

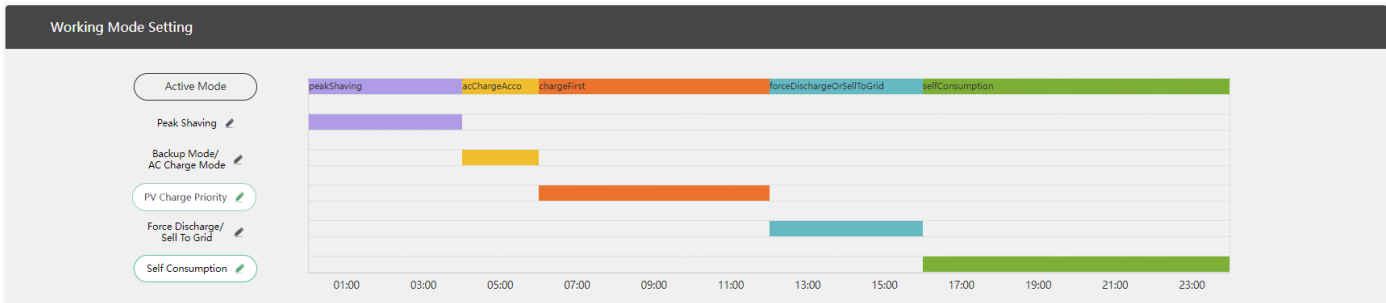
## EG4<sup>®</sup> 18KPV MONITOR SYSTEM WORKING MODES



The EG4 18kPV Hybrid Inverter has several different preset working modes that allow the user to configure the system to meet their demands through extensive customization. By following this guide, the user can easily set the station's needs depending on the time of day among several other factors.

The image below represents an 18kPV ESS configured for the user's demands through the monitoring software. Each colored bar represents a specific working mode.

## Working Mode Setting Example:



From 0:00 to 04:00 the system will be in peak-shaving mode to prevent and/or limit using the grid during periods of peak electrical prices. From 04:00 to 06:00 the system will utilize grid power as top priority to charge the batteries. From 06:00 to 12:00, the system is configured to charge batteries using solar as the top priority with grid as the backup. From 12:00 to 16:00, the system is set to use battery power as top priority for loads and/or selling back to the grid. From 16:00 to 24:00, the system will be set into self-consumption mode to power loads from battery as top priority with solar as a backup.

## Working Mode Definitions:

**Self-Consumption Mode:** The system will operate in a pre-set priority system. In this mode, the user will experience the inverter drawing power from the solar arrays to power the loads. When/if the solar power is insufficient, the inverter will then draw from the battery bank for loads. Only as a last resort will the inverter switch to bypass mode to power loads from AC input.

### Backup/AC Charge Mode

The system will operate in a pre-set priority system. In this mode, the user will experience the inverter drawing power from the solar arrays to power the loads. When/if the solar power is insufficient, the inverter will then switch to bypass mode to power loads from AC input. The inverter will only power loads with battery when there are no other options.

### Force Discharge/Sell To Grid

The user can configure the inverter to forcefully sell PV and/or battery power back to the grid through a combination of settings.

### Peak Shaving

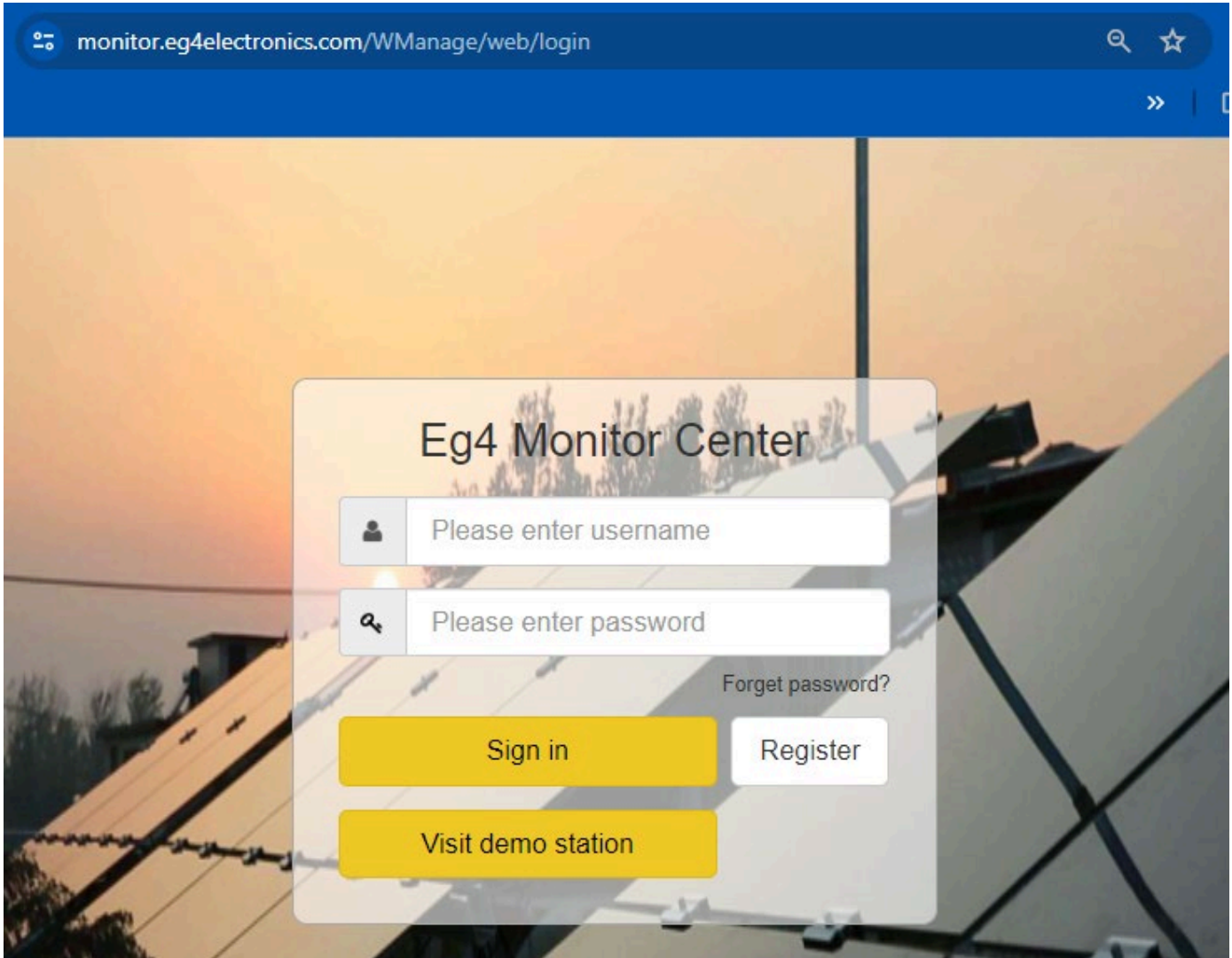
Peak shaving is used to avoid peak demand charges from the grid by using a combination of settings to limit the power drawn from the grid.

### PV Charge Priority

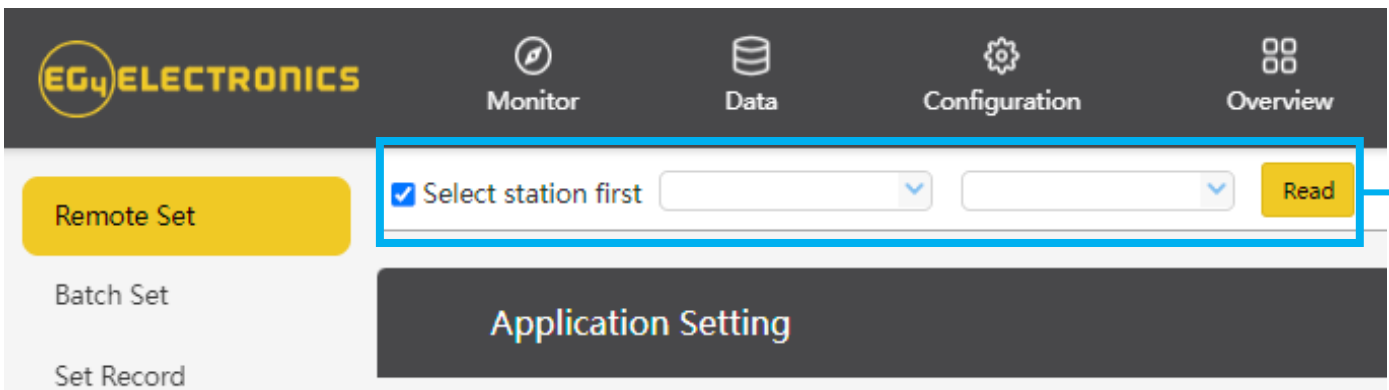
This mode allows the user to prioritize battery charging from PV, specifically. If there is excess PV power after the batteries are charged, then the inverter will utilize the excess power to send to loads.

To activate these different working modes, the user must login to the EG4 Monitoring System through a web browser. Follow the steps listed in this guide to navigate to the working modes section of the monitoring system.

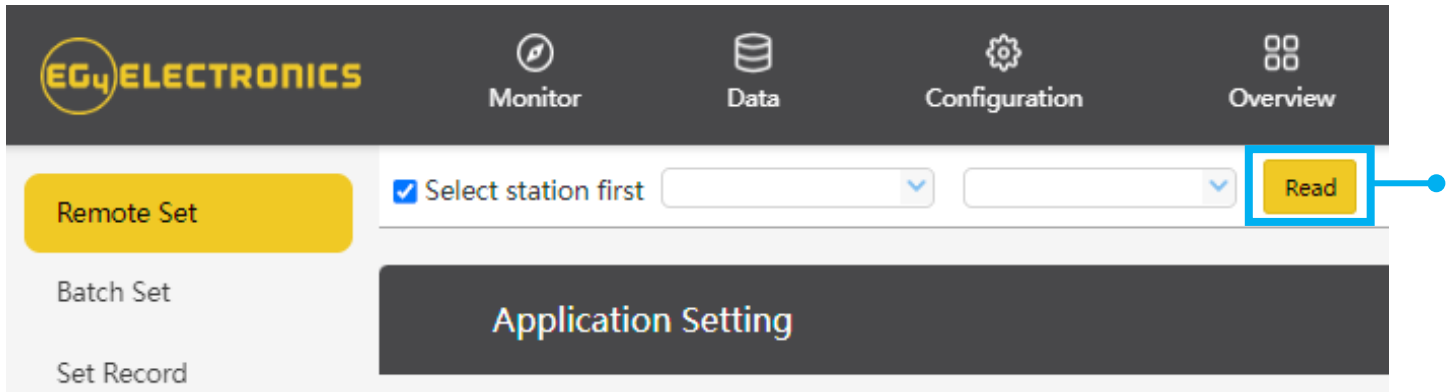
## 1. Login to the EG4 monitor center.



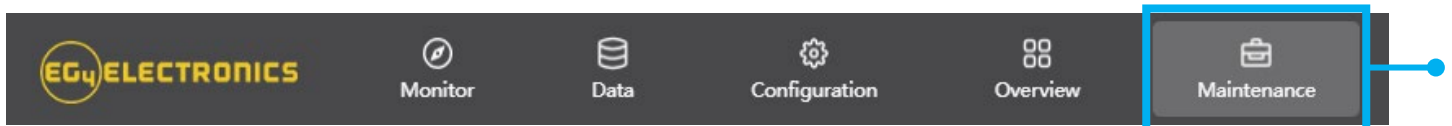
## 2. Select the station to be configured.



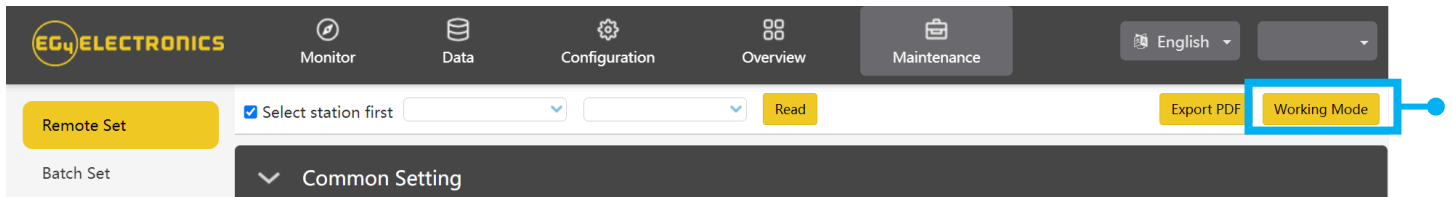
### 3. Select “Read”.



### 4. Navigate to the “Maintenance” tab.



### 5. Select “Working Mode” in the top-right corner.

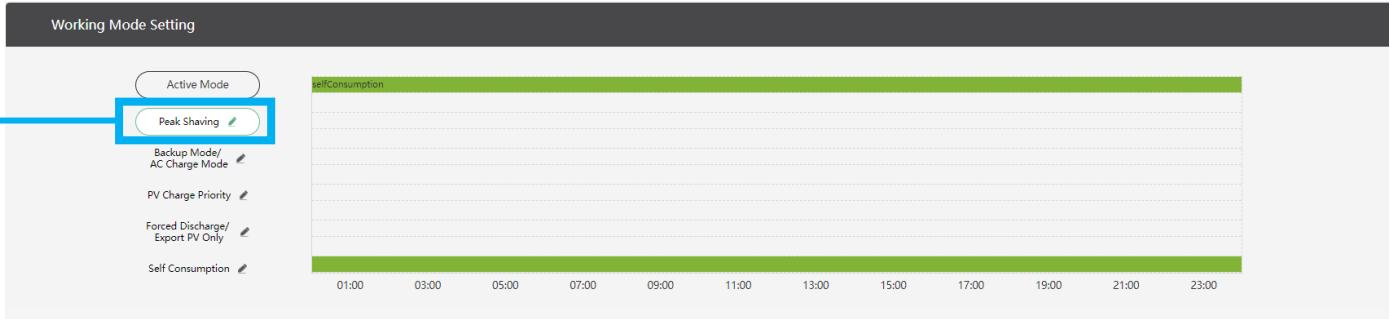


### 6. Scroll down past “Application Setting” and find the “Working Mode Setting” section.

The user will now have direct access to configure the system to their own needs by utilizing a combination of settings and time of use periods.

The following section describes the different modes of operation and descriptions of each setting associated with each mode.

## Peak Shaving



Grid Peak-Shaving (?)  Enable  Disable

**Grid Peak-Shaving Power(kW)**

Start Peak-Shaving Volt 1(V)

Start Peak-Shaving SOC 1(%)

**Start**    **End**

**Grid Peak-Shaving Power2(kW)**

Start Peak-Shaving Volt 2(V)

Start Peak-Shaving SOC 2(%)

**Start**    **End**

When setting the station into this mode, the inverter will use peak-shaving to avoid peak demand charges from the grid. The user will be able to configure the system to pull limited (or no) power from the grid for charging batteries or powering loads by setting maximum power in kW, according to SOC/voltage, and by setting time of use.

Upon selecting the working mode, the system must be configured using the settings listed below:

### Grid Peak-Shaving

*Enable or disable grid peak-shaving.*

### Grid Peak-Shaving Power(kW)/Grid Peak-Shaving Power2(kW)

*Set the maximum amount of power that will be drawn from the grid.*

### Start Peak-Shaving Volt 1(V)/Start Peak-Shaving Volt 2(V)

*Set the starting point of peak-shaving when using voltage setpoints for batteries.*

### Start Peak-Shaving SOC 1(%) / Start Peak-Shaving SOC 2(%)

*Set the starting point of peak-shaving when using SOC setpoints for batteries.*

### T1/T2 Start

*Set the start time of peak-shaving depending on SOC/voltage as configured above.*

### T1/T2 End

*Set the end time of peak-shaving depending on SOC/voltage as configured above.*

## Backup/AC Charge Mode

The screenshot shows the 'Working Mode Setting' interface. The 'Backup/AC Charge Mode' is selected and highlighted. Below this, there are several configuration sections:

- AC Charge Enable:** A toggle switch set to 'Disable'.
- AC Charge Power(kW):** A slider and input field set to 6 kW.
- AC Charge Based On:** A dropdown menu set to 'Time (A)'.
- Backup / Stop AC charge SOC(%):** An input field set to 75.
- Backup / Stop AC charge Volt(V):** An input field set to 58.
- Battery Backup Mode:** A toggle switch set to 'Disable'.
- Battery Backup Mode Table:** A table with three rows (T1, T2, T3) and two columns (Start, End). Each row has input fields for time (00:00) and a 'Set' button.

When setting the station into Backup/AC Charge mode, the user can configure the system to prioritize charging batteries from grid power. The user can configure to charge with grid based on maximum power in kW, SOC/voltage, and by setting times of use.

Upon selecting the working mode, the system must be configured using the settings listed below:

### AC Charge Enable

Enable or disable the system's ability to charge batteries from the grid.

### AC Charge Power(kw)

Set the maximum power drawn from the grid to charge batteries.

### AC Charge Based On(SOC/Volt/Time)

Configure how the system will charge batteries from the grid by setting custom voltage points, SOC% of batteries, or by time.

### Backup/Stop AC charge SOC(%) / Volt (V)

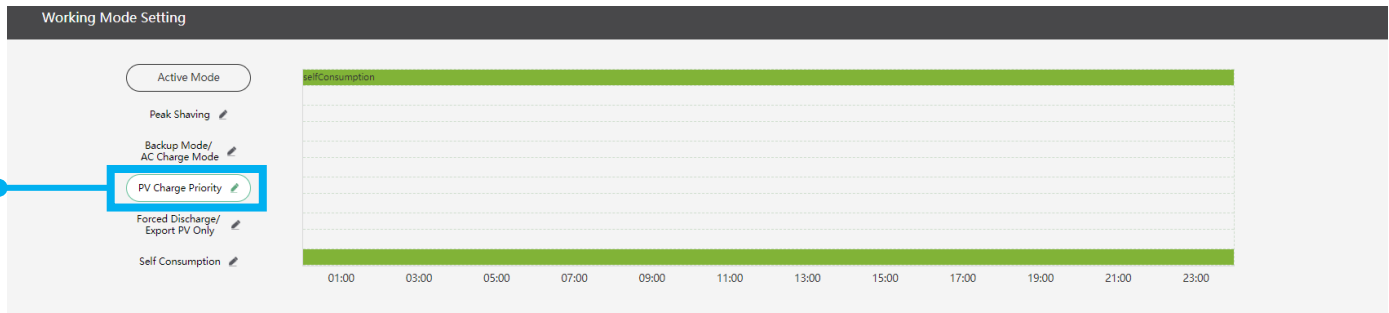
Percentage at which the system will stop charging batteries from the Grid.

### Battery Backup Mode:

When enabled, the system will use the batteries as a last resort during the set timeframes.

## PV Charge Priority

When setting the station into this mode, the order of priority for solar will be Battery > Load > Grid.



The screenshot shows the 'AC Charge' settings panel. It includes fields for 'AC Charge Enable' (Enable/Disable), 'AC Charge Based On' (Time), 'Start AC Charge SOC(%)' (20), 'Start AC Charge Volt(V)' (56), 'AC Charge Power(kW)' (6), 'Stop AC Charge SOC(%)' (75), and 'Stop AC Charge Volt(V)' (58).

During the PV Charge Priority period, loads are first supplied from grid power. If there is excess solar power after charging the batteries, the excess solar will power the loads along with the grid.

Upon selecting the working mode, the system must be configured using the settings listed below:

### **PV Charge Priority**

*Enable or disable the battery priority/PV Charge Priority working mode.*

### **PV Charge Power(kW)**

*Set the maximum amount of power to charge the batteries from solar.*

### **PV Charge Priority Stop SOC(%)**

*Set the stop point for Battery Priority according to SOC%.*

### **Battery Priority Stop Volt(V)**

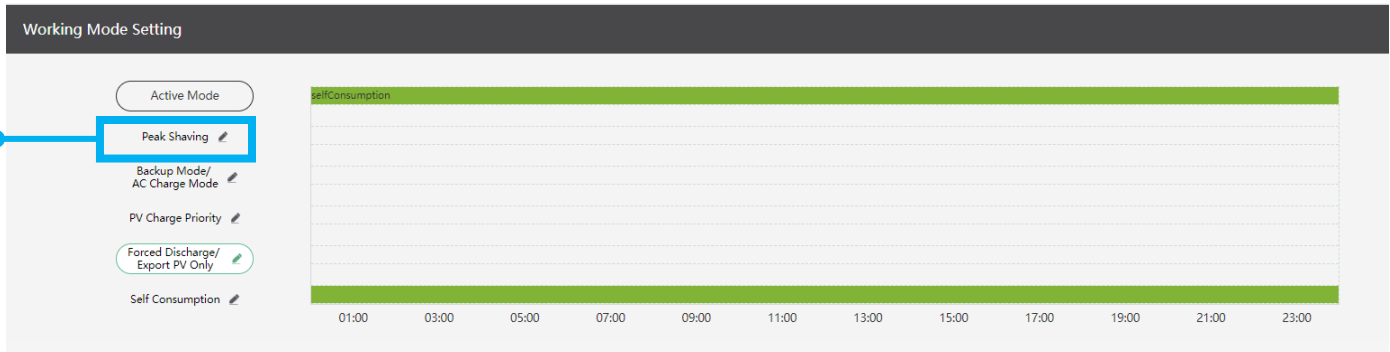
*Set the stop point for Battery Priority according to voltage.*

### **T1/T2/T3**

*Set up to 3 different start and stop times for the PV Charge Priority working mode.*

## Force Discharge/Sell To Grid

When setting the station into this mode, the batteries will be forced to discharge within the set periods of time. During this period, the inverter will discharge the battery at the power set by “Forced Discharge Power(kW)” until the battery SOC or voltage set point reaches the “Stop Discharge” value.



Upon selecting the working mode, the system must be configured using the settings listed below:

### Forced Discharge Enable

Enable this setting to forcefully discharge the station’s battery bank.

### Export PV Only

Enable this setting to sell back generated PV power to the grid.

### Forced Discharge Power(kW)

Set the maximum power limit of battery discharge.

### Stop Discharge SOC(%)

Stop the forced discharge upon reaching the set SOC%.

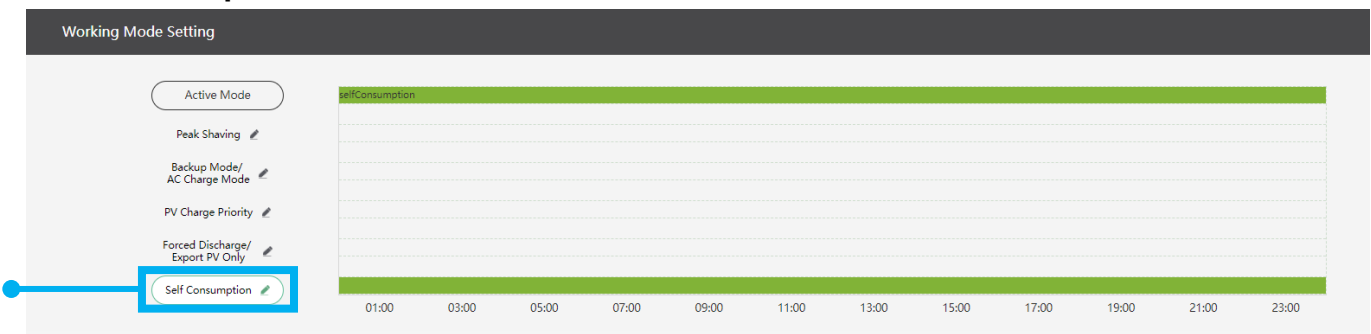
### Stop Discharge Volt(V)

Stop the forced discharge upon reaching the set voltage point.

### T1/T2/T3

Set up to 3 different start and stop times for the Force Discharge/Sell To Grid working mode.

## Self-Consumption



The station will default to Self-Consumption mode. The order of priority for powering loads is Solar > Battery > Grid. The order priority for solar power is Load > Battery > Grid which creates an ideal scenario when needing to prioritize solar power generation over other types of power.