PG&E Interconnection Guidance – NBT with Storage

Applicability

This guide is for residential homes or small commercial sites with or without existing solar and storage that are adding solar and the FranklinWH System with energy storage, with a generator size of 30 kilowatts or less, and enrolling in NBT/NEM 3.0.

If you have any questions during the application or need guidance for a specific interconnection application, please contact engineering@franklinwh.com.

Guide

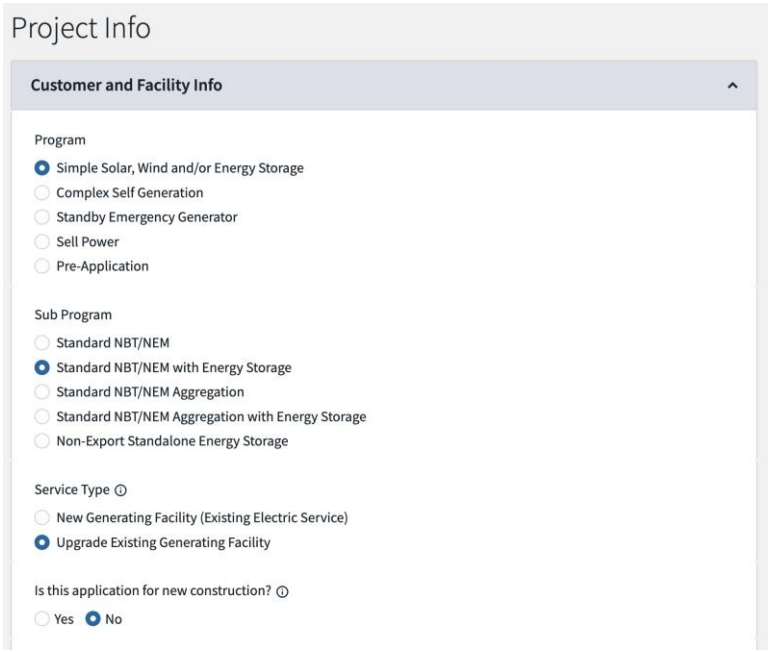
On the PG&E Your Projects Portal, start an application.

Program Type

Application Type	Connect Solar Panels, Wind Turbines, or Other Generating Equipment
Service Type	Simple Solar, Wind and/or Energy Storage
Application Request	Standard NBT/NEM with Energy Storage

Project Info and Contact Info

Fill out the customer and facility information based on the individual case.



Equipment

Depending on the FranklinWH products you are installing, refer to the scenario that describes your installation:

(1) If you are installing an aGate and aPower 2:

Create a new System entry under Equipment Details for the new solar inverter and fill in the required information. You will also create a Power Module within the System for the PV panels.

Add another System entry for the FranklinWH products and choose the right “aPower X + aGate” combination in the drop-down menu according to your configuration. For this step, see the detailed field selection below.

(2) If you are installing an aGate and aPower S

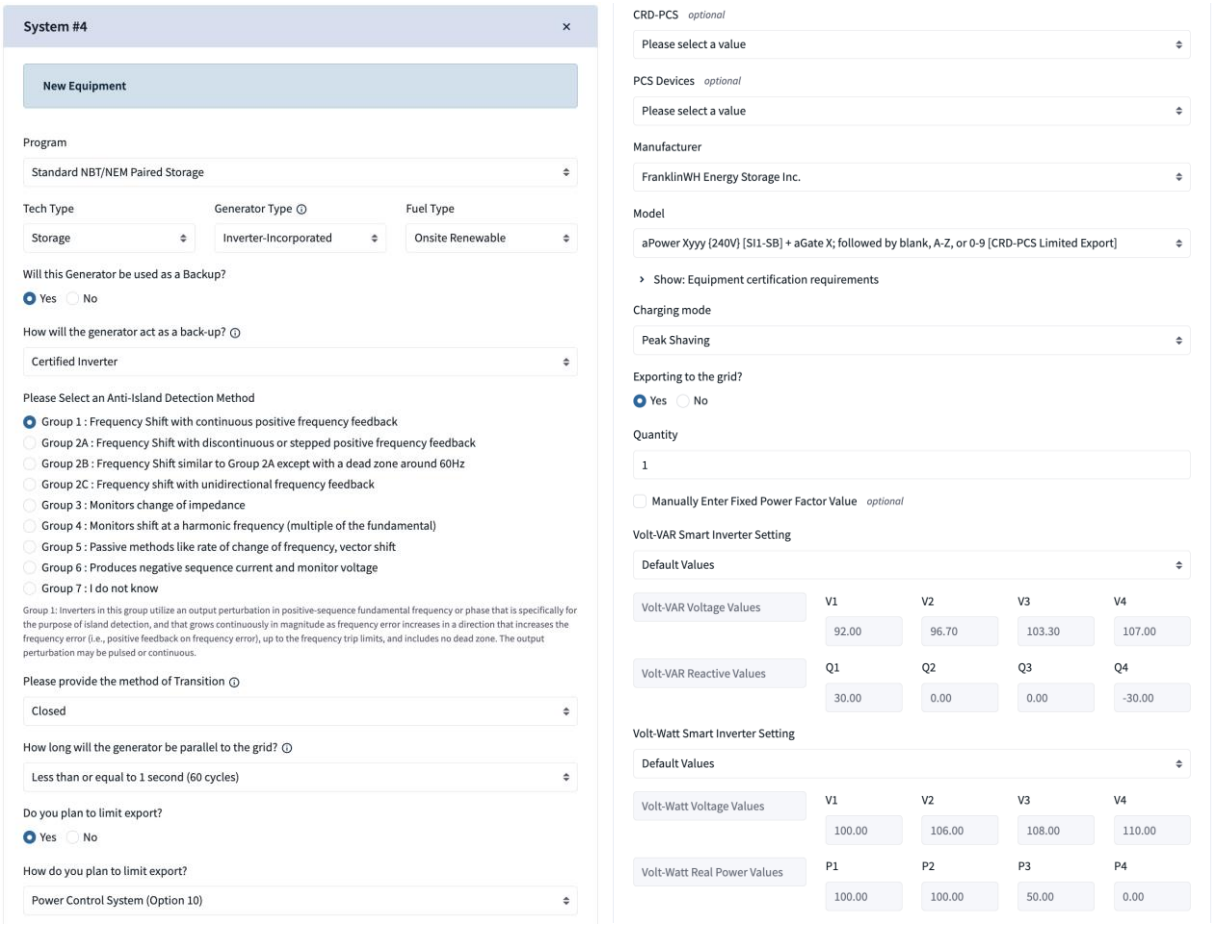
Create a new System entry for the new solar inverter (i.e. aPower S + aGate). You will then add the new PV panels and the aPower S batteries as two Power Modules attached to the new System. See the detailed field selection below.

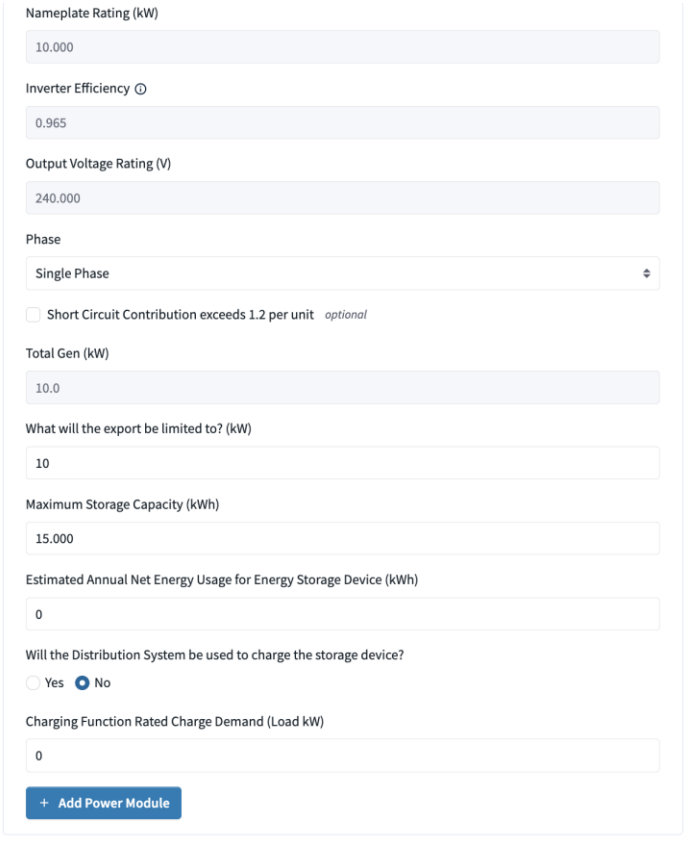
If you are using a combination of aPower S and aPower 2 batteries, you will create an additional System entry for the aPower 2.

aPower 2 + aGate Field Selections

After creating and filling out the System entry for solar inverter and the Power Module entry for solar panels. Follow the field selection to create another System entry for aPower 2 + aGate:

System #2	
Program	Standard NBT/NEM Paired Storage
Tech Type / Generator Type / Fuel Type	Storage / Inverter-Incorporated / On-Site Renewable
Will this Generator be used as a Backup?	Yes
How will the generator act as a back-up?	Certified Inverter
Please select and Anti-Island Detection Method:	Group 1: Frequency Shift with continuous positive frequency feedback.
Please provide the method of transition:	Closed
How long will the generator be parallel to the grid?	Less than or equal to 1 second (60 cycles)
Do you plan to limit export?	Yes
How do you plan to limit export?	Power Control System (Option 10)
Manufacturer	FranklinWH Energy Storage Inc.
Model	aPower Xyyy {240V} [SI1-SB] + aGate X; followed by blank, A-Z, or 0-9 [CRD-PCS Limited Export]
Charging Mode	Peak Shaving
Exporting to the grid?	Yes
Quantity	Fill based on individual case
Phase	Single
What will the export be limited to? (kW)	10* *Choose based on individual case
Maximum Storage Capacity (kWh)	15
Estimated Annual Net Energy Usage for Energy Storage Device (kWh)	0
Will the Distribution System be used to charge the storage device?	No
Charging Function Rated Charge Demand (Load kW)	0

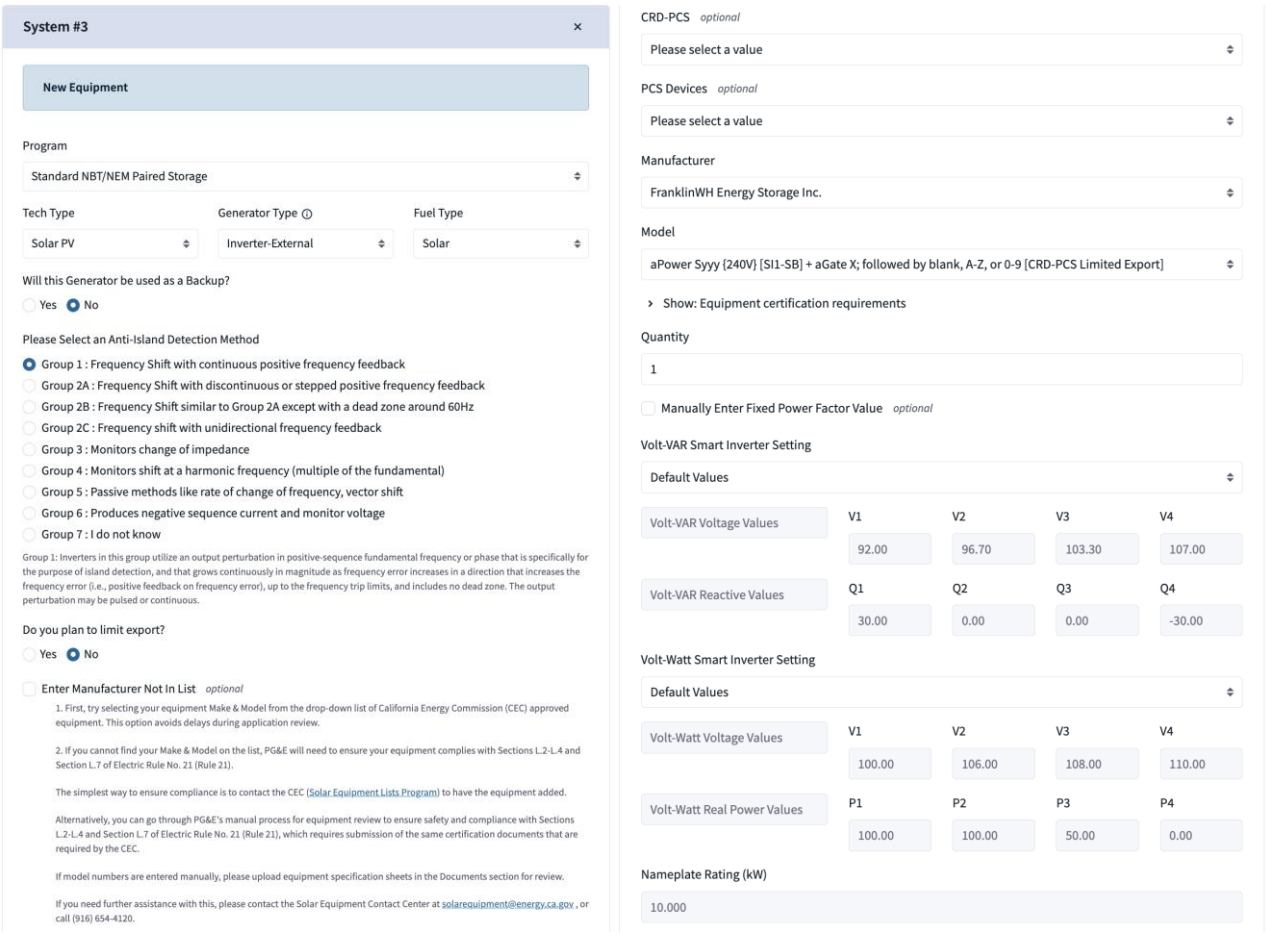

System #4
New Equipment
Program
Standard NBT/NEM Paired Storage
Tech Type
Storage
Generator Type
Inverter-Incorporated
Fuel Type
Onsite Renewable
Will this Generator be used as a Backup?
Yes
No
How will the generator act as a back-up?
Certified Inverter
Please Select an Anti-Island Detection Method
Group 1 : Frequency Shift with continuous positive frequency feedback
Group 2A : Frequency Shift with discontinuous or stepped positive frequency feedback
Group 2B : Frequency Shift similar to Group 2A except with a dead zone around 60Hz
Group 2C : Frequency shift with unidirectional frequency feedback
Group 3 : Monitors change of impedance
Group 4 : Monitors shift at a harmonic frequency (multiple of the fundamental)
Group 5 : Passive methods like rate of change of frequency, vector shift
Group 6 : Produces negative sequence current and monitor voltage
Group 7 : I do not know
Group 1: Inverters in this group utilize an output perturbation in positive-sequence fundamental frequency or phase that is specifically for the purpose of island detection, and that grows continuously in magnitude as frequency error increases in a direction that increases the frequency error (i.e., positive feedback on frequency error), up to the frequency trip limits, and includes no dead zone. The output perturbation may be pulsed or continuous.
Please provide the method of Transition
Closed
How long will the generator be parallel to the grid?
Less than or equal to 1 second (60 cycles)
Do you plan to limit export?
Yes
No
How do you plan to limit export?
Power Control System (Option 10)
CRD-PCS optional
Please select a value
PCS Devices optional
Please select a value
Manufacturer
FranklinWH Energy Storage Inc.
Model
aPower Xyyy (240V) [SI1-SB] + aGate X; followed by blank, A-Z, or 0-9 [CRD-PCS Limited Export]
Show: Equipment certification requirements
Charging mode
Peak Shaving
Exporting to the grid?
Yes
No
Quantity
1
Manually Enter Fixed Power Factor Value optional
Volt-VAR Smart Inverter Setting
Default Values
Volt-VAR Voltage Values
V1 92.00
V2 96.70
V3 103.30
V4 107.00
Volt-VAR Reactive Values
Q1 30.00
Q2 0.00
Q3 0.00
Q4 -30.00
Volt-Watt Smart Inverter Setting
Default Values
Volt-Watt Voltage Values
V1 100.00
V2 106.00
V3 108.00
V4 110.00
Volt-Watt Real Power Values
P1 100.00
P2 100.00
P3 50.00
P4 0.00


Nameplate Rating (kW)
10.000
Inverter Efficiency
0.965
Output Voltage Rating (V)
240.000
Phase
Single Phase
Short Circuit Contribution exceeds 1.2 per unit optional
Total Gen (kW)
10.0
What will the export be limited to? (kW)
10
Maximum Storage Capacity (kWh)
15.000
Estimated Annual Net Energy Usage for Energy Storage Device (kWh)
0
Will the Distribution System be used to charge the storage device?
Yes
No
Charging Function Rated Charge Demand (Load kW)
0
+ Add Power Module

aPower S + aGate Field Selections

First, create a new System for solar inverter with the fields selection below.

System #1	
Program	Standard NBT/NEM Paired Storage
Tech Type / Generator Type / Fuel Type	Solar PV / Inverter-External / Solar
Will this Generator be used as a Backup?	No
Please select and Anti-Island Detection Method:	Group 1: Frequency Shift with continuous positive frequency feedback.
Do you plan to limit export?	No
Manufacturer	FranklinWH Energy Storage Inc.
Model	aPower Syyy {240V} [SI1-SB] + aGate X; followed by blank, A-Z, or 0-9 [CRD-PCS Limited Export]
Quantity	Fill based on individual case
Phase	Single



System #3

New Equipment

Program: Standard NBT/NEM Paired Storage

Tech Type: Solar PV | Generator Type: Inverter-External | Fuel Type: Solar

Will this Generator be used as a Backup? Yes / No

Please Select an Anti-Island Detection Method

- Group 1 : Frequency Shift with continuous positive frequency feedback
- Group 2A : Frequency Shift with discontinuous or stepped positive frequency feedback
- Group 2B : Frequency Shift similar to Group 2A except with a dead zone around 60Hz
- Group 2C : Frequency shift with unidirectional frequency feedback
- Group 3 : Monitors change of impedance
- Group 4 : Monitors shift at a harmonic frequency (multiple of the fundamental)
- Group 5 : Passive methods like rate of change of frequency, vector shift
- Group 6 : Produces negative sequence current and monitor voltage
- Group 7 : I do not know

Group 1: Inverters in this group utilize an output perturbation in positive-sequence fundamental frequency or phase that is specifically for the purpose of island detection, and that grows continuously in magnitude as frequency error increases in a direction that increases the frequency error (i.e., positive feedback on frequency error), up to the frequency trip limits, and includes no dead zone. The output perturbation may be pulsed or continuous.

Do you plan to limit export? Yes / No

Enter Manufacturer Not In List *optional*

1. First, try selecting your equipment Make & Model from the drop-down list of California Energy Commission (CEC) approved equipment. This option avoids delays during application review.

2. If you cannot find your Make & Model on the list, PG&E will need to ensure your equipment complies with Sections L.2-L.4 and Section L.7 of Electric Rule No. 21 (Rule 21).

The simplest way to ensure compliance is to contact the CEC (Solar Equipment Lists Program) to have the equipment added.

Alternatively, you can go through PG&E's manual process for equipment review to ensure safety and compliance with Sections L.2-L.4 and Section L.7 of Electric Rule No. 21 (Rule 21), which requires submission of the same certification documents that are required by the CEC.

If model numbers are entered manually, please upload equipment specification sheets in the Documents section for review.

If you need further assistance with this, please contact the Solar Equipment Contact Center at solarequipment@energy.ca.gov , or call (916) 654-4120.

CRD-PCS *optional*: Please select a value

PCS Devices *optional*: Please select a value

Manufacturer: FranklinWH Energy Storage Inc.

Model: aPower Syyy {240V} [SI1-SB] + aGate X; followed by blank, A-Z, or 0-9 [CRD-PCS Limited Export]

› Show: Equipment certification requirements

Quantity: 1

Manually Enter Fixed Power Factor Value *optional*

Volt-VAR Smart Inverter Setting: Default Values

Volt-VAR Voltage Values	V1	V2	V3	V4
	92.00	96.70	103.30	107.00
Volt-VAR Reactive Values	**Q1**	**Q2**	**Q3**	**Q4**
	30.00	0.00	0.00	-30.00

Volt-Watt Smart Inverter Setting: Default Values

Volt-Watt Voltage Values	V1	V2	V3	V4
	100.00	106.00	108.00	110.00
Volt-Watt Real Power Values	**P1**	**P2**	**P3**	**P4**
	100.00	100.00	50.00	0.00

Nameplate Rating (kW): 10.000

Inverter Efficiency

0.965

Output Voltage Rating (V)

240.000

Phase

Single Phase

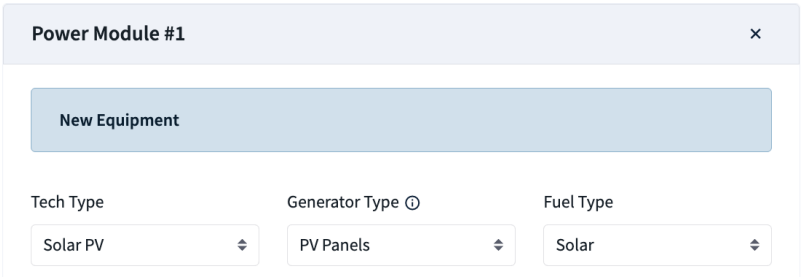
Short Circuit Contribution exceeds 1.2 per unit *optional*

Total Gen (kW)

10.0

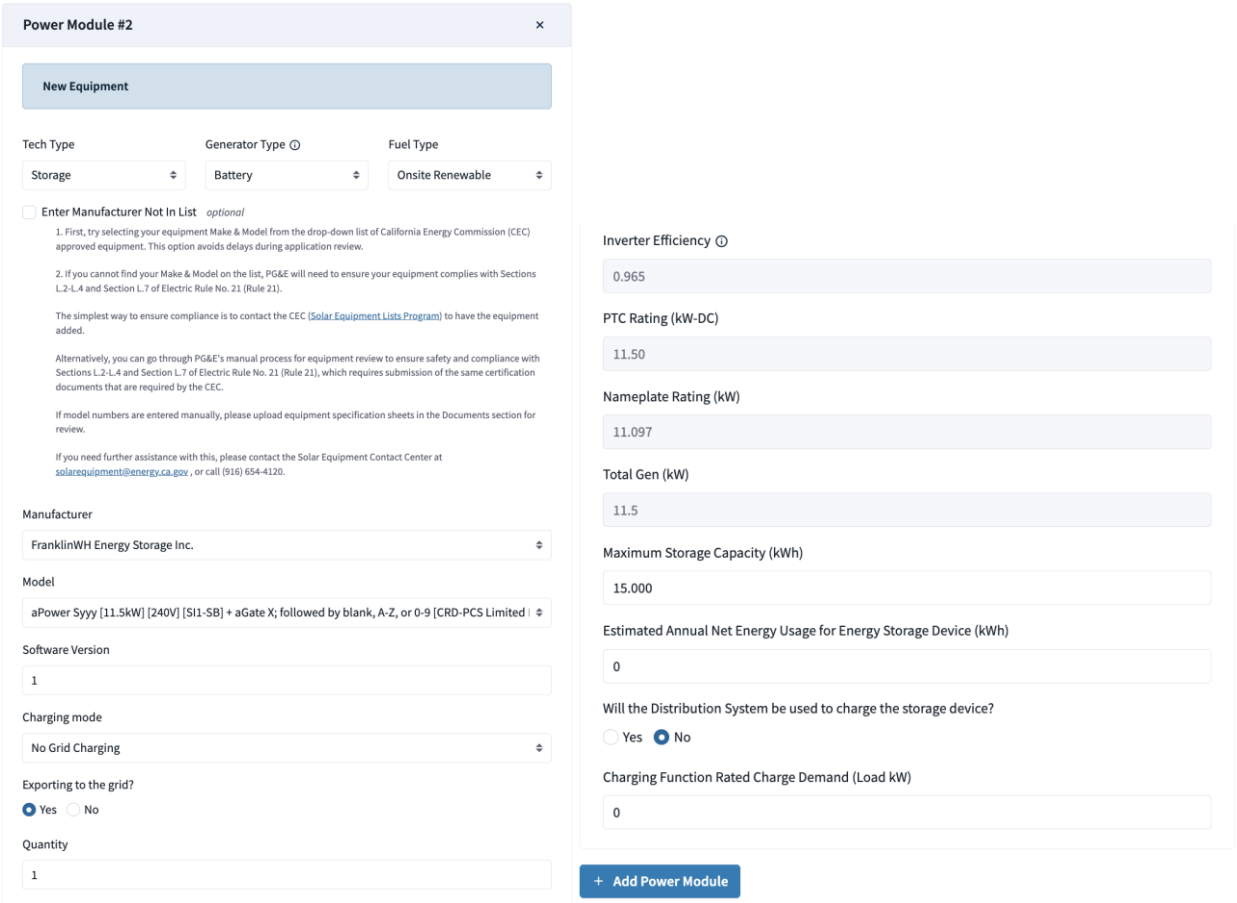
Add a Power Module for the solar panels. Fill in the required fields based on the brand and quantity used.

Power Module #1	
Tech Type / Generator Type / Fuel Type	Solar PV / PV Panels / Solar



Add a second Power Module for FranklinWH. Please refer to the table below for field selection.

Power Module #2	
Tech Type / Generator Type / Fuel Type	Storage / Battery / Onsite Renewable
Manufacturer	FranklinWH Energy Storage Inc.
Model	aPower Syyy [XXkW] [240V] [SI1-SB] + aGate X; followed by blank, A-Z, or 0-9 [CRD-PCS Limited Export]* *Choose nominal output power based on needs;
Software Version	1
Charging Mode	No Grid Charging
Exporting to the Grid?	Yes* *Choose based on individual case
Quantity	Based on desired quantity
Inverter Efficiency / PTC Rating / Nameplate Rating / Total Gen	Auto-filled
Maximum Storage Capacity (kWh)	15
Estimated Annual Net Energy Usage for Energy Storage Device (kWh)	0
Will the Distribution System be used to charge the storage device?	No
Charging Function Rated Charge Demand (Load kW)	0



If you are also installing aPower 2 batteries along with the aPower S, create another System entry for the aPower 2 accordingly.

If you have any further question regarding interconnection request, please contact engineering@FranklinWH.com.