IQ Battery commissioning in grid-tied applications using Enphase Installer App 3.X

Overview

This document is intended for Enphase certified Storage installers who are commissioning IQ Batteries in grid-tied applications. Follow the steps below to establish successful communication between IQ Batteries and IQ Gateway and validate that the system is operating as designed.

It also covers the steps to decommissioning an IQ Battery for replacement and how to perform a range test when planning the installation to confirm robust communication between the devices on-site.

Contents

## Preparing for Enphase Installer App (previously Installer Toolkit) Communications

The following process assumes that all IQ Batteries have been installed in a code-compliant manner, tested for appropriate voltages, and are ready to be energized.

- For all products, always follow the safety instructions and instructions in the Enphase Quick Install Guides and Installation Manuals.
- IQ Batteries are commissioned using Enphase Installer App. Ensure that Enphase Installer App is updated to version 3.X or later:

Legacy Installer Toolkit 2.0 (not used with IQ Battery storage systems)

New Enphase Installer App 3.0 (used with IQ Battery storage systems)

- You can install the application using the following links
    - iOS
    - Android

- Enable Bluetooth communication on the smart phone or tablet you will use for commissioning.

- Turn OFF automatic sleep mode on your smart phone or tablet. This prevents your mobile device from going to sleep and interrupting the IQ Gateway Metered software upgrade.
    - o In iOS, this setting is called "Auto Lock" and can be changed to "never" under "display and brightness"
    - o In Android, this setting is called "screen saver" and can be changed to "never" under settings, display, advanced display.
    - o After commissioning is complete, you can reset the mobile device to automatic sleep.
- Ensure that the Enphase IQ Gateway Metered has software version 7.4.X for commissioning and operation of IQ Batteries by button displays "Up to Date"
    - o You can update the IQ Gateway software using Enphase Installer App.
    - o You must create a system activation before commissioning if the activation does not already exist.
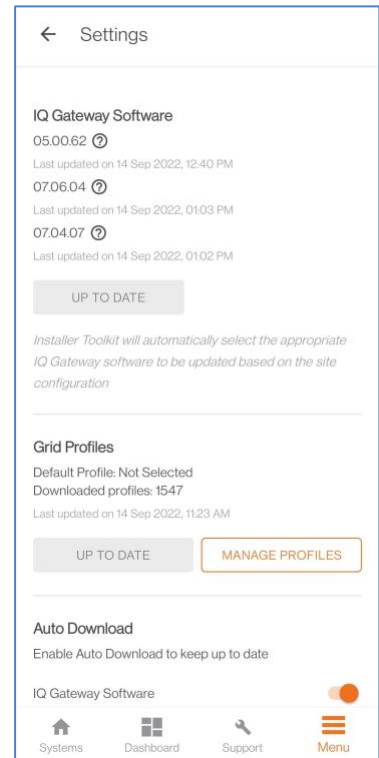
- If you must create a site, you can do this before going to the site using the Enphase Installer Portal ([Click here](#)) or, on-site, using the Enphase Installer App.
    - o Creating an activation beforehand will save time in the field. Please refer to this document to [know more](#) about activation in Enphase Installer Platform
    - o Ensure that Enphase Installer App has Internet access (cellular data or Wi-Fi).

- Before going to site, ensure that the IQ Gateway software 7.4.X has been downloaded to the mobile device
    - o The **Settings** tab in Enphase Installer App has an IQ Gateway Software section with an **Update Now** button for downloading IQ Gateway Metered software.
    - o Users will see different versions of software. Enphase Installer App will autoselect the right version for IQ Batteries and Enphase PV only sites.

- Informative notes:
    - o IQ Batteries ship with approximately 30% state of charge.
    - o IQ Batteries ship with "Self-Consumption" as their default mode.
    - o If an IQ Battery has a very low state of charge (typically 5%) when it arrives to a site, provided it is connected to the AC side with its DC switch on, it can be commissioned. IQ Battery housekeeping supply will get power from AC supply during commissioning and IQ Battery can communicate with the IQ Gateway Metered.

        Sept 30th, 2022   Enphase Installer App 3.26.1

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Commissioning Instructions

Date and time at start of commissioning: _____

Address: _____

System being commissioned: _____

Installer company: _____

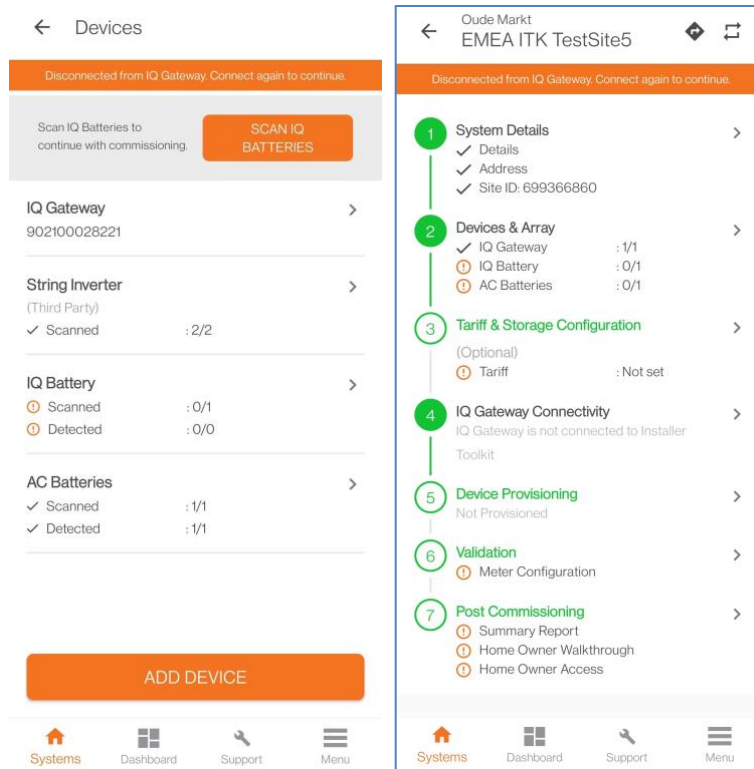Individual (name and email) overseeing commissioning: _____

- Perform the following steps, and mark completed steps in the check boxes provided on the left side of the page.
- Initial the bottom of each page showing all steps on that page are complete.

Commissioning Process

☐ A.   Open Enphase Installer App. Tap the **Systems** tab in the lower left side of the screen.

☐ B.   If an activation has not previously been completed using Enphase Installer Portal, complete Step 1 in Enphase Installer App (input system details including address, grid profile, etc.).

☐ B.1.   When installing IQ Batteries on a previously completed system activation tap on the right system

☐ B.2.   **If you will install using a string inverter with IQ Battery and not microinverters** - Please check the 'Is String Inverter Present?' checkbox in system details form. If the system already exits, please edit the 'system details' to select this option.

C.   Enphase Installer App Step 2, **Devices & Array**:

          Sept 30th, 2022   Enphase Installer App 3.26.1

_____ Installer Initials: All steps complete on this page

☐ C.1. Enter the total count of each device type to be added in the system.

C.1.1. Enter the IQ Gateway serial number using camera scanner or by entering the serial number manually

☐ C.1.2. Enphase Installer App can use your mobile device camera to scan IQ Battery and Range Extender serial numbers. Also select the appropriate phase for each IQ Battery.

C.1.3. A power line scan can be used to detect the microinverters, however we strongly recommend that you use the barcode scanning feature in the Enphase Installer App to add the microinverters to the system. In locations where there are other nearby Enphase installations the line scan can "poach" an incorrect serial number from a nearby site.

C.1.4. If retrofitting IQ Battery to an existing site, microinverters will appear in the activation

C.1.5. **If you will install using a string inverter with IQ Battery and not microinverters,** string inverter details can be added, including the manufacturer, DC and AC capacity of the inverters.

Sept 30th, 2022   Enphase Installer App 3.26.1

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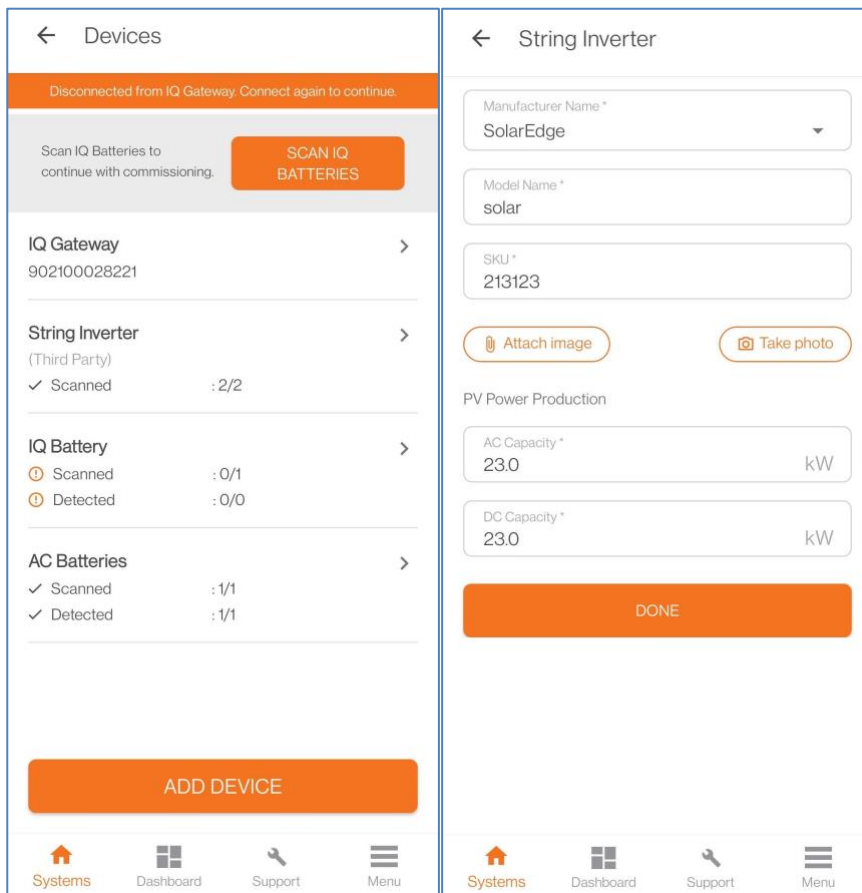
C.1.6. **Note:** The LED status indicator on the IQ Batteries, and state of charge in Enphase Installer App will be inaccurate until IQ Gateway software is updated at the end of **Step E**

 Sept 30th, 2022 Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

D. Enphase Installer App Step 3, **Set Utility Tariff** (Optional)

☐ Tap on the "Tariff Editor" and then "Add Electricity Import Rate" . Please ensure you are connected to Internet to complete this step.
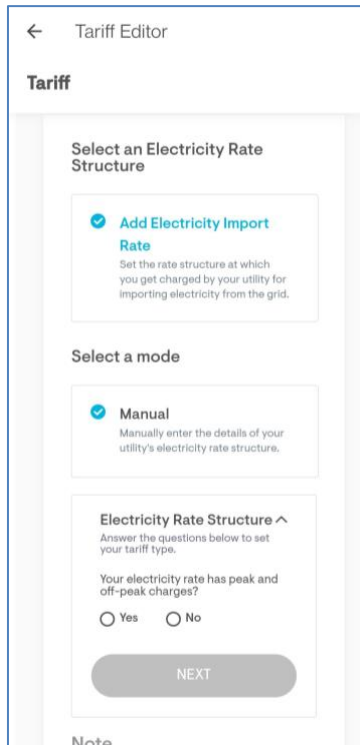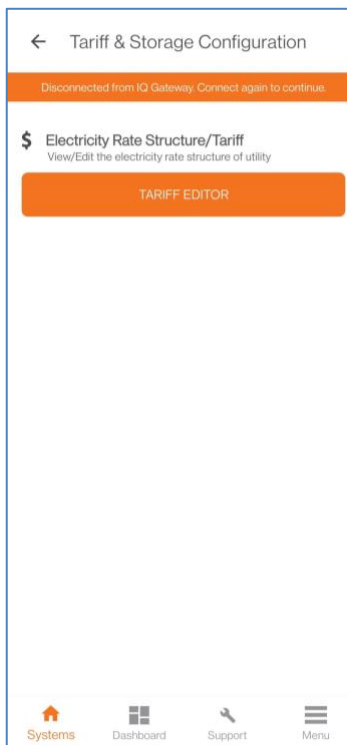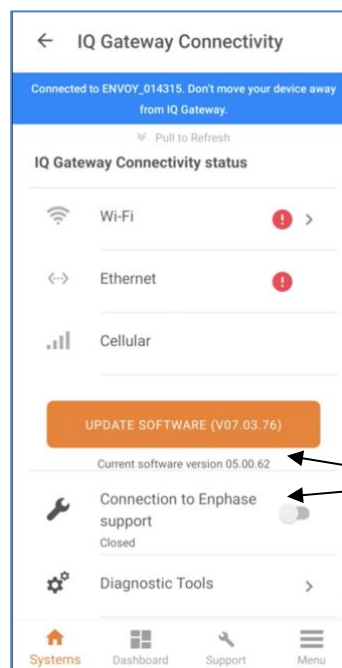
E. Enphase Installer App Step 4, **IQ Gateway Connectivity**:

E.1. This brings up the screen showing your mobile device's connectivity to the web and to the IQ Gateway Metered.

E.2. Your mobile device should be shown as connected to the web, but not to the IQ Gateway Metered.

E.3. To provision devices, connect to the IQ Gateway Metered using AP Mode

☐ E.4. On the IQ Gateway Metered, press the AP (Access Point) mode button (top button) for about one second. The LED will turn solid green.

☐ E.5. Go to your mobile device's settings and connect to the IQ Gateway's broadcast Wi-Fi network.

☐ E.6. This will show as an available Wi-Fi network with the name "ENVOY_XXXXXX" where the last six characters are the last six digits of the IQ Gateway serial number. Connect to this network.

☐ E.7. Once connected, Enphase Installer App will show your mobile device is connected to the IQ Gateway Metered, but not to the web, if the IQ Gateway is not connected to the

Sept 30th, 2022   Enphase Installer App 3.26.1

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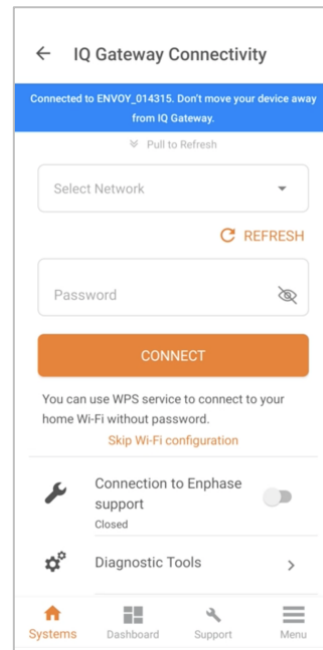
internet via LAN cable. We strongly recommend to use LAN cable to connect the IQ Gateway to the internet, if the wifi network signal is weak.

E.7.1. If there are issues connecting to this network, turn AP Mode OFF and ON again by repeating Steps E.4 through E.7. If this fails several times, a hard reboot of the IQ Gateway Metered is advised.

☐ E.8. Configure the IQ Gateway Metered with Wi-Fi or Ethernet connectivity. You must input network and password information in the Wi-Fi section. If connecting using Ethernet, select 'Skip Wi-Fi configuration' and simply plug the cable into the IQ Gateway. If Ethernet/Wi-Fi is not connected, the user will be blocked from provisioning.

☐ E.9. Before device provisioning can occur, ensure that the IQ Gateway Metered has appropriate software version

E.9.1. 7.4.X (or later) installed for IQ Batteries to be commissioned. Tap **Update Software** to complete this process (takes approximately 30 minutes).

☐ E.9.2. Ensure that the mobile device is close to the IQ Gateway Metered, and do not move the mobile device away during the updating process. Moving the mobile device away could cause problems.

E.9.3. Your mobile device screen must stay active while this update occurs. Allowing your mobile device to go to sleep will interrupt the update. Do not switch to different apps on your mobile device during the update process.

E.9.4. After the software update, IQ Gateway Metered will restart.

E.9.4.1 While the IQ Gateway Metered is restarting, all four LEDs will flash red in unison or the LEDs will sequentially flash green (top to bottom)

E.9.4.2 Once the restart is complete, the network communications LED will light solid green.

E.9.5. After the IQ Gateway Metered reboots, you will lose AP mode connectivity on your mobile device. Once the IQ Gateway Metered has rebooted successfully, reconnect to AP mode.

E.9.5.1 If you have issues connecting to AP mode, turn OFF AP mode ON the IQ Gateway Metered by pressing the AP mode button for one second, and then "forget" the AP mode network in your mobile device Wi-Fi settings.

E.9.5.2 Repeat Steps E.4 to E.6 to reconnect to the IQ Gateway Metered.

E.9.6. Configure Wi-Fi or Ethernet in the options.

E.9.6.1 The IQ Gateway Metered requires a means of communicating to the web to display Internet connectivity. Ensure that the IQ Gateway Metered Wi-Fi access has been configured, or that the Ethernet connection is established.

E.9.6.2 If, after completing the previous step, the IQ Gateway Metered software version shown on the **Update Software** button does not match the IQ Gateway Metered software version shown below the button in the App, then the upgrade has failed, and you must tap **Update Software** again.

_____Installer Initials: All steps complete on this page

☐ E.9.7. Tap Start Provisioning Devices at the bottom of the IQ Gateway Metered Connectivity screen.

F.   Enphase Installer App Step 5, **Provisioning Devices**:

   F.1. You must be Ensemble Storage training certified to provision IQ Batteries. If you are not, you will be asked to select a certified user from your company. You can refer the [Certification support](#) page to know more.
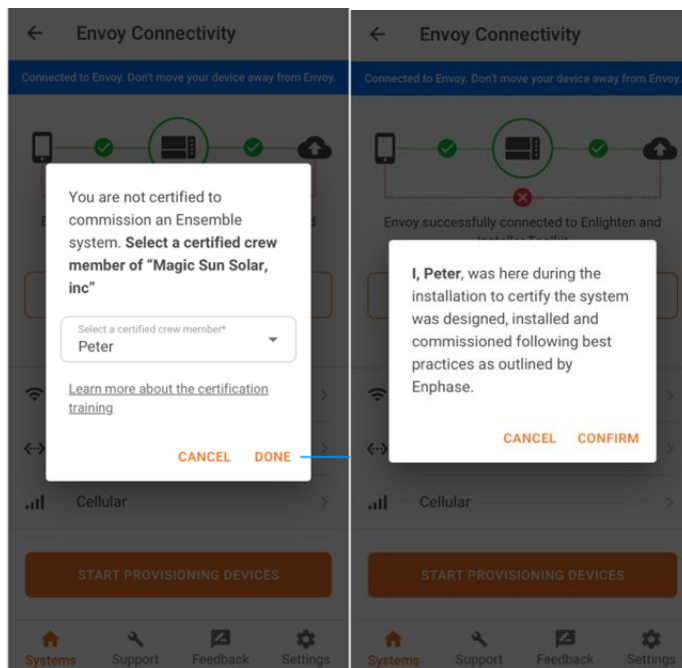
☐ F.2. Ensure that the Communications Kit (COMMS-KIT-EU-01) is plugged into one of the IQ Gateway Metered USB ports. It takes up to 5 minutes after the eSW update before the USB-port on the IQ Gateway Metered is powered on.

   F.2.1. Device provisioning will not be successful if the following are not complete

      F.2.1.1 COMMS-KIT-EU-01 not plugged in.

      F.2.1.2 IQ Gateway Metered is not connected to Wi-Fi or Ethernet.

      F.2.1.3 Installer is not Ensemble Storage Certified.

      F.2.1.4 IQ Battery AC circuits are not powered on.

   F.3. Enphase Installer App will begin provisioning all devices, and several steps will occur (this takes three to six minutes):

☐ F.3.1.1 The grid profile will be updated.

☐ F.3.1.2 The tariff will be updated only if the single rate was set in Step D.

☐ F.3.1.3 The Enphase microinverters OR String Inverter will be provisioned.

☐ F.3.1.4 The Range Extender will be provisioned.

☐ F.3.1.5 The IQ Batteries will be provisioned.

      F.3.1.6 During provisioning, the status flows as follows:

         F.3.1.6.1 **Discovered / not discovered** - Enphase Installer App is able to discover the device using Bluetooth (BLE) on your mobile device. Please stay close to the Batteries when getting discovered.

     Sept 30th, 2022   Enphase Installer App 3.26.1

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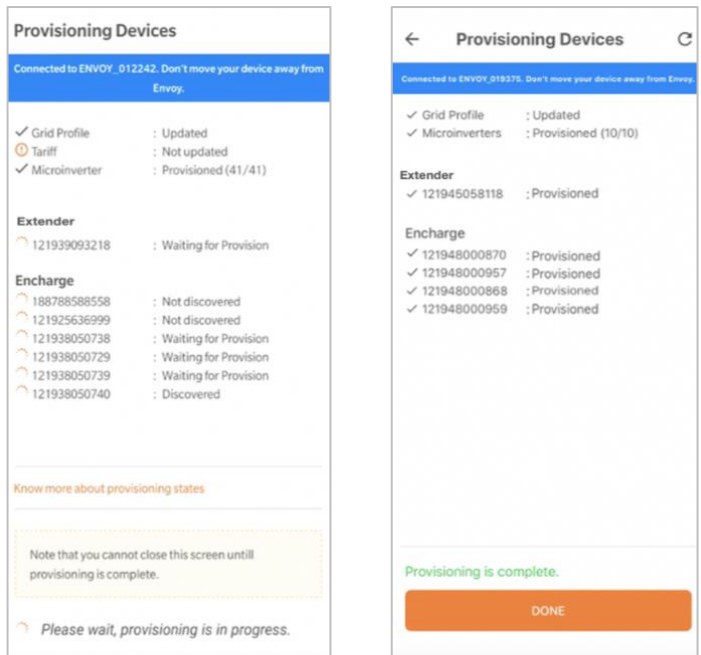
F.3.1.6.2 **Waiting for provisioning** - The initial communication is being established. Enphase Installer App is sending network information to the IQ Batteries and Range Extender using BLE. Please continue to remain close to Batteries.

F.3.1.6.3 **Waiting for acknowledgement** - The IQ Gateway Metered is trying to communicate with the IQ Batteries and Range Extender using the wireless 2.4 GHz radio.

F.3.1.6.4 **Provisioned** - IQ Gateway Metered can communicate with the IQ Batteries and Range Extender.

F.3.1.7 Once provisioning is complete, click **Done**.

G. Confirm that the IQ Batteries are communicating with the IQ Gateway Metered by checking Enphase Installer App Step 2: **Device & Array**. The IQ Batteries should display "communicating" as follows:

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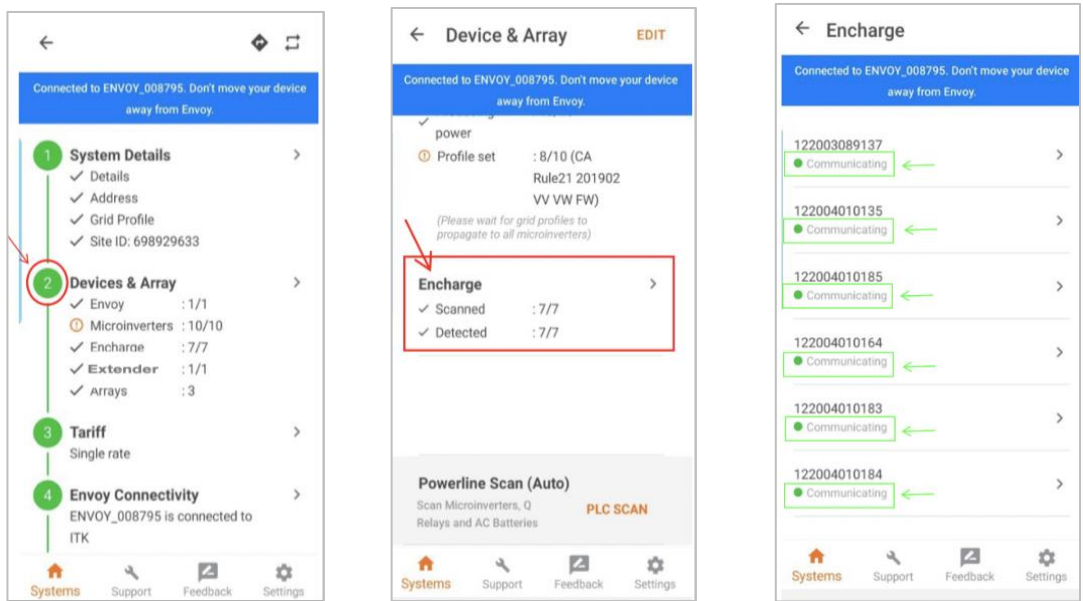
G.1. In Enphase Installer App, LED status and state of charge will now display accurately.

G.2. If the IQ Batteries are not communicating to IQ Gateway Metered, follow these steps to power cycle the batteries:

G.2.1.1 Turn OFF the DC disconnect switches for all batteries.

G.2.1.2 Turn OFF the AC breakers (Branch circuit protection) connecting all the batteries.

G.2.1.3 Wait for at least two minutes. The IQ Battery LEDs should be OFF at this point.

G.2.1.4 Turn ON the AC breaker.

G.2.1.5 Wait for 1 min. Allow the IQ Battery LEDs to flash red.

G.2.1.6 Turn ON IQ Battery DC switches. The IQ Battery LEDs should stop flashing red after DC switches are turned ON.
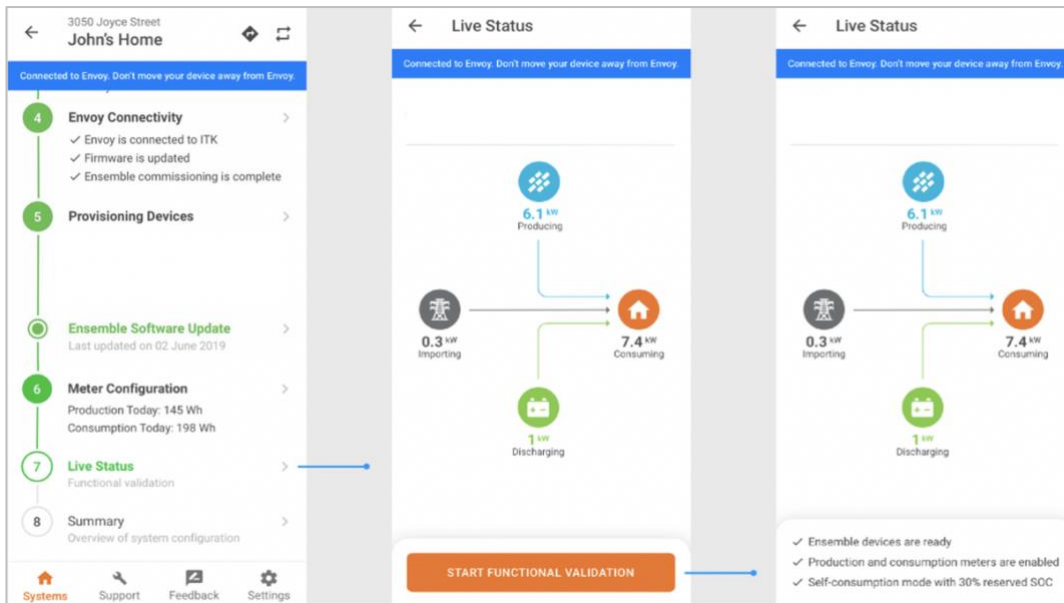
H. In Enphase Installer App Step 6, the meters will be disabled by default after provisioning IQ Battery and Range Extender. **Configure Production and Consumption CTs** using the meter wizard:

☐ H.1. Enable the meters by verifying the readings by going through the meter wizard (required).

☐ H.2. Whilst in the production meter wizard, switch OFF all PV circuit breakers as instructed to make sure the Production CT readings go to zero before enabling.

☐ H.3. While in the consumption meter wizard, turn ON the PV and a known load in the home to confirm consumption rises or falls as expected, and select the meter location.

☐ H.4. Once the meters are configured correctly, you will be able to see if the IQ Batteries are charging or discharging in the **Devices** section of Enphase Installer App.
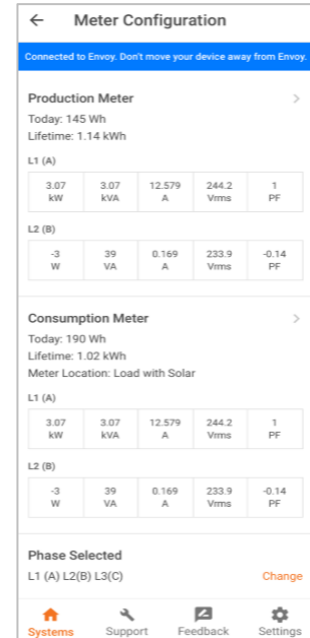
I. Enphase Installer App Step 7: Live Status & Functional Validation:

I.1. Live status displays real time data about the Enphase system. It provides the same information as visible from the Enphase Installer Portal.

     Sept 30th, 2022   Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

Sept 30th, 2022   Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

Functional Validation Instructions

- Complete all steps in the order listed.
- Mark steps completed in the Document Results section of each step.
- If any of the steps cannot be completed, record what occurred in the Observations section.

Date and time at start of Functional Validation: _____

N. Consumption (load monitoring) test:

N.1. Turn ON a known load and confirm if that you can see the load increase in the **Live Status** interface of Enphase Installer App.

O. Battery Discharge Test

O.1. Ensure that the known load is still switched ON.

O.2. Turn OFF the PV circuit breaker(s)

O.3. Use Enphase Installer App **Live Status** and each battery LED to check and confirm that the batteries are discharging. (Discharge is indicated by a pulsing blue LED. For a full list of LED states, see the table at the end of this document).
Note: consumption reading in Enphase Installer App may be higher than the known load if the homeowner is using other loads in the home.

O.4. Turn OFF the load by switching OFF the circuit breaker and confirm. The Installer App will check if the batteries have stopped discharging. You should be able to see both load and battery discharging go to zero.

   Sept 30th, 2022 Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

O.5. Turn ON the load and confirm that the battery is discharging

O.6. Turn ON the PV circuit breaker(s)
O.7. Turn OFF loads to ensure that production exceeds consumption.
O.8. Wait for the microinverters to reconnect
(30 seconds to 5 minutes depending on grid profile).
O.9. Turn OFF the known load and confirm that the batteries are charging using the **Live Status** interface and by LED indicators on each battery.
Note: This step requires sufficient sunlight to enable the PV to produce more power than the on-site load. If this is not possible, note it in the observations section.

P. Enphase Installer App Step 8, **Generate a Summary Report**:
☐ P.1. You can share this report using email, text, or AirDrop. It contains details of each provisioned device and the commissioned status of the system.

_____Installer Initials: All steps complete on this page

Note: Before leaving the site, ensure all circuit breakers feeding the IQ Batteries and PV system are switched ON (if grid connection has been permitted by the Grid Operator).

Different States of IQ Batteries

State	Description
Uncommissioned	
Flashing blue	After booting up, when IQ Battery has paired with an IQ Gateway but has not passed the commissioning three-way handshake to confirm that it is an Enphase device.
Flashing green	After passing the three-way handshake with the IQ Gateway.
After commissioning (normal operation)*	
Rapidly flashing yellow	Starting up / Establishing communications
Red flashes in sequences of 2	Error.
Solid yellow	Not operating due to high temperature.
Solid blue or green	Idle. Colour transitions from blue to green as state of charge increases. You can check Enphase Installer Portal for charge status.
Slowly flashing blue	Discharging
Slowly flashing green	Charging
Slowly flashing yellow	Sleep mode activated
Off	Not operating

* IQ Batteries have a one-hour orphan timer. If the IQ Gateway stops communicating with them, after one hour the IQ Battery batteries return to an "uncommissioned" state.

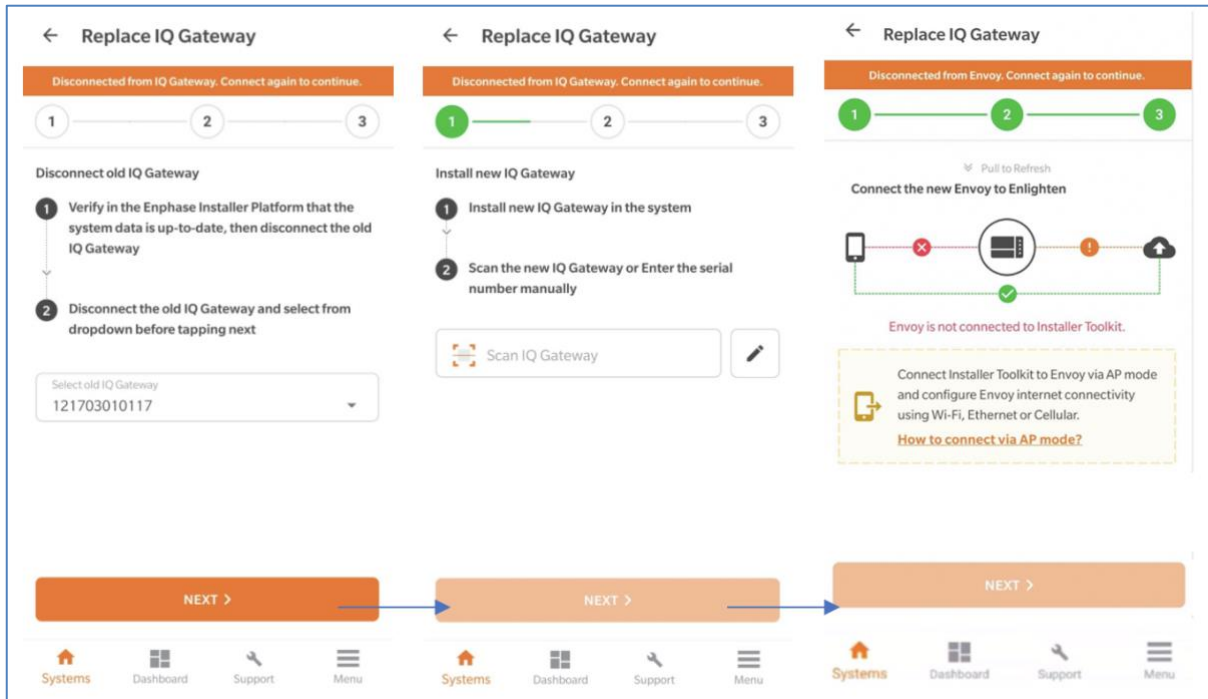_____Installer Initials: All steps complete on this page

Replacing an IQ Gateway on site

You can replace your old IQ Gateway using the Installer app. This will ensure that all your devices are communicating with the new Gateway.
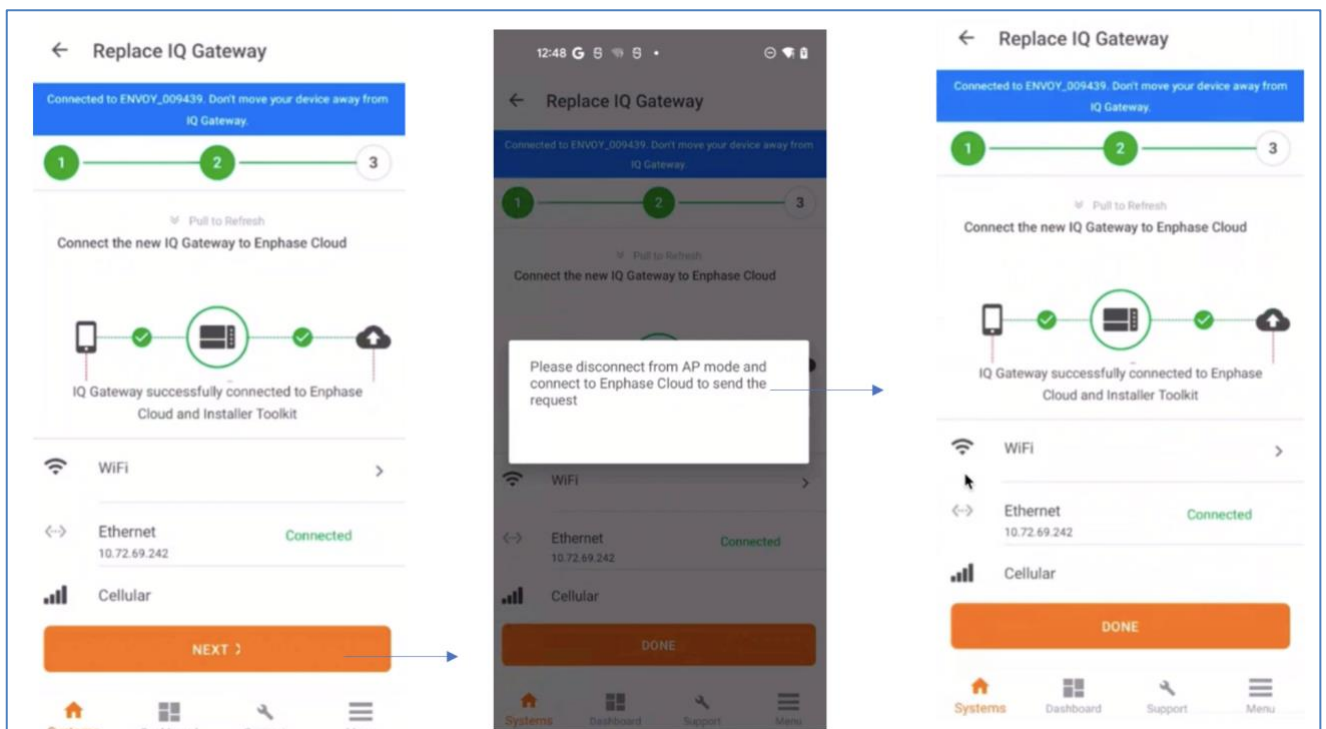
      a. Search and select the system (site) under 'Systems' tab.
      b. Go to 'Request return and Install replacement'
      c. Select 'REPLACE IQ Gateway'.
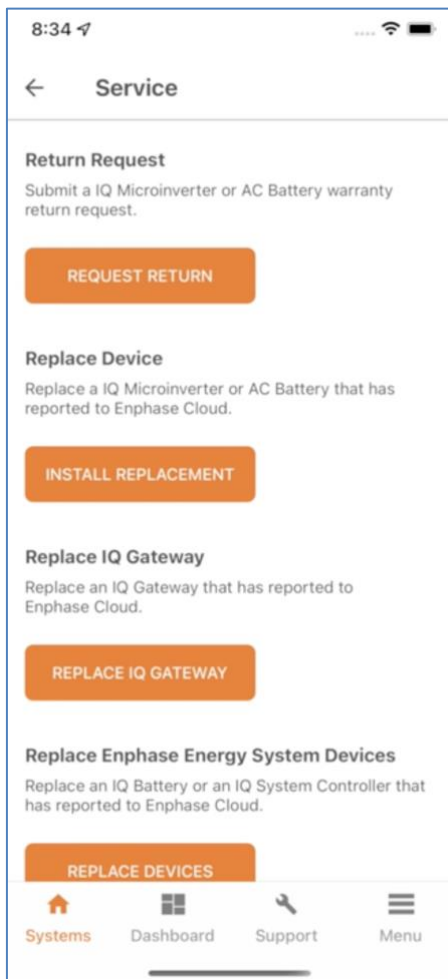
      d. Make sure we select the existing Gateway and follow the instructions in step 1 before tapping 'Next'
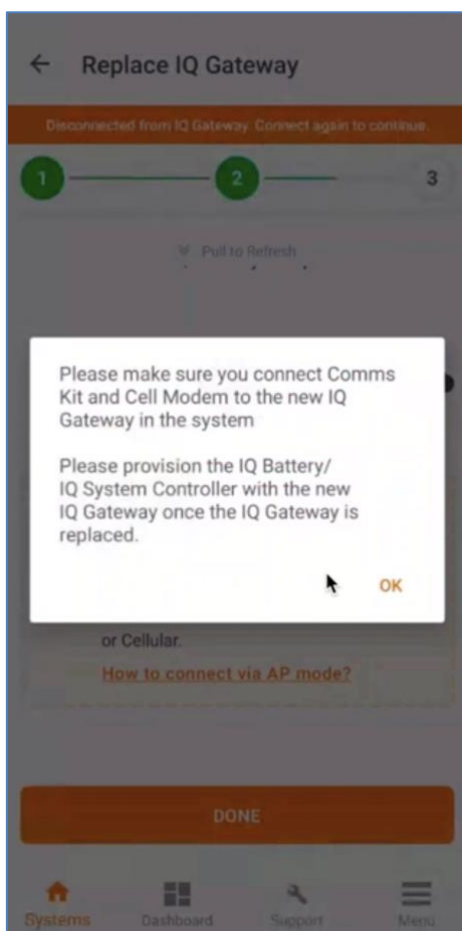   e. Scan/Enter the new Installed Gateway in step 2 and tap 'Next'

       Sept 30th, 2022   Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

f. In step 3, Connect to new Gateway in AP mode
   i. Connect the new Gateway to Enlighten either by configuring the Wi-Fi or by using Ethernet. After confirming the Gateway is connected to Enlighten, disconnect from the AP mode
   ii. Tap on 'DONE' button to send the replace request to Enlighten.

     Sept 30th, 2022   Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

Things to Note:
- On successful submission, the request to replace the Gateway is sent to Enphase Cloud. The Enphase cloud will ensure that all the devices previously reporting to the old Gateway are not communicating with new Gateway. However, this process may take from 5-30 mins. You can check the status of the Gateway in the Enlighten manager.
- After the IQ Gateway replacement, if your System Controller or IQ Batteries are not reporting to the new Gateway, please retry provisioning (step 5) to ensure the devices communicating to the new Gateway.
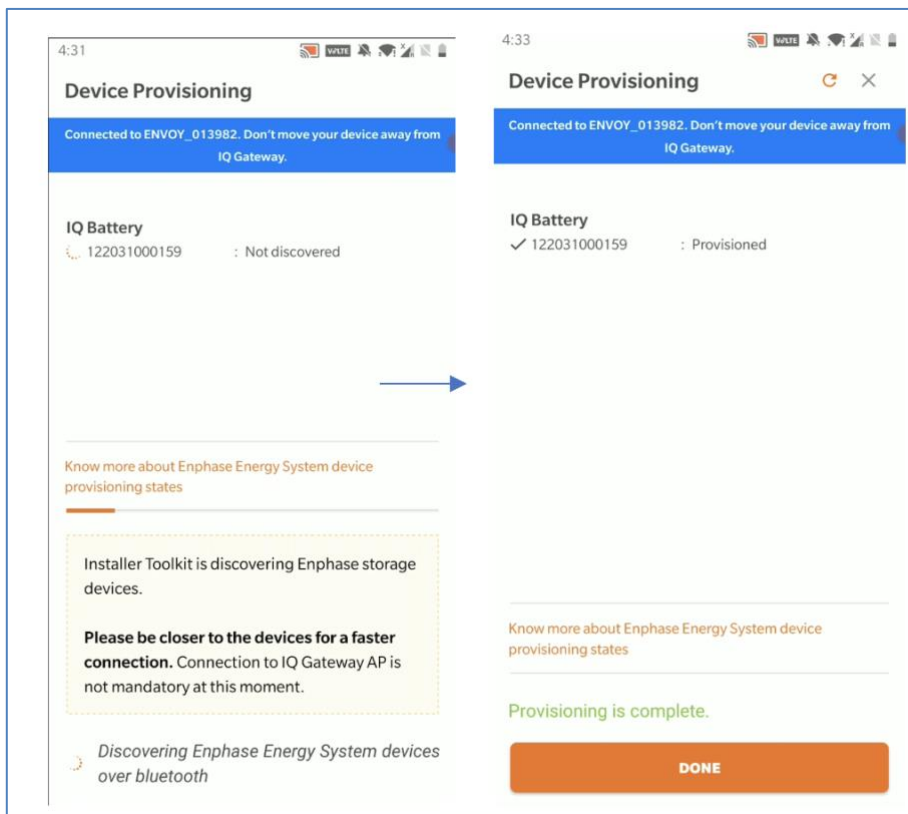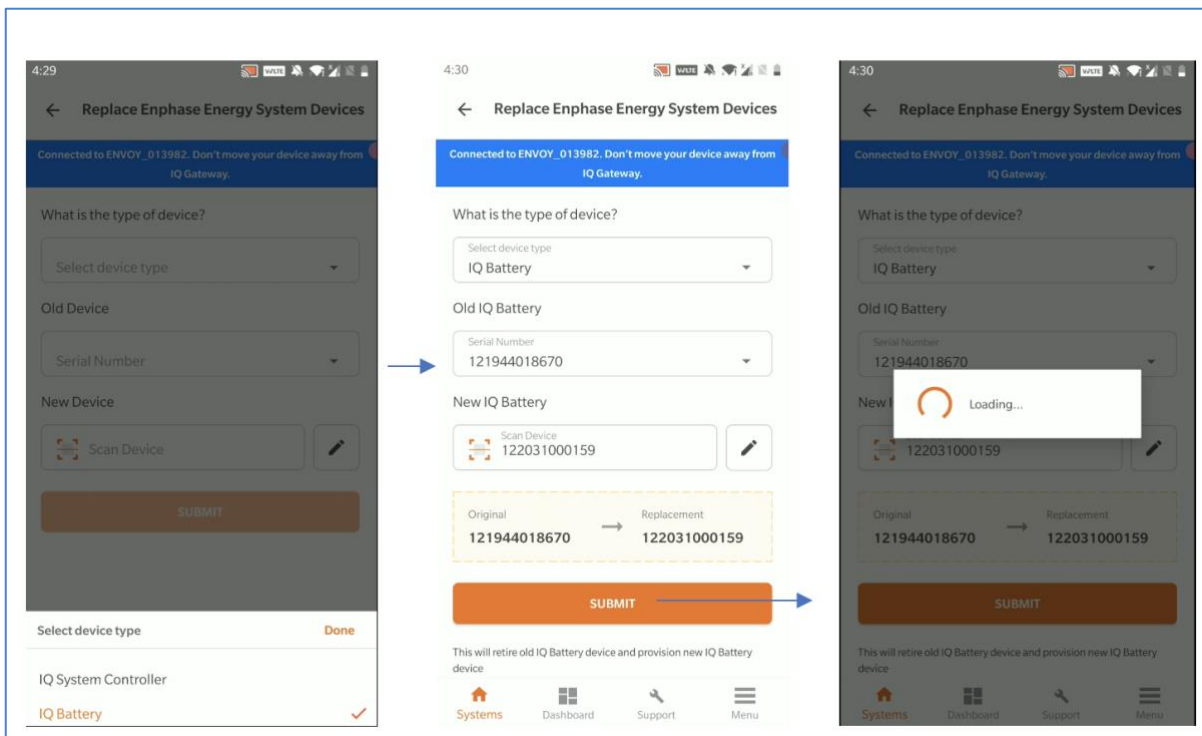

        Sept 30th, 2022   Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page

Replacing an IQ Battery on site

How to replace IQ Battery for an Enphase Storage system?
   a. Search and select the system under 'Systems' tab.
   b. Go to 'Request return and Install replacement'.
   c. Select 'Replace Enphase Energy System Devices'
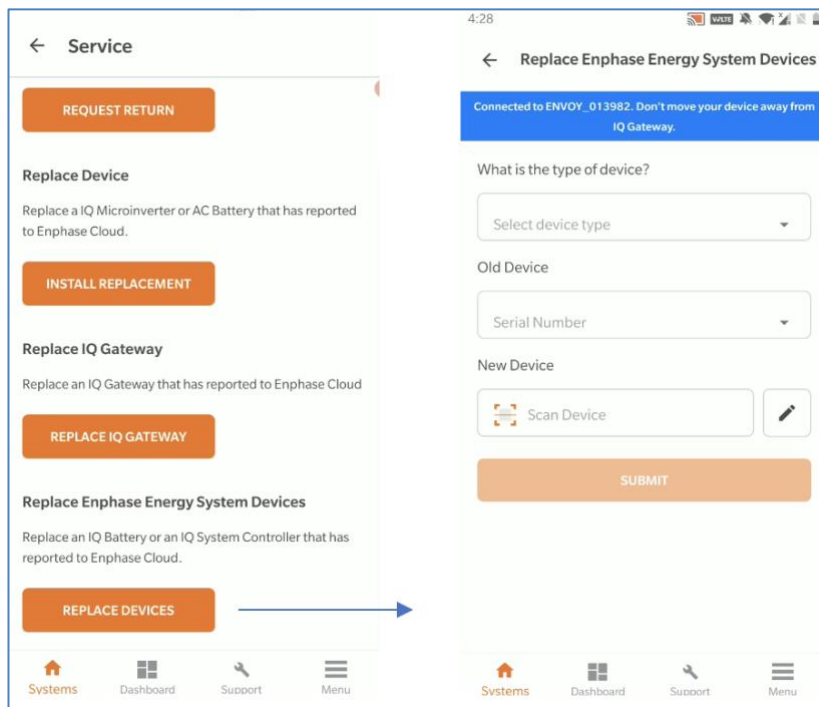
   d. Select if you want to replace the IQ Battery in the system
   e. Select the old device and add the new device.
   f. Press Submit and ensure provisioning of the new device is successful.

_____Installer Initials: All steps complete on this page

     Sept 30th, 2022   Enphase Installer App 3.26.1

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Things to Note:

- Known Issue: If your old device is not communicating with the IQ Gateway (already retired), the user will not be allowed to continue with replacement in the current Installer app 3.26.1.
  - o Workaround: Instead of replacement, you can add the new device in step 2 and re-provision the system in Step 5 of commissioning workflow
- Once the replacement is successful, please wait for 5-10 minutes for the IQ Gateway to report the new device details to Enphase Cloud.

          Sept 30th, 2022   Enphase Installer App 3.26.1

_____Installer Initials: All steps complete on this page