

Vendor Notes On Solar Panels

A photovoltaic (PV) system with battery storage works dynamically based on the relationship between solar generation and load demand. Here's how it operates under different load conditions:

1. No Load (Zero Consumption)

- If there is no domestic load, the electricity generated by the PV system is managed as follows:
 - **First, charge the battery:** If the battery is not fully charged, the PV power will be directed to charge it.
 - **Then, export to the grid (if applicable):** If the battery is fully charged and there is a grid connection, excess power is exported to the grid.
 - **Curtailement (if necessary):** If neither battery charging nor grid export is available, the PV system may reduce its output to prevent overvoltage.

2. Load is Less Than PV Generation

- When the domestic load is smaller than the power generated by the PV system:
 - **First, supply the load:** The PV power will first meet the household energy demand.
 - **Then, charge the battery:** The excess PV power will be stored in the battery.
 - **Then, export to the grid (if applicable):** If the battery is full, any remaining power is sent to the grid.
 - **Possible inverter curtailement:** If there's no grid export allowed and the battery is full, the inverter may reduce the PV output.

3. Load is Greater Than PV Generation

- When the domestic load is higher than what the PV system produces:
 - **First, supply power from the PV system:** The solar power is used to meet part of the load.
 - **Then, use battery storage:** The battery discharges to make up for the shortfall if it has sufficient stored energy.
 - **Finally, draw from the grid (if needed):** If both PV and battery power are insufficient, the remaining demand is met by importing electricity from the grid.

This dynamic operation ensures optimal use of solar energy while reducing grid dependence and maximizing self-consumption.