Consumption Monitoring - Application Note (for North America)

The SolarEdge cloud-based monitoring platform allows monitoring of the house electricity consumption and self-consumption in addition to the monitoring PV production. Consumption monitoring allows you to adapt your electricity consumption according to the PV production, thus increasing self-consumption and minimizing electricity bills. To monitor consumption using the monitoring platform, a SolarEdge Electricity Meter should be connected to the inverter.

The SolarEdge Electricity Meter enables measuring the power consumption or the import/ export power of a site; the SolarEdge inverter uses these measurements for the following applications:

- Consumption monitoring
- SolarEdge on-grid applications
- Import/ export monitoring for export limitation

The meters can be defined according to their point of connection:

- *Export/ Import meter* - A meter that is installed at the grid connection point and reads the energy/ power exported/ imported to/ from the grid.
- *Consumption meter* - A meter that is installed at the load consumption point and reads the energy/ power consumed by the site.

In addition, production monitoring is available for all inverters connected to the monitoring platform using the inverter energy measurements. For revenue grade production monitoring, you can use a revenue grade inverter (a SolarEdge inverter with a built-in meter).

This document describes the information displayed in the monitoring platform when a consumption meter is installed: PV production, house energy consumption and self-consumption throughout the day.
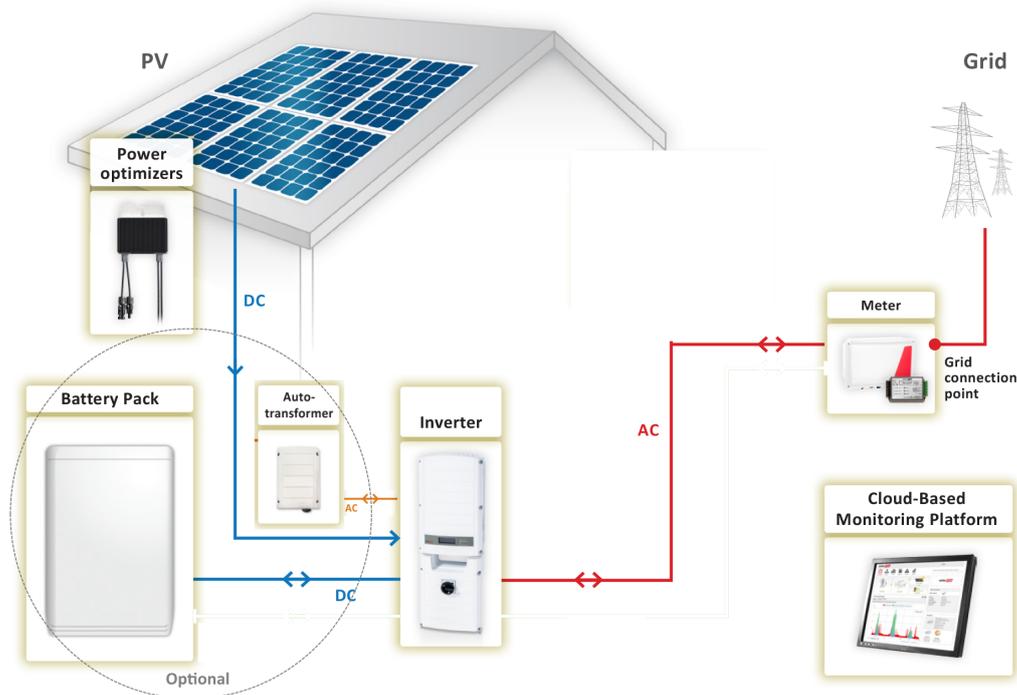

Figure 1: Typical installation with consumption meter

For details about meter installation and configuration refer to http://www.solaredge.com/sites/default/files/electricity_meter_installation_guide_na.pdf.

Make sure the meter is configured correctly for consumption monitoring (using the **Communication ➔ RS485-X Conf.** inverter LCD menu):

- Device Type: Revenue Meter
- Protocol: WattNode
- Meter Func.: Consumption

A meter configured as above is referred to as a consumption meter throughout this document.

Power and Energy Information in the Dashboard

The site dashboard screen in the cloud-based monitoring platform displays power and energy information for a week, month and year. The information is graphically displayed in three panes using the following color-codes (see *Figure 2*):

| Color	Description
Light blue	*Self-consumption* - the PV energy consumed by the site; value and percentage out of the produced / consumed energy
Dark green	*System Production*- the produced PV energy, with value and percentage of exported energy to the grid; out of the produced energy
Red	*Consumption* - the PV energy purchased from the grid; value and percentage out of the consumed energy
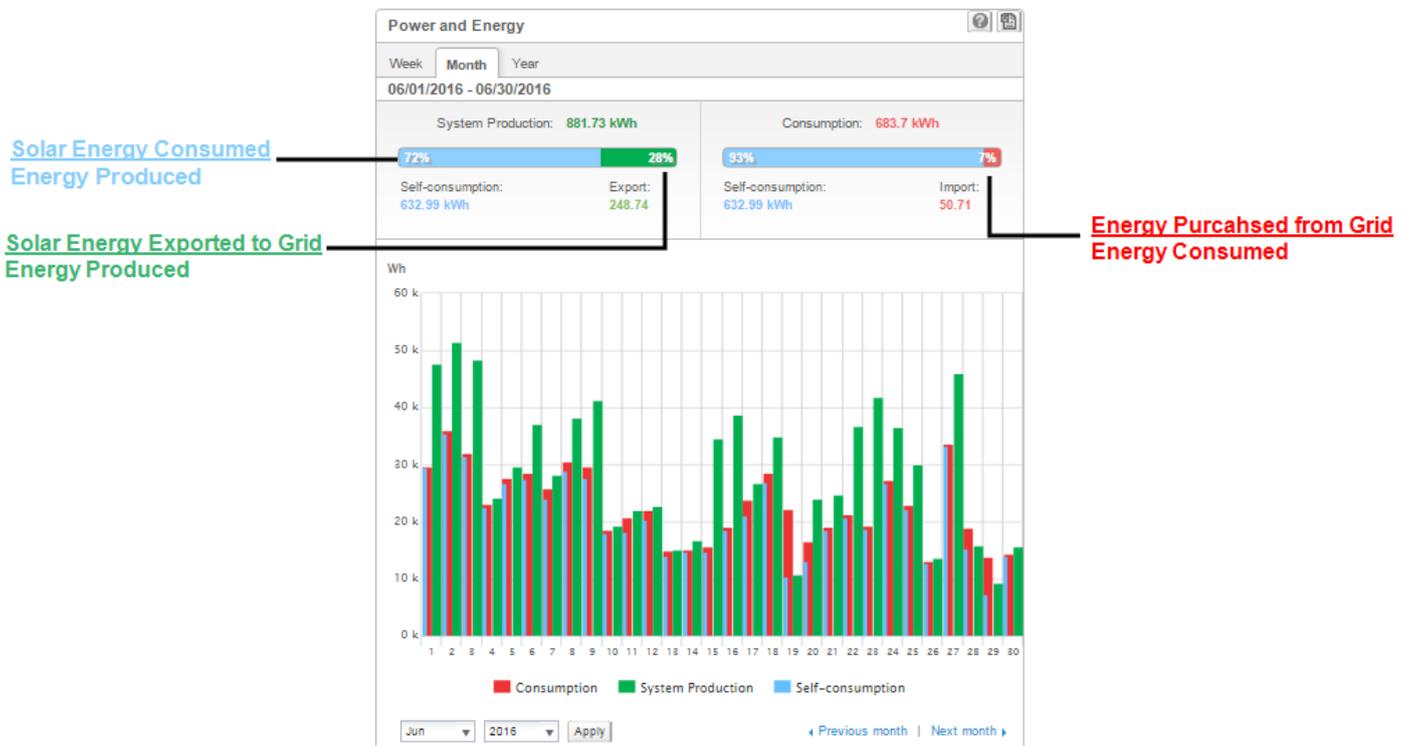
Figure 2: The dashboard window showing monthly information

Zooming-in allows analyzing the energy data by drilling-in as deep as 15-minute intervals. To zoom-in, select an area by clicking, dragging and releasing the mouse. To return to default zoom, click **Reset Zoom** at the top of the chart.

Zooming-in in the Month and Year tabs will change the display from a column chart to an area chart. For StorEdge systems , an additional light-green colored graph is added to the screen: *Solar Production*. This graph represents the power produced by the PV modules.

Hovering over the chart displays information about the specific point: power type (production, self consumption, consumption), value, date and time.

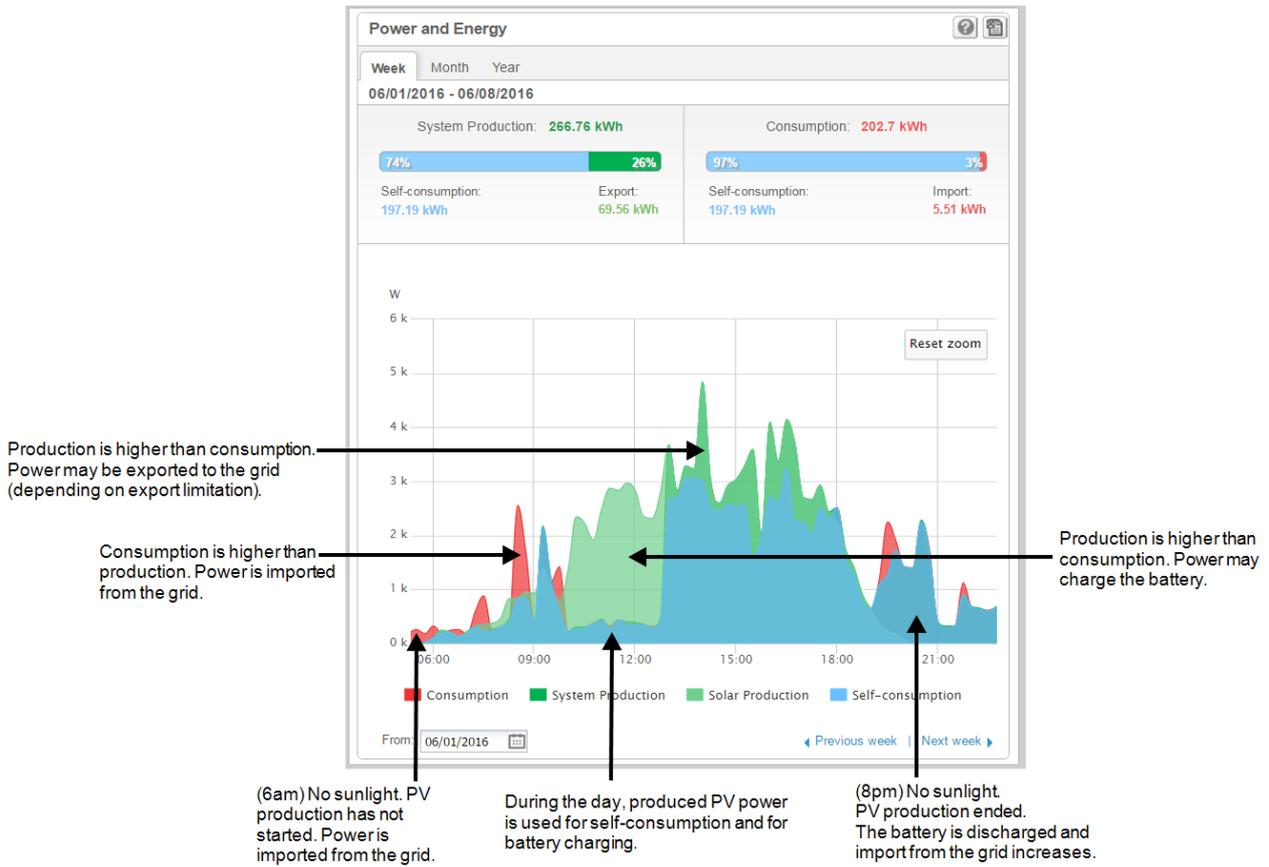The following figure explains the meaning of colors in the graphs.

Figure 3: The Week tab, showing an area chart (zoomed-in)

StorEdge System Information

For StorEdge systems, the cloud-based monitoring platform also provides insight into household PV production and consumption, displaying the power flow between the PV array, battery, grid and house loads as well as tracking real-time system data. The battery discharge and discharge percentage is displayed as well.
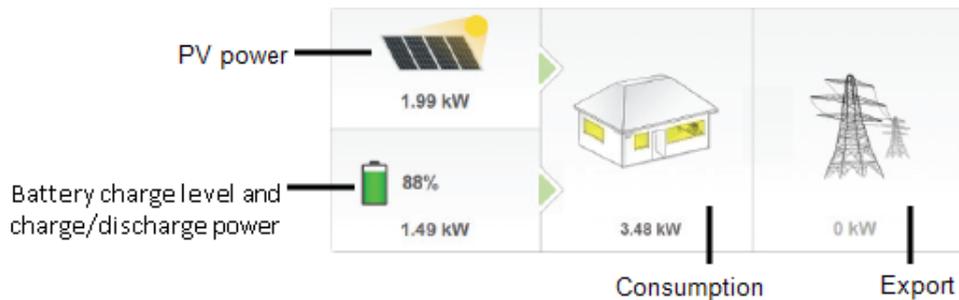

Figure 4: Power flow in the Dashboard window

Meter Details in the Logical Layout Tab

You can view the readings of installed and calculated meters in the monitoring platform Dashboard. Calculated meter readings (also referred to as "virtual meters"), such as self-consumption, are calculated using the data measured by the meter and the inverter(s).

Verify that the meter type is set correctly in the **Admin** page > **Logical Layout** > **Meter** details:
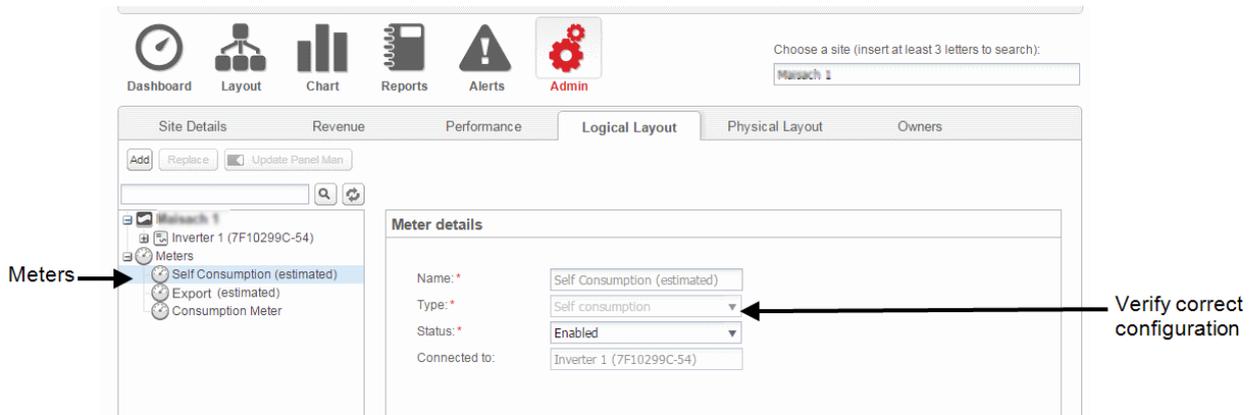

Figure 5: Setting the Meter details in the monitoring platform

The production data originates from the inverter and not the meter.

The displayed data depends on the meter(s) location: grid connection point (export), or load consumption point (consumption). The tables below detail the displayed information per meter location.

Export Meter:

Data	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts
Production	✔	✔
Consumption	✔ (calculated)	✔ (calculated)
Self-consumption	✔ (calculated)	✔ (calculated)
Export	X	✔
Import	X	✔

Consumption Meter:

Data	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts
Production	✔	✔
Consumption	✔	✔
Self-consumption	✔ (calculated)	✔ (calculated)
Export	X	✔ (calculated)
Import	X	X

The data from the inverters and from installed meters is displayed in the Dashboard and Charts tabs of the monitoring platform.