IQ Battery usable capacity

This document outlines the total usable energy capacity of the IQ Battery. The usable capacity includes a 2% State of Charge (SoC) reserved to protect the customer's assets, such as the battery unit. This reserved capacity is known as the safety-critical limit or Extremely Low SoC (ELS).

For instance, if the AC circuit breaker trips and the battery drops to 2% SoC while the homeowner is away for an extended period with no grid energy available, the battery will remain in this low state. Upon the homeowner's return and restoration of the AC supply, the battery will resume normal operation. Unlike batteries from other suppliers, it will not enter an unrecoverable state, requiring a Return Merchandise Authorization (RMA).

This safety-critical limit capacity is exclusively used to protect the homeowner's assets and is only usable under certain conditions.

Additionally, the battery maintains a 3%* SoC as a safety limit. This 3% reserved capacity is called Battery shutdown level or Very Low SoC (VLS). When the battery reaches this safety limit, it stops supporting loads and uses this reserved energy for daily sustenance of the battery electronics and status reporting. This safety limit ensures the battery electronics remain active and allows the battery to start charging from PV sources when the sun rises.

Failing to maintain the VLS would result in the battery continuously drawing energy from the grid to keep the electronics active. Unlike other suppliers who rely on grid energy for standby purposes, Enphase prefers to use green energy generated during the day for battery sustenance. The battery uses this safety limit daily once the 5%* SoC level is reached.
Therefore, the battery cycles from 100% to 5%* when discharged and back to 100% when charged. Note that one battery cycle is considered complete when a full charge and discharge of the entire battery capacity including the VLS and ELS capacity.

*In exceptional instances, for backup systems utilizing the IQ Battery in conjunction with non-grid-forming Enphase PV microinverters (IQ7 or earlier) or third-party PV inverters, the Battery shutdown level or Very Low SoC (VLS) is defined as 8%. Therefore, the battery cycles from 100% to 10% (VLS + ELS) when discharged and back to 100% when charged.

Revision history

Revision	Date	Description
TEN-00031-2.0	November 2024	Updated the VLS value in the footnote.
TEN-00031-1.0	October 2024	Initial release.