Eskom.
- For this report they define the baseline to be the last year's bills minus 10%. They also define other factors like control, disincentive and penalty band and their respective thresholds for when they apply.
- Screen 1:
  - Enter a baseline value for every month
  - Enter control, disincentive and penalty band and respective thresholds.
  - Click Submit
- Screen 2:
  - Baseline is shown as a red polygon
  - Actual usage is shown as a blue line over the baseline

Possible Extrapolations

- Determine if you are using less power according to the Eskom PCP.

Example:



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MODULE 1:
Summary Billing Report

Possible Extrapolations

- Meter Account Group optionally divided into categories of Incomer and Tenant
- One or more Bill Runs for the Meter Accounts in the Meter Account Group

Access

- Select desired Meter Account Group in Overview
- Go to Reports->Summary Billing Report

Usage

- The categories can be set up under Edit->Meter Account Group
- This report displays kWh/kVA and cost of all Meter Accounts in this Group against all Consumptions and Demand Tariff Line Items of the default tariff.
- Meter Accounts are listed as rows
- Tariff Line Items are listed as columns
- On the last row, a summation of the Line Item values are shown
- There is also a Download as CSV if you want to do your own calculations or further reporting in Excel.
- The Meter Accounts are sorted in rows to show incomers first and then other accounts.

Possible Extrapolations

- Get an overview of all your meters. Since incomers are clustered together, it can be used to see how much incomers differ from sub-meters. For this reason, this report serves as a substitute for over and under recovery reports.
- Compare different sub-meters/tenants demand and consumption to each other. For example in a case where there are many tenants, one with high demand and the rest with high consumption paying towards the same incomer, a fair split can be discussed based on this report.

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MODULE 1:
Summary Billing Report

Example

NOTES:

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MODULE 1:
Sub-metering Recon

Requirements

- Meter Account Group with Meter Accounts divided into categories:
  - One or more Incomer (i.e. What you are being charged by your Billing Authority.)
  - Bulk LV (optional) This will generally be on the LV side of your Transformers, so the difference between this and the INCOMER accounts are generally your Transformer losses.
  - One or more of the Tenant categories. You can have multiple classes of accounts that are Tenants accounts, e.g. Common Areas, air conditioners, etc.
  - One or more corresponding non-Tenant accounts. This is where you put your Bulk Aircon and Bulk Common Area accounts.
- One or more previous Bill Runs

Access

- The categories can be set up under Edit ➢ Meter Account Group
- Select desired Meter Account Group
- Go to Reports ➢ Sub-metering Recon
- From the billing period drop down, select the desired billing period for which bills has already been run.

Usage

- This report is divided into 3 different areas:
  - Main Incomer Totals
  - Grand total for usage and maximum demand
  - Energy Use Analysis between Incomer, Bulk LV and Tenants
  - Table for Bulk Electricity
- Total: Summation of consumption and MD of Bulk LV
- Variance Units to Incomer: Bulk LV Total – Incomer Totals
- Variation % to incomer: Variance Units / Incomer Totals
  - Table for Actually Billed

MODULE 1:
Sub-metering Recon

- At the end is a bottom line Total Cost of Supply for both the Amount Paid to Billing Authority and Recovered from Tenants and a Rand and Percentage Variance.

- Also, if you are Over or Under Recovering.
- You can also download this information as a CSV download

Possible Extrapolations

- This report helps you - as the Billing Authority for your tenants - to determine whether you are recovering all your energy costs or not, by how much, and why.

Example:

Sub-metering Recon

Billing Period [2012/05/17 00:00:00 - 2012/06/17 00:00:00]

	kWh	kVA
INCOMER	60,040.20	2,846.72

	Bulk Electricity		Actually Billed		Variance		%	
	kWh	kVA	kWh	kVA	kWh	kVA	kWh	kVA
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Variance Units to INCOMER	-60,040.20	-2,846.72	-60,040.20	-2,846.72	0.00	0.00	0.00%	0.00%
Variation % to INCOMER	100.00%	100.00%	100.00%	100.00%				

Unaccounted for Units -60,040.20kWh
Unnaccounted @ cost R-17,430.89
Unnaccounted @ ave selling R0.00

Financial Recovery Analysis:

	Paid to Billing Authority			Recovered from Tenants		
				Billed	Variance	
	Units	Rate (R)	Amount (R)	Amount (R)	R	%
Energy kWh (INCOMER)	60,040.20	0.44	26,153.22	0.00	-26,153.22	-100.00%
Max Demand kVA	2,846.72	45.72	130,130.15	0.00	-130,130.15	-100.00%
Service Charge	124.00	75.73	9,386.10	0.00	-9,386.10	-100.00%
Excess varh	30,361.32	0.25	7,593.58	0.00	-7,593.58	-100.00%
Other charges	29,996.40	0.02	509.93	0.00	-509.93	-100.00%
Other			509.93	0.00	-509.93	-100.00%
Total Cost of Supply			177,740.99	0.00	-177,740.99	-100.00%

Under Recovery

Download csv File

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MODULE 1:
Group Financial Loss due to PF<1

Requirements

- Meter Account Group
- Multiple previous Bill Runs

Access

- Select desired Meter Account Group in Overview
- Go to Reports ➢ Group Financial Loss due to PF<1

Usage

- Lists all Meter Accounts and columns for:
  - Meter Account Number
  - Meter Account Name
  - Manager Telephone Numbers
  - Region
  - Load Factor (Average Usage divided by Peak Usage)
  - Annual Max Demand
  - Annual Loss in Currency
  - Loss for the last 3 months in Currency
  - Power Factor for the last 3 months

Possible Extrapolations

- Determine which sites are in most need of power factor correction.

Example:

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MODULE 1:
Meter Online Status

Requirements

- Meter Account Group with readings for the past 12 months

Access

- Select desired Meter Account Group in Overview
- Go to Reports->Meter Online Status
- Enter date range for report. Preferably 3-24 months.

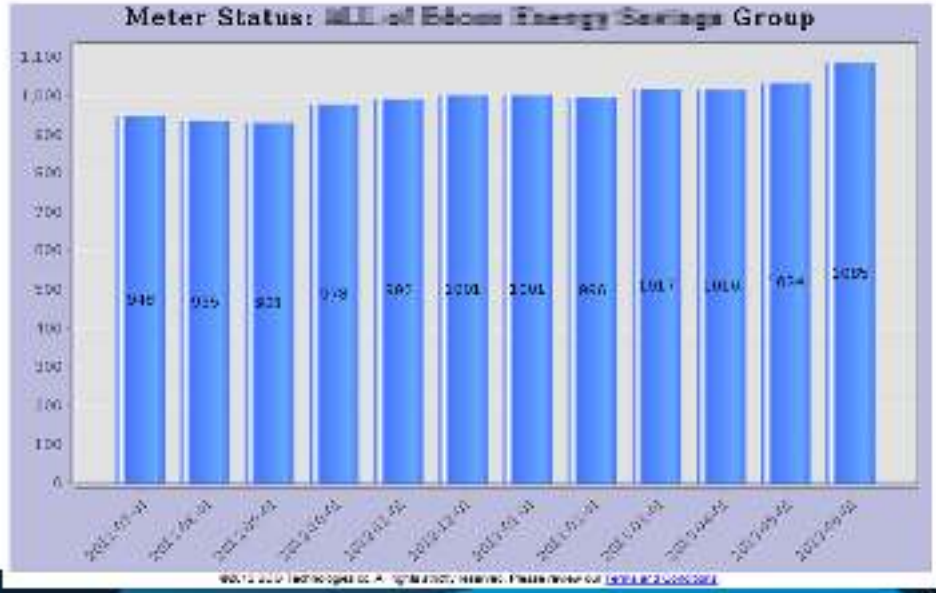
Usage

- This report shows a bar for each month in the selected date range. Each bar shows how many meters were read in for each month.
- A meter is said to be “called in” if any license channels were charged. e.g. kWh/kvarh profile, real time, digital switches, instrumentation profile etc. For this reason, this report gets is figures from the license table.

Possible Extrapolations

- Useful to trend commissioning of a site, if for example a fixed amount of meters need to be installed per month.

Example:



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MODULE 1:
Power Factor at Daily Maximum Demand

Requirements

- Meter Account linked to one or more meters with profile Access
- Select desired Meter Account in Overview
- Go to View->Profile Graph
- Select desired date range for report
- Go to Reports->Power Factor at Daily Maximum Demand

Usage

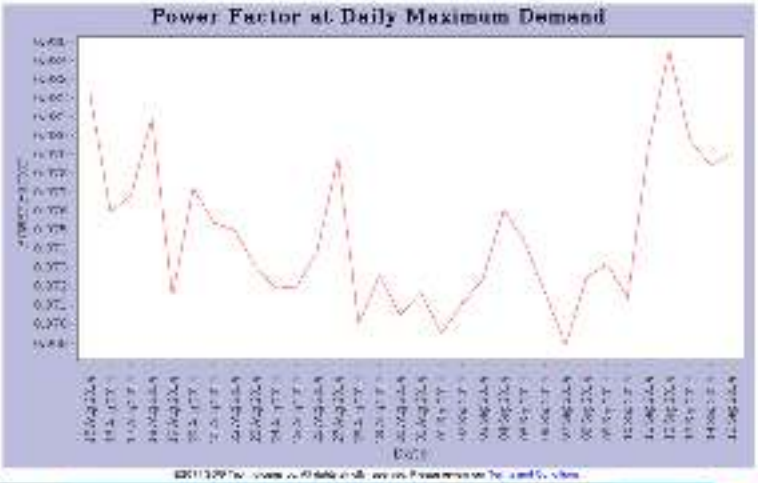
- Left axis shows power factor (not starting from 0).
- Bottom axis is date range. One tick per day.
- For every day, the point of Maximum Demand is calculated and then the power factor at that point is plotted on the graph.

Possible Extrapolations

- Like MD Scatter Plot, but with daily context. Allows you to understand your power factor.

Example:

0036 JMT Maitland Street : 0036 ; 0514300635/0514301684/0834949813



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MODULE 1:
MD Breakdown

Requirements

- Meter Account linked to one or more meters with kWh and kvarh profile data

Access

- Select desired Meter Account containing multiple meters in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report
- Go to Reports ➢ MD Breakdown

Usage

- Shows selected date range with point and value of MD
- Lists each Meter in the selected Meter Account, along with:
  - Meter Name with quick access link to this meter in overview
  - Serial with quick access link to this meter's totals
  - Active Energy at point of MD
  - Reactive Energy at point of MD
  - Demand at point of MD
  - Power Factor at point of MD
  - Status at point of MD, which includes the following:
  - ok (MD was not calculated)
  - calculated (MD was calculated, like from a linear interpolation after a meter total insert)

Possible Extrapolations

- Determine which meter is contributing most to the MD or bad power factor.

Example:


Meter Account: 0036 JMT Maitland Street

Maximum Demand Breakdown Analysis Report

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MODULE 1:
MD Scatter Plot

Requirements

- Meter Account linked to one or more meters with kWh and kvarh profile data

Access

- Select desired Meter Account in Overview
- Go to View ➢ Profile Graph
- Select desired date range for report
- Go to Reports ➢ MD Scatter Plot

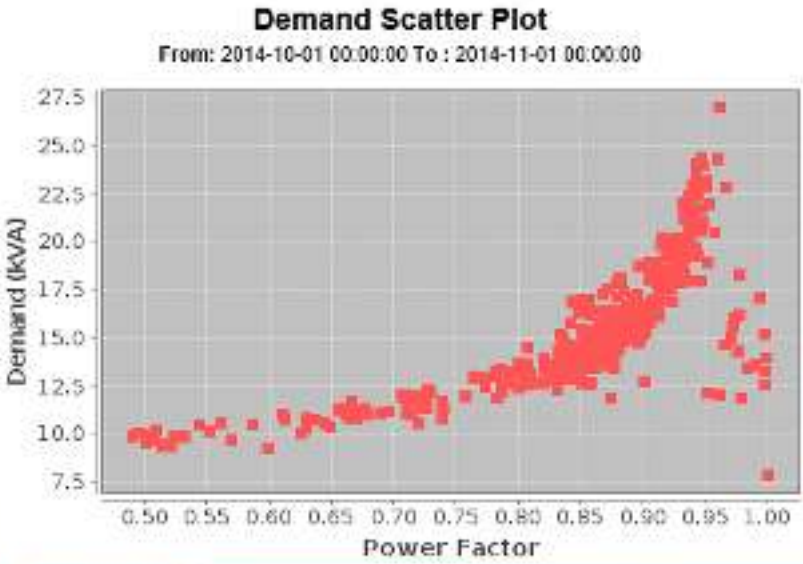
Usage

- Left axis is MD (not starting from 0)
- Bottom axis is power factor (not starting from 0)
- Plots power factor at point of maximum demand against demand. One dot for each day.
- The highest dot marks the month's MD.

Possible Extrapolations

- Shows the effectiveness of your power factor correction equipment at different demand levels.

Example:



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MODULE 1:
Night Time Reduction Report

Requirements

- Meter Account Group

Access

- Select desired Meter Account Group in Overview
- Go to Reports ➢ Night Time Reduction Report

Usage

- Also known as the morning report.
- Enter a date start and end range and click on Change Date Range.
- Lists all Meter Accounts in the selected Meter Account Group along with these sortable columns:
  - Name (link for quick access to Meter Account)
  - Total kWh Used for all meters in each Meter Account
  - kWh not used (i.e. the gap) during after hours (taken as 19:00 – 7:00). If a line was to be drawn (on the profile graph) from the top of the kWh used at 17:00 to the top of the kWh used at 9:00 the next day, all usage below this line forms part of the gap.
  - Percentage of Gap to Total kWh. Values below 20% are marked in red. Negative values imply that more power was used during night time than during day time.
  - Average Power Factor for selected period.
- Table can be exported to CSV

Possible Extrapolations

- Can give a quick overview of shops not switching off aircons and lights at night. To determine which cases are most severe, Total kWh and % of Gap to Total should be taken into consideration.

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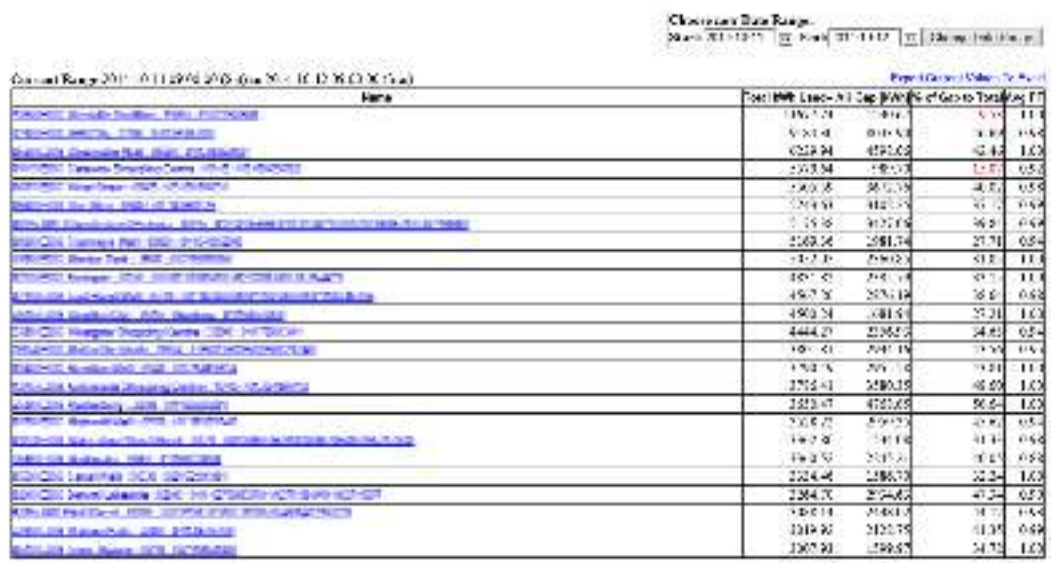
MODULE 1:
Night Time Reduction Report

Example


Morning Report

Name	Total kWh Used	Avg kW	% of Grp to Total	Avg PF
[redacted]	1967.28	[redacted]	5.14	0.98
[redacted]	3761.48	[redacted]	9.83	0.96
[redacted]	6228.94	4791.65	16.28	1.00
[redacted]	2053.34	1580.03	5.37	0.95
[redacted]	1840.38	1416.29	4.81	0.99
[redacted]	1774.91	1365.32	4.64	0.94
[redacted]	1735.16	1335.09	4.53	0.94
[redacted]	3169.56	2661.74	27.78	0.94
[redacted]	1817.31	1398.01	4.75	0.98
[redacted]	1801.43	1385.72	4.71	0.98
[redacted]	1797.56	1383.51	4.70	0.98
[redacted]	1790.34	1377.95	4.68	1.00
[redacted]	4444.21	3418.62	34.63	0.94
[redacted]	1801.43	1385.72	4.71	0.94
[redacted]	1793.76	1379.82	4.69	0.98
[redacted]	3216.43	2474.18	46.69	1.00
[redacted]	2203.47	4721.65	56.64	1.00
[redacted]	1806.27	1389.44	4.72	0.95
[redacted]	1801.38	1385.68	4.71	0.98
[redacted]	1792.53	1378.87	4.68	0.98
[redacted]	2224.46	1711.12	23.24	1.00
[redacted]	2384.70	3674.62	47.24	0.93
[redacted]	1801.43	1385.72	4.71	0.94
[redacted]	2319.92	3573.75	48.39	0.99
[redacted]	2307.93	1775.33	24.73	1.00

NOTES:

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MODULE 1:
Comparable Period Savings Report

Requirements

- Meter Account Group

Access

- Select desired Meter Account Group in Overview
- Go to Reports ➢ Comparable Period Savings Report

Usage

- Enter Start date for report (last week is default)
- Enter Comparable date for report, preferably same date last year (last year, same date is default)
- Enter number of days to compare (7 days is default)
- Enter after hour range (19:00 to 07:00 is default)
- Click Change Date after changing any values
- Data can be exported to CVS by clicking on Export Current Values To Excel
- Data is given in table with one row for every Meter Account in Meter Account Group with sortable columns for:
  - Code (from the Meter Account's Number)
  - Meter Account Name
  - Comparable date range is given first
  - Total kWh Used: Summation of kWh used for all meters in Meter Account. A quick link to the Profile Graph for this period is given as a Graph icon. If no value is given, it means the Meter Account has no comparable data.
  - Afterhours kWh Used
  - % of Usage Afterhours: Percentage of Total to Afterhours kWh used.
  - Current date range is given second
  - Total kWh Used: If no value is given, it means the Meter Account has no current data.
  - Afterhours kWh Used
  - % of Usage Afterhours: Percentage of Total to Afterhours kWh used.
  - Total Usage Changed % since comparable year. A positive value means more power was used.

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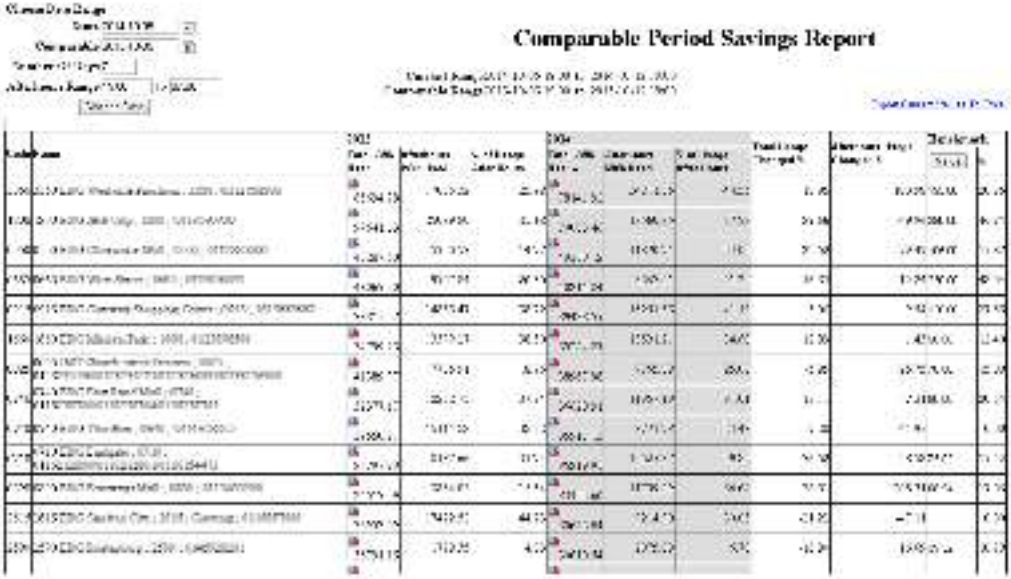
MODULE 1:
Comparable Period Savings Report

Example



Comparable Period Savings Report

NOTES:

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MODULE 1:
BMSRTU Bypass Report

Requirements

- One or more BMSRTU's

Access

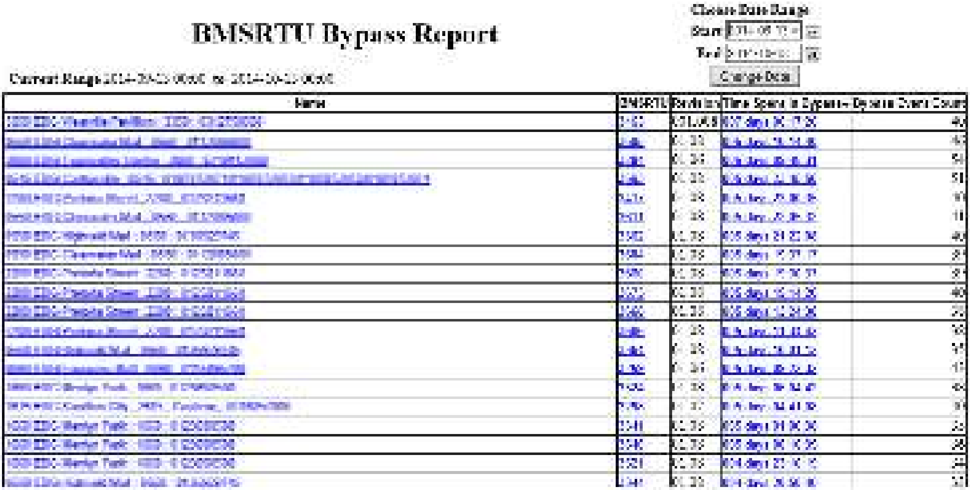
- Go to Reports ➢ BMSRTU Bypass Report Usage
- Lists all BMSRTU's along with sortable columns for:
  - Name of Meter Account that this BMSRTU is associated with along with a quick link to the Meter Account. If there are multiple Meter Accounts linked to this BMSRTU, takes you to an intermediate screen where you can select the correct Meter Account.
  - Serial with quick link to Overview screen for this BMSRTU.
  - Revision of the BMSRTU
  - Time Spent in Bypass is a summation of all the time the BMSRTU spent in bypass mode for the selected period.
  - Bypass Event Count is the amount of times the BMSRTU was bypassed.

Possible Extrapolations

- Sometimes a security guard will bypass the BMSRTU every 4 hours of the night because they don't like working in the dark. This report can aid in dealing with the biggest offenders. In this case there will be many Bypass Counts as well as a lot of time spent in bypass.
- Sometimes the BMSRTU is bypassed 5 minutes before the shop is programmed to open. This means that by changing the schedule on the BMSRTU 5 minutes earlier, the shop's lights comes on as the workers open up. In this case there will by many Bypass Counts, with little time spent in bypass.

MODULE 1:
BMSRTU Bypass Report

Example



NOTES:

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MODULE 1:
Usage Report

Requirements
- Meter Account Group

Access
- Select desired Meter Account Group in Overview
- Go to Reports->Usage Report

Usage
- Enter Start Date
- Enter End Date
- Enter Afterhours start and end time
- Click on Change Date
- You can export the information to CSV format
- Meter Accounts are listed in the rows, with sortable columns for:
  - Meter Account Name
  - Total kWh used for all meters in the Meter Account
  - Afterhour kWh for all meters in the Meter Account
  - MD for Meter Account over the selected date range
  - Average Power Factor over entire period

Possible Extrapolations
- Find sites that need power factor correction equipment the most.

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MODULE 1:
Phasor Report

Requirements

- Meter Account Group linked to Meter Accounts linked to one or more 3 phase meters

Access

- Select desired Meter Account Group in Overview
- Go to Reports->Phasor Report

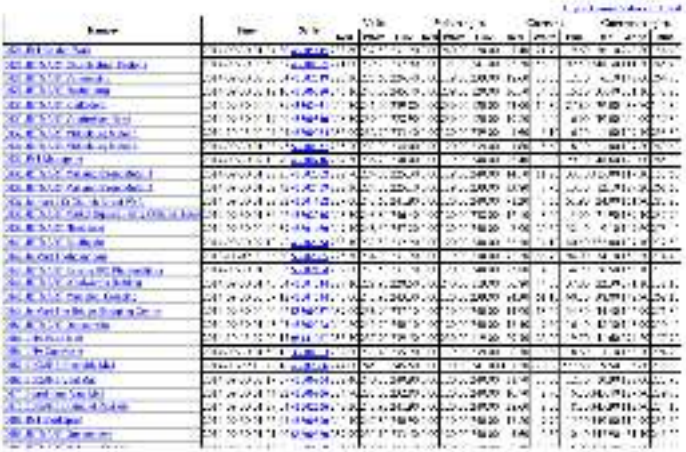
Usage

- Provides a list of all Meter's in Meter Accounts in the select Meter Account Group and their last Phasor with sortable columns for:
  - Name of meter with a quick link to the meter in the Overview screen
  - Time last Phasor was taken
  - Serial number of Meter with a quick link to the meter's Phasor screen
  - Volts of all 3 phases
  - Volt Angles of all 3 phases
  - Current of all 3 phases
  - Current Angles of all 3 phases

Possible Extrapolations

- Get an overview of sites needing phase load balancing or CTs installed incorrectly. (e.g. Current Angles going 0,240,120 instead of 0,120,240)

Example



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MODULE 1:
Notification Report

Requirements

- One or more Meters with events
- One or more Login Accounts

Access

- Go to Reports ➢ Notification Report
- Select desired notifications
- Click Submit at bottom of page

Usage

- Lists each of the login accounts visible to the current user, along with columns for each of the selected notifications from the previous screen.
- A notification only needs to be configured in either the Organization Role or the Login Account to be sent.
- For each login account, shows whether they are getting notifications:
  - via email as configured in their Role (blue letter)
  - via SMS as configured in their Role (blue talk bubble)
  - via email as configured in their Login Account (green letter)
  - via SMS as configured in their Login Account (green talk bubble)

Possible Extrapolations

- In the case of prepaid, get an overview of all Login Accounts and whether they are receiving “Ledger Low” notifications.

PNPSCADA

MODULE 1:
Notification Report

Example

Choose which notifications you want to see in the report:

- [ ] All/None toggle
- [ ] A Bill has been captured, please verify it
- [ ] Active Power Over Threshold
- [ ] Active Power Under Threshold
- [ ] Additional Information (Sw)
- [ ] Always Connected Device Connection Restored
- [ ] Always Connected Device Not Connected
- [ ] A New Bill cannot be run for this Meter Account yet
- [ ] A New Bill is available
- [ ] Apparent Power Over Threshold
- [ ] Apparent Power Under Threshold
- [ ] Back Flow
- [ ] Battery voltage OK
- [ ] Calibration Report (Sw)
- [ ] Cannot set Prod=Tot do manual
- [ ] Cannot set Prod=Tot many gaps
- [ ] Change Sensor
- [ ] Change Time
- [ ] Cleared Events
- [ ] Cleared Tamper Data
- [ ] Clear Energy Data
- [ ] Comm. Activity Modification
- [ ] Communications blocked
- [ ] Consumption=0 Total!=0
- [ ] Consumption is less than Total
- [ ] Consumption is more than Total
- [ ] Consumption > Limit (Sw)
- [ ] Contactor Arm Disconnect

Example

Legend

Receiving Email via login settings

Receiving SMS via login settings

Receiving Email via role settings

Receiving SMS via role settings

Name	Login	Meter did not call in	Power Factor Under Threshold
Kevin Baker	eskom kevin		
Eskom IT	eskom eskomit		
Warren Gray	eskom warren		
Online 100	eskom online100		
Xavier Pienaar	eskom Xavier		
Balance Online	eskom balance		
Eskom BMR [*3]	eskom Eskom1		
Arnold Van Der Walt	eskom arnold		
Peter Christodoulou	eskom peter		
Clint Heller	eskom clint		
Clint Heller	eskom clint2		
Eskom Afterhour Project	eskom apex		
Russell Kwong Hing	eskom russell		
Tim Spence	eskom tim		
Ayanda Mphahlele	eskom ayanda		
Name	**Login**	**Meter did not call in**	**Power Factor Under Threshold**
Shane Matheson	eskom shane		
praveen	eskom praveen		
Alastair	eskom alastair		

PNPSCADA

MODULE 1:
Captured Utility Bill vs Verification Meter

Requirements

- Meter Account with one or more previous Bill Runs and Municipal Bills for the same period

Access

- Select desired Meter Account
- Go to View ➢ Profile Graph
- Capture Bills:
  - ❍ Select date range for which a previous Bill Run exists
  - ❍ Go to Tools ➢ Capture Bill
- Draw Report:
  - ❍ Select date range for which one or more previous Bill Runs and Captured Bills exists.
  - ❍ Go to Reports ➢ Captured Utility Bill vs Verification Meter

Usage

- Capture Bills:
  - ❍ At the top, select a date range for which a bill has already been run, against which you want to capture a bill
  - ❍ Enter Invoice Date for the Captured Bill
  - ❍ The Bill Total according to the already run bill is shown
- Draw Report:
  - ❍ Left Axis: Shows values is currency
  - ❍ Bottom Axis: Date Range, divided in months
  - ❍ The graph shows 2 bars per month selected. The red bar is what was billed by PNPSCADA and the blue bar is what was billed according to the captured bill.
  - ❍ At the top a total difference is shown, with a positive value meaning Captured Bill was more and a negative value meaning PNPSCADA was more.

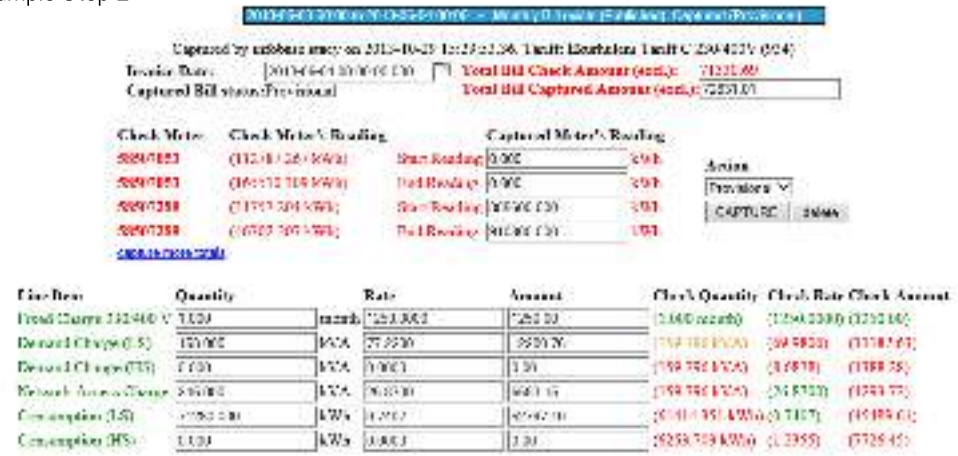
Possible Extrapolations

- Get a graphical overview of the comparison between Captured Bills and PNPSCADA's bills.

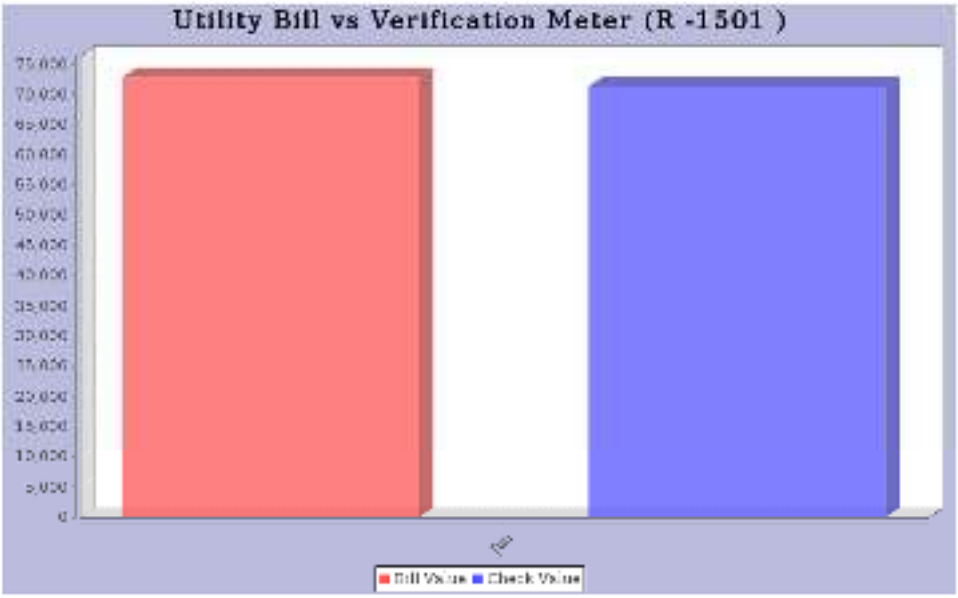
PNPSCADA

MODULE 1:
Captured Utility Bill vs Verification Meter

Example Step 1

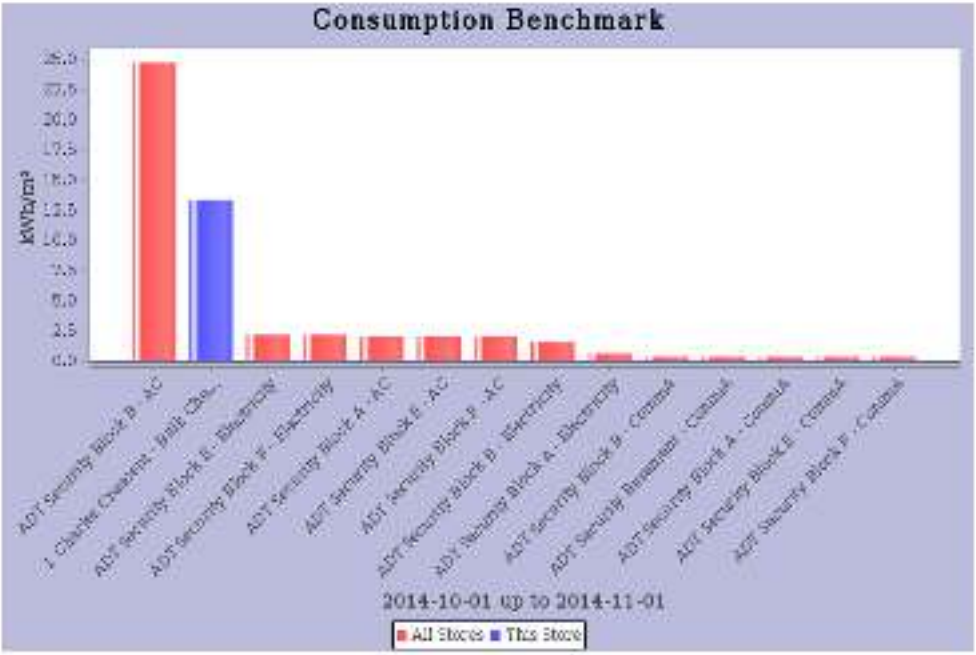


Example Step 2



PNPSCADA

MODULE 1:
Meter Account Benchmark



Meter Account Benchmark incl. Last Year and Meter Account Benchmark incl. Last Year afterhours