



Hardware Install Guide



Site Audit Process

This section of the install process will guide you through points of interest to identify during the initial site audit.

1. Gateway Location

The location of the GridDuck Gateway unit(s) must be selected based on a number of factors, where a strong position will determine the efficiency of the asset network as a whole and must be considered on a case-by-case basis.

a. *Where will the gateway be located on-site?*

STANDARD RULE FOR WIRELESS CONNECTIVITY RANGE :- The standard rule of thumb for wireless connectivity range of GridDuck hardware is that the assets must not be separated by a distance of more than 20m line of sight, 2 solid walls, or 1 floor. If the separation between any 2 GridDuck assets is equal to or greater than any of those values, more gateways will need to be added to expand the gateway network.

Key factors for consideration:

- **Does the site have strong network connectivity?**

Sites with weak or unreliable network connectivity will require a Gateway Pro unit with cellular connectivity, in order to avoid possible intermittent loss of connection.

- **Is the site very large, over many floors, or a wide area?**

Ideally a single gateway unit will be situated in a position within wireless connectivity range of all the appliances within a site, according to the **rule of range**. If this is not possible, for example in large sites that cover several floors, more than one gateway unit will be required in order to create a network of gateway units that can access all appliances consistently.

- **Is the location safe, secure, and accessible only by authorised persons?**

After connectivity, the primary considerations when deciding the location of a gateway unit is the security of that position. The location will need to be easily accessible for safe maintenance, but only by members of staff with the authorisation to do so. The gateway device should be firmly fastened to a stable, ideally flat surface, away from adverse environmental conditions such as excessive humidity or heat, and away from the general public.

- **How many monitored appliances will be required on-site?**

If there are a large number of monitored appliances within a small area, and in connectivity range of a single gateway unit, but exceeding 30 appliances, more than one gateway unit will be required in order to create a network of gateway units than can access all appliances consistently.

- **Is the site network restricted?**

If the site to be monitored is a large commercial site, it is likely that the GridDuck gateway units will need to be added to a list of network approved devices in order to connect to the network. See section '**Pre-Install Setup Process**' for information on how to do this.

Ideally, the chosen location of the GridDuck gateway will be :-

1. Within the **rule of range** of all appliances to be monitored
2. Safely fixed on a surface to which only authorised staff have access, away from excessive humidity or heat
3. If using a standard Gateway unit, within physical range of an ethernet port, to provide a reliable fixed network connection
4. If using a Gateway Pro unit, within an area that provides strong cellular connection, for example above ground level

If one or other of these conditions cannot be met by a single gateway, then more gateway units should be added as appropriate, until the network of connected GridDuck gateways meets the desired criteria.

2. Energy Meter Location

Identify the **location** and **type** of the primary incoming energy meter for the site. These factors will affect the type and amount of GridDuck assets needed.

a. What kind of meter is on-site?

- i. If the energy meter has a **pulse output** (flashing LED signalling rate of incoming energy), a meter reader can be used to monitor the energy meter
 - Make a note of the **Imp/kWh** (Impressions per kWh) value for the meter. This value will be needed to calculate the meter energy rate

b. Where is the meter located on-site?

- i. If the energy meter is located within the **rule of range** of the planned gateway or gateway network, the asset on the meter will be able to connect wirelessly to the gateway without issue.
- ii. If the energy meter is not located within **rule of range** of the planned gateway or gateway network, the asset on the meter will require extra assets to connect to the gateway.

c. What type/model is the energy meter?

- i. Take images of the energy meter to be added to the site file folder on the GridDuck Dashboard, that document information including -
 - Meter Type
 - Imp/kWh Value
 - Meter Model
 - Meter Location

ii. Access the site folder through:

Site > [Specific site name] > Info & Settings > Files

Select 'Choose file / Camera' and add the relevant images to the folder.



2. What appliances need to be managed?

- a. If the exact appliances to be monitored are known, then estimate the maximum distance between any two appliances on-site.
 - i. If this distance is less than the **rule of range**, the gateway or gateway network will be able to connect wirelessly to all appliances without issue.
 - ii. If this distance is greater than the **rule of range**, additional gateway units will be needed for the gateway network to connect wirelessly to all appliances.
- b. If the exact appliances to be managed are not known, or more managed appliances are to be added to the site after the initial install, additional gateway units will need to be added to ensure that any potential locations for energy management will be within the **rule of range** from a gateway.

3. What GridDuck assets need to be used to manage the planned appliances?

a. Energy Meter Monitoring

In order to monitor the energy transfer through an energy meter, the following assets can be used :

- **Meter Reader**

If the energy meter has a **pulse output** (flashing LED signalling rate of incoming energy), and the user wishes to monitor the total energy usage through the meter into the site, a meter reader can be used to monitor the energy meter.

b. Individual Appliance Management

In order to monitor and control the energy transfer through an individual appliance, or in the case of the 16A relay, a small circuit or group of appliances, there are 3 options for GridDuck assets -

- Smart plug
 - Inline Switch
 - 16A Relay
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- i. If the individual appliance is connected to a power outlet that is easily accessible, a smart plug can be used to monitor/control the appliance.
 - ii. If the individual appliance is connected to a power outlet that is not easily accessible for plug installation, an Inline Switch can be used to monitor/control the appliance.
 - iii. If the user wishes to control a specific circuit running through a distribution board, for example a small lighting circuit, a 16A relay can be used to monitor and control that circuit.

c. Environmental Monitoring

In order to monitor environmental conditions within a certain space -

- Temperature/Humidity Sensor

4. Calculate the initial specification of required GridDuck assets

- No. of Gateways
- No. of Smart Plugs
- No. of Temperature/Humidity Sensors
- No. of Inline Switches
- No. of Meter Readers
- No. of Relays

Pre-Install Setup Process

This section of the install process will guide you through the preparation required before the site visit to install the hardware.

1. Are the gateway units approved by the site network?

In order for the gateway(s) to connect successfully to the site network, particularly for larger commercial sites with restricted networks, it is likely that they must first be added to the list of authorised devices. This will be done by the technical team at the site, but an authorisation request must be made using the **VERIFY SITE GATEWAY(S) +** function in the dashboard, which is accessed through -

Site > [Specific site name] > Info & Settings > Details

- a. Select the **VERIFY SITE GATEWAY(S) +** function in the dashboard. This will generate the following message -

"Access Control Request: Please authorise the following GridDuck energy management hardware for access to your network. Ethernet MAC: XXX WiFi MAC: XXX"

Where "XXX" contains the individual Ethernet and WiFi MAC addresses for the gateway units assigned to the site, separated by a comma (,) in the case of multiple units, for example -

"Access Control Request: Please authorise the following GridDuck energy management hardware for access to your network. Ethernet MAC: 00-14-22-01-23-65,00-14-22-01-23-54 WiFi MAC: 00-14-22-01-23-45,00-14-22-01-23-64"

- b. Copy and paste the generated message into a new email and input the relevant email address for the site technical support team.
- c. Send an email request to the site technical support team.

2. What tools and equipment are needed for the install?

In order that the install process be as efficient as possible, the following equipment should be ready for use on site during the install -

a. Assets and Gateways

All assets planned to monitor site appliances, and the calculated number of gateways to monitor those assets.

b. Connectivity Tools

Tools to allow initial connection between all assets, including -

- i. Ethernet cable extension leads (if applicable, based on ideal gateway location).

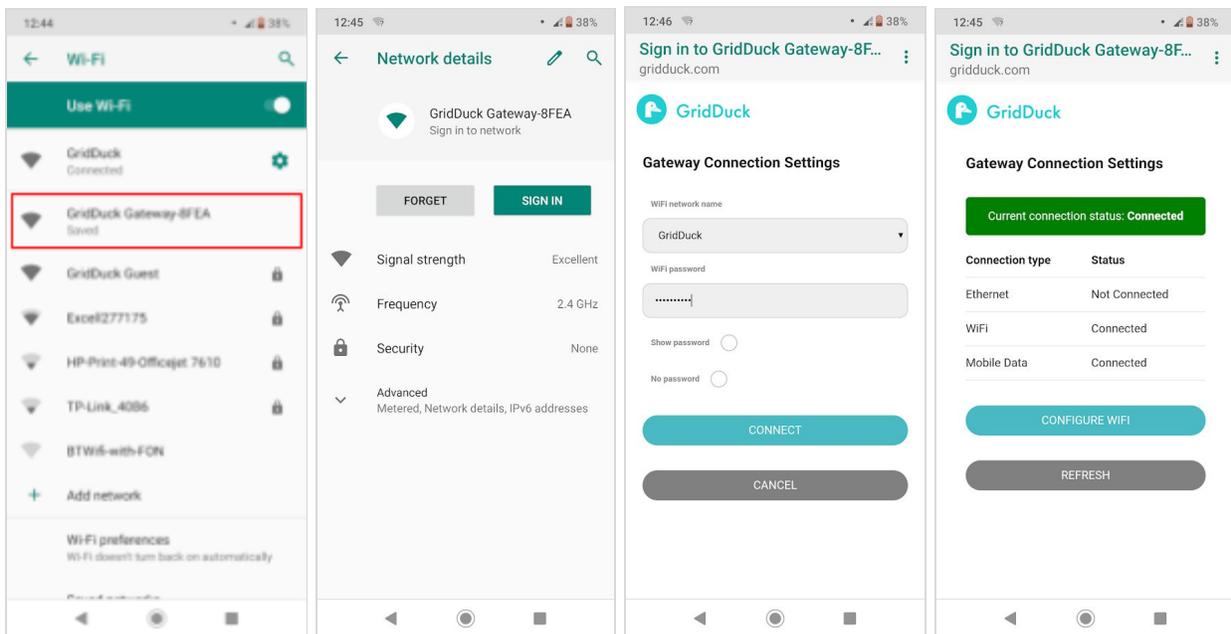
- ii. Power cable extension leads (if applicable, based on ideal gateway location).

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1. Gateway Installation

Installing the gateway unit(s) on site and establishing a network connection between the site and the gateway or gateway network is **always** the first step to the installation.

- a. Place the gateway in location as selected in the '**Site Audit - Gateway Location**' part of this guide and connected to the closest possible power outlet, using power extension cables as necessary.
- b. If using a standard Gateway unit :
 - i. **If an ethernet connection is available**, connect the ethernet port of the gateway unit to the incoming ethernet wall socket using an ethernet cable
 - ii. **If an ethernet connection is not available** :



1. Using a mobile phone or tablet, in the 'Network Settings' of your device, **connect** to the relevant gateway unit through WiFi connection e.g. GridDuck Gateway-8EFB.
2. Once your phone or tablet device is connected to the gateway unit, the **gateway connection settings** page will automatically open. If it does not open automatically, go to the internet browser on your device and navigate to any page to open the settings page.

3. Using the gateway connection settings page, select the site WiFi network that you want the gateway to connect to from the drop-down list.
4. Enter the WiFi password for this network in the text box
5. Select the blue **Submit** button to start the connection between the gateway and the site WiFi network.

c. If using a Gateway Pro unit with cellular connectivity :

- i. The Gateway Pro unit will connect automatically to the cellular network upon receiving power.

The GridDuck Gateway unit will now be connected to the network, and is ready to scan for any GridDuck assets in the area.

d. Checking the connection status of the gateway

At any time, the connection status of the gateway can be checked by doing the following -

- i. Hold the central button the gateway down for approximately 3 seconds. The orange  symbol will start to flash.
- ii. Using a mobile phone or tablet, in the 'Network Settings' of your device, **connect** to the relevant gateway unit through WiFi connection e.g. GridDuck Gateway-8EFB.
- iii. The gateway connection settings page will show the connection status of the Ethernet, WiFi, and Mobile Data connection. This page can also be used to reconfigure the settings for the gateway WiFi connection.

2. Meter Reader Installation

a. Locate Energy Meter

The energy meter will likely be located in the main plant room, or basement of the site.

b. Which type of asset will be used to monitor the energy meter?

- i. If installing a GridDuck Meter Reader, refer to the Meter Reader Installation Manual, [found here](#)

3. Installing GridDuck Energy Management Assets

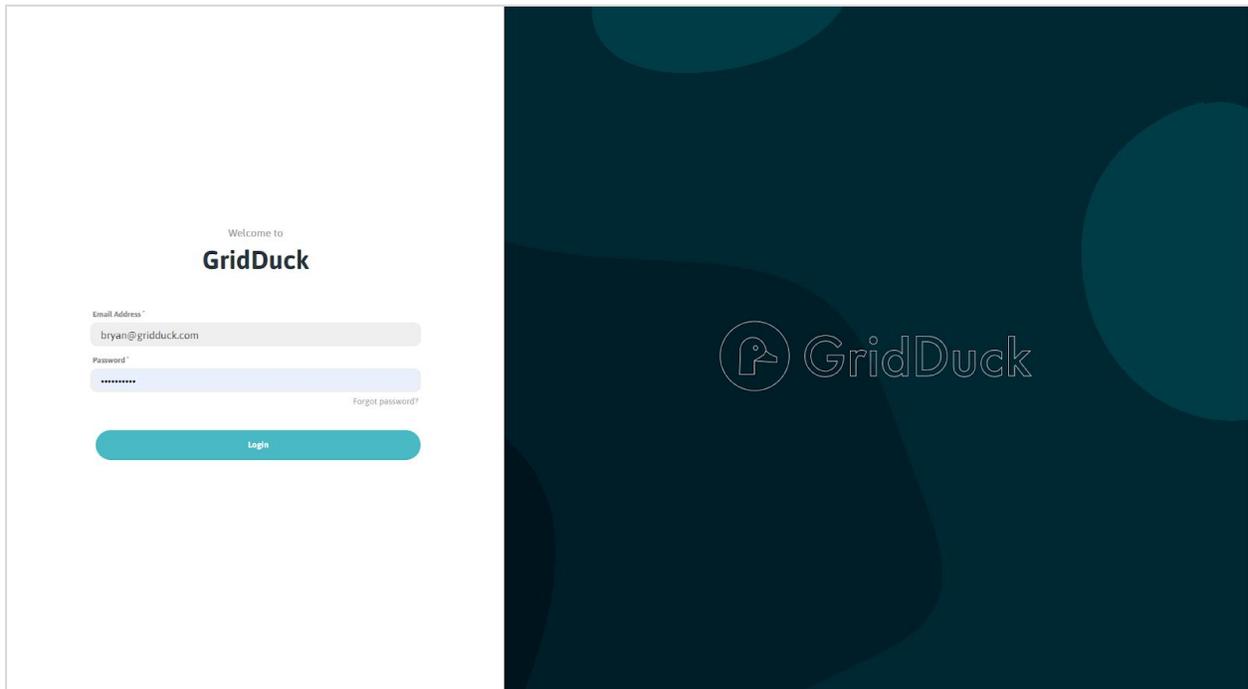
During the install, assets must first be installed in place physically, then connected and configured within the GridDuck Dashboard to integrate them into the GridDuck network and begin to manage their respective appliances.

Physical installation

- a. If installing a GridDuck smart plug, refer to the Smart Plug Installation Manual, [found here](#)
- b. If installing a GridDuck inline cable, refer to the Smart Cable Installation Manual, [found here](#)
- c. If installing a GridDuck 16A relay, refer to the 16A Relay Installation Manual, [found here](#)

In order to connect to and use GridDuck assets from the dashboard you must first sign in to your account.

Accessing your GridDuck Dashboard



Before you can access the dashboard, you will need your **login** email address and a **password**.

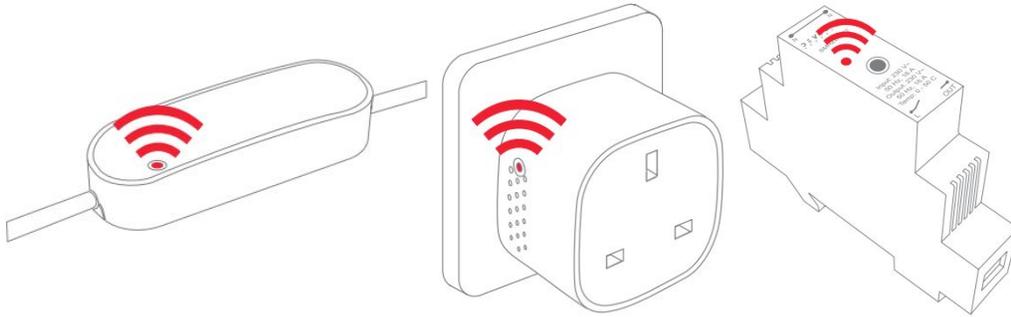
Once you have your account details -

1. Visit the GridDuck dashboard at **dashboard.gridduck.com**
2. Log in using your account credentials, for example:
 - a. Username: **example@gmail.com**
 - b. Password: **ex@mp1e**

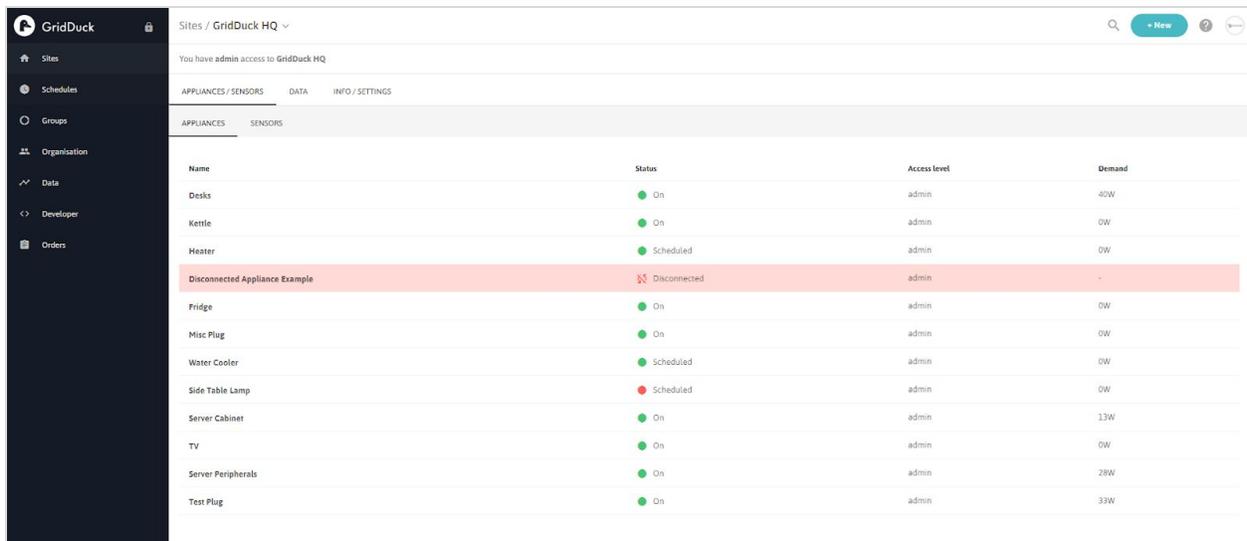
GridDuck Dashboard Installation

This section of the guide applies to the setup of all 3 GridDuck Monitor/Control type assets; Smart Inline Cable, Smart Plug, Smart 16A Relay.

All 3 asset types will flash  red once per second whilst actively scanning for a network connection with the GridDuck gateway.



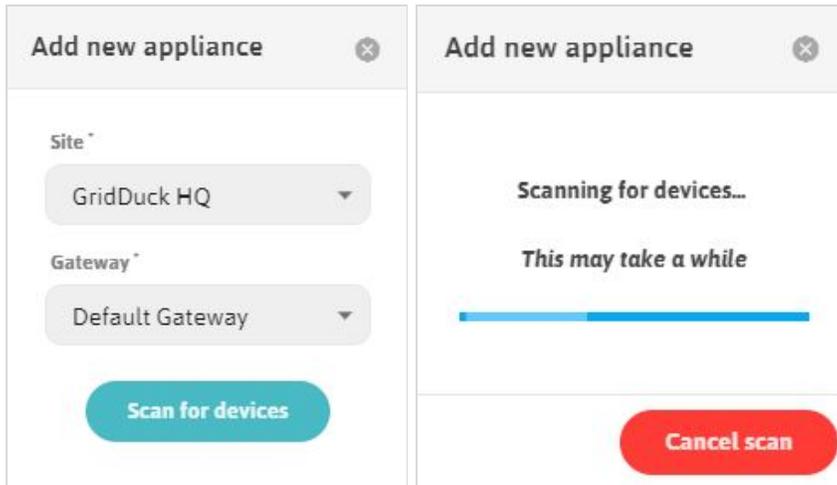
1. Make sure asset(s) are physically installed safely and securely as per the Develco instructions in section **'Installing GridDuck Monitor/Control Assets - Physical Installation'** of this guide.
2. Navigate to the **GridDuck Dashboard** in your internet browser



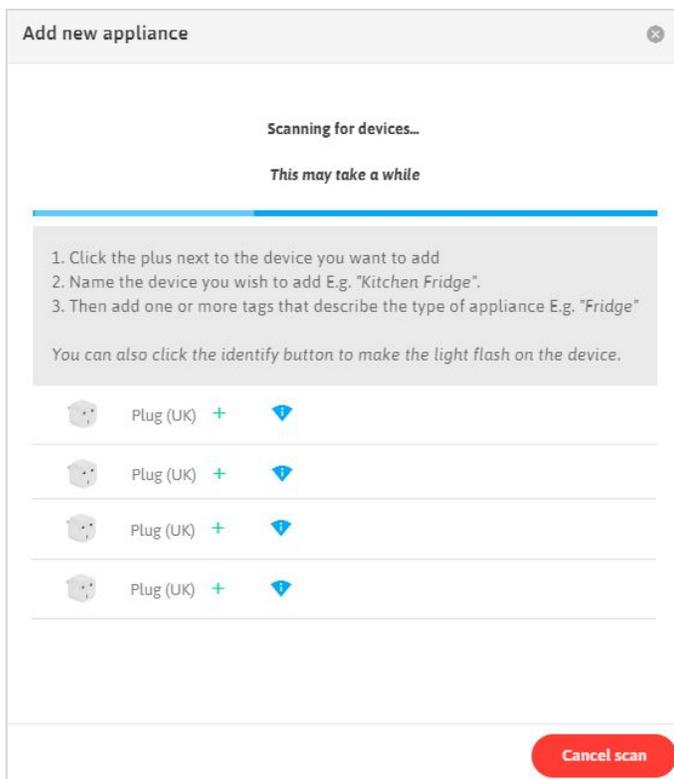
Name	Status	Access level	Demand
Desks	● On	admin	40W
Kettle	● On	admin	0W
Heater	● Scheduled	admin	0W
Disconnected Appliance Example	✖ Disconnected	admin	-
Fridge	● On	admin	0W
Misc Plug	● On	admin	0W
Water Cooler	● Scheduled	admin	0W
Side Table Lamp	● Scheduled	admin	0W
Server Cabinet	● On	admin	13W
TV	● On	admin	0W
Server Peripherals	● On	admin	28W
Test Plug	● On	admin	33W

3. Click the blue **+ New** button in the top right corner of the window, and select 'Appliance' from the menu

4. The **'Add New Appliance'** window will appear.

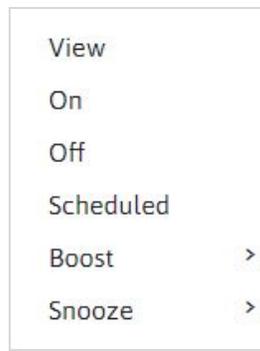


5. Select the relevant site from the drop down list, and click the blue **Scan for Devices** button
6. The **'Scanning for Devices'** window will appear. The Dashboard may take up to 5 minutes



7. Upon successful connection to the gateway, the LED on the asset will stop flashing. The Dashboard will display the message 'please click plus to add a device' for each available asset found during the scan.

8. For each individual asset, click the green plus  icon and enter the appliance **name** in the text box, e.g. Refrigerator.
 - a. **Note:** pressing the 'identify' button will cause the LED on only the associated asset to flash, in the case of multiple assets in the same area, so assets can be identified easily.
9. Press 'Confirm' to accept all selected assets.
10. The light on the asset will turn solid green  indicating a stable connection to the gateway, and the plug, cable, or relay now appears as an asset in the site asset list.
11. Right click on the asset in the asset list to access the quick menu, where you can view the asset or change its current state, or left click to go to the asset page where you can monitor the related data and configure the device.



Glossary

Gateway Network: a network of more than 2 or more interconnected gateway units, functioning as a single unit with an increased wireless connectivity range, with each individual gateway unit taking ownership and connecting to those assets closest to it.

Pulse Output: a pulse output in the case of an energy meter is a flashing LED on the face of the unit which displays a light 'pulse' based on the amount of energy passing the meter, which can then be read using a meter reader.



Imp/kWh Value: a value describing the number of LED pulses displayed by an energy meter for every kWh of energy that passes through the system, e.g. **1000 Imp/kWh**. Number of pulses are detected and recorded by a meter reader, and energy usage over a given period can be calculated.

Appliance: a piece of electrical equipment performing a function within a site, being monitored/controlled through the GridDuck network; e.g. refrigerator, TV.

Asset: a piece of equipment linked to the GridDuck network used to monitor/control the energy usage of an appliance; e.g. smart plug, meter reader.

GridDuck Dashboard or **Dashboard:** the GridDuck visual tool used to create, monitor, control, and configure all the GridDuck assets in a site

Rule of Range: The standard rule of thumb for maximum wireless connectivity range of GridDuck hardware, where the assets must not be separated by a distance of more than 20m line of sight, 2 solid walls, or 1 floor. If the separation between any 2 GridDuck assets is equal to or greater than any of those values, more gateways will need to be added to expand the gateway network.