FORTRESS POWER
Secure your energy

Welcome to the Webinar!

eSpire NANO

Introduction
&
Overview

By **Fortress Power, Your Residential & Commercial Energy Storage Solution Partner**

Hello !

my name is

Avtandil Giorgadze

(Gio)

Senior Product Engineer

FORTRESS POWER

eSpire **Nano**

+

=

What is it, really?

- Multifunctional

- Scalable

- Modular

- Solar and generator ready

- Advanced

- Energy Storage Solution

For

Three-Phase

Commercial and Industrial Applications

Three Phase

But which one?

Directly Compatible with:

480Y/277V and **208**Y/120V
Three Phase AC

(and more three-phase signals
common outside of the US/North America)

Multifunctional

How so?

Supports

- Self-Consumption
- Backup
- Export Priority
- Off-Grid
- Peak-Shaving
- Time-of-Use
- Advanced EMS-controlled

Modes Of Operations

PV and Generator

Ready as in?

…And direct

- DC-Coupled
- AC-coupled PV
- Generator
- Smart Load

Integration

Furthermore:

- Built in APSystems RSD transmitters for DC-Coupled PV
- AC-coupled PV and DC-coupled PV can be connected to a Nano inverter simultaneously
- Dedicated 2-wire start ports for a generator
- %SOC and grid-availability based control for the smart load circuit
- UL3141, UL9540, UL9540A, UL1973, L1973, UL9540A, UL1741, FCC Part 15, IEEE 1547, UN38.3 certified.

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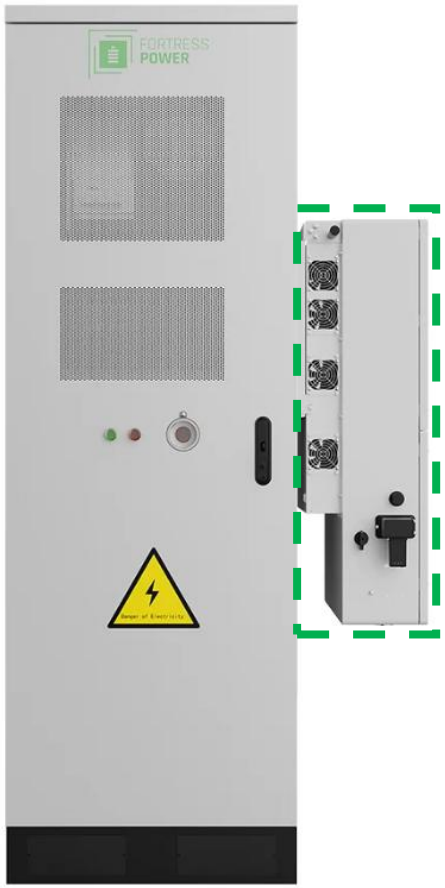
Inverter



All Thanks to

eSpire **Nano**
Hybrid Inverter

eSpire **Nano**

Inverter

Available in Three Configurations:

30kW for **208**Y/120**V**

30kW for **480**Y/277**V**

60kW for **480**Y/277**V**

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Inverter

Each of them featuring:

30kW for **208**Y/120**V**

3 MPPTs
(for up to **6** DC PV strings,~**60**kW input PV Power)

30kW for **480**Y/277**V**

3 MPPTs
(for up to **6** DC PV strings,~**60**kW input PV Power)

60kW for **480**Y/277**V**

4 MPPTs
(for up to 8 DC PV strings,~**100**kW input PV Power)

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Inverter

Each of them featuring:

30kW for **208**Y/120**V**	**30kW** for **480**Y/277**V**	**60kW** for **480**Y/277**V**
3 MPPTs (for up to **6** DC PV strings,~**60**kW input PV Power)	**3 MPPTs** (for up to **6** DC PV strings,~**60**kW input PV Power)	**4 MPPTs** (for up to 8 DC PV strings,~**100**kW input PV Power)
Up to 33kW CHA/DCH	**Up to 33kW CHA/DCH**	**Up to 60kW CHA/DCH**

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Inverter

Each of them featuring:

30kW for **208**Y/120**V**	**30kW** for **480**Y/277**V**	**60kW** for **480**Y/277**V**
3 MPPTs (for up to **6** DC PV strings,~**60**kW input PV Power)	**3 MPPTs** (for up to **6** DC PV strings,~**60**kW input PV Power)	**4 MPPTs** (for up to 8 DC PV strings,~**100**kW input PV Power)
Up to 33kW CHA/DCH	**Up to 33kW CHA/DCH**	**Up to 60kW CHA/DCH**
26kVA Rated AC Output (31kVA 5min, 37kVA 1min, 39kVA 10s, 42kVA 2s)	**30kVA Rated AC Output** (36kVA 5min, 42kVA 1min, 45kVA 10s, 48kVA 2s)	**60kVA Rated AC Output** (72kVA 5min, 85kVA 1min, 90kVA 10s, 96kVA 2s)

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Inverter

Each of them featuring:

30kW for **208**Y/120**V**	**30kW** for **480**Y/277**V**	**60kW** for **480**Y/277**V**
3 MPPTs (for up to **6** DC PV strings,~**60**kW input PV Power)	**3 MPPTs** (for up to **6** DC PV strings,~**60**kW input PV Power)	**4 MPPTs** (for up to 8 DC PV strings,~**100**kW input PV Power)
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Up to 52kW Grid Input Passthrough + Charge	**Up to 60kW Grid Input** Passthrough + Charge	**Up to 120kW Grid Input** Passthrough + Charge

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Inverter

Each of them featuring:

30kW for **208**Y/120**V**	**30kW** for **480**Y/277**V**	**60kW** for **480**Y/277**V**
3 MPPTs (for up to **6** DC PV strings,~**60**kW input PV Power)	**3 MPPTs** (for up to **6** DC PV strings,~**60**kW input PV Power)	**4 MPPTs** (for up to 8 DC PV strings,~**100**kW input PV Power)
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Up to 52kW Grid Input Passthrough + Charge	**Up to 60kW Grid Input** Passthrough + Charge	**Up to 120kW Grid Input** Passthrough + Charge
26kW Smart Port For Generator, AC-coupled PV, or Smart Load	**30kW Smart Port** For Generator, AC-coupled PV, or Smart Load	**60kW Smart Port** For Generator, AC-coupled PV, or Smart Load

Each of them includes:

x1

Nano Inverter

x1

Wall-Mount Bracket

x4

Fastening Screw

x5

Expansion Bolt

x1

Communication Dongle

x1

Communication Cable (9.5ft)

x2

Screw-in Handle


Rogowski Coil Set 600A (three Coils)

x11

RJ45 Connector

x1

Meter

Modularity and Scalability

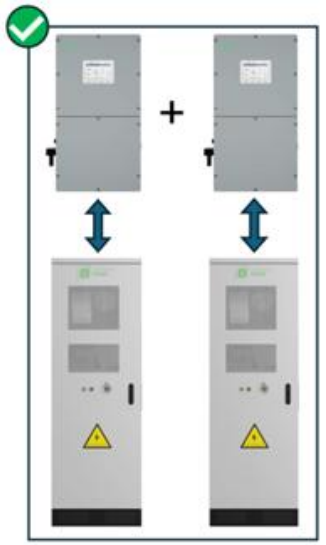
Some of the Do-s and Don't-s

- Nano inverters may be wall-mounted or mounted directly onto the battery cabinet
- There may be up to 6 Nano inverters of identical type working in parallel
- There may be up to 3 Nano batteries of identical type working with one Nano inverter
- Two Nano inverters may not share one battery or one battery group (multiple of them interconnected)
- When multiple Nano inverters are working in parallel, there may be one or more inverters without a battery connection
- Nano inverters working in parallel, all of them must connect to the identical AC panels with identical AC ports.
- It is possible to have energy storage capacity unevenly distributed between the batteries, but in such case it is STRONGLY RECOMMENDED to have PV input power distributed between the inverters proportionaly to the energy storage distribution

Modularity and Scalability

Visualizing Some of the Do-s and Don’t-s

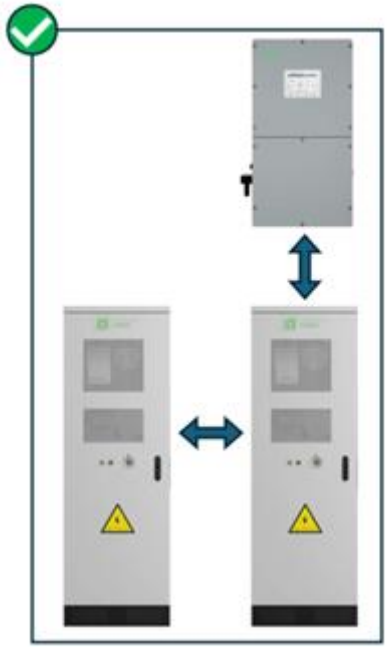
- There may be up to 6 Nano inverters <u>of identical type</u> working in parallel



Modularity and Scalability

Visualizing Some of the Do-s and Don’t-s

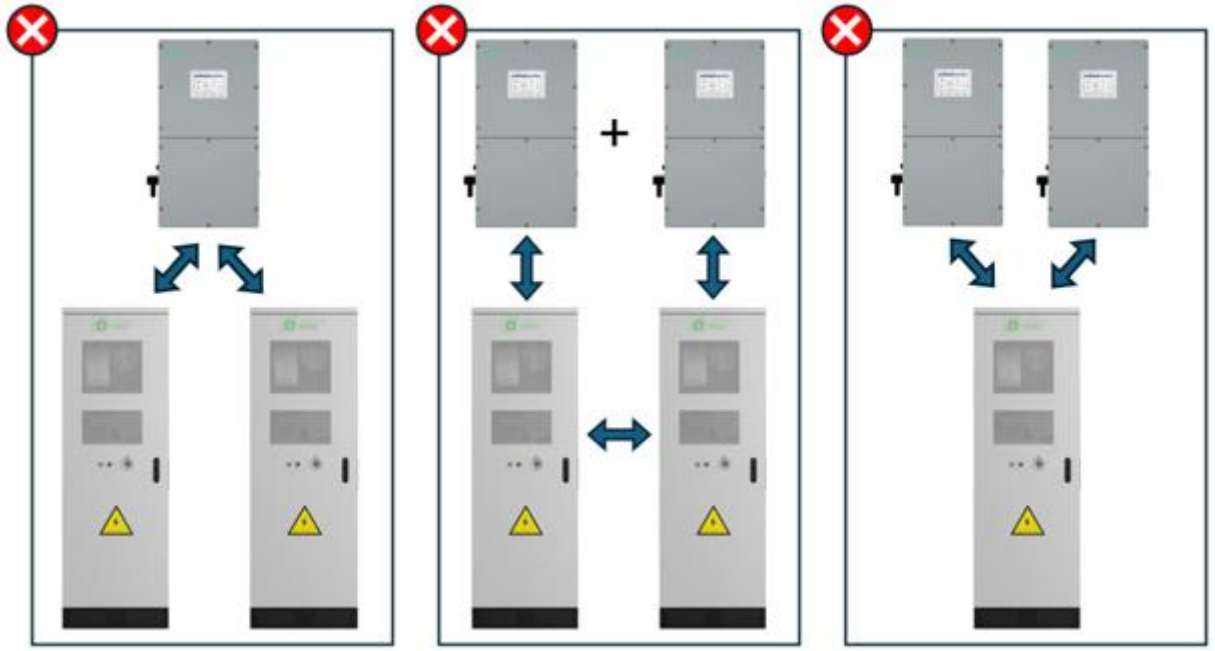
- There may be up to 3 Nano batteries of identical type working with one Nano inverter



Modularity and Scalability

Visualizing Some of the Do-s and Don’t-s

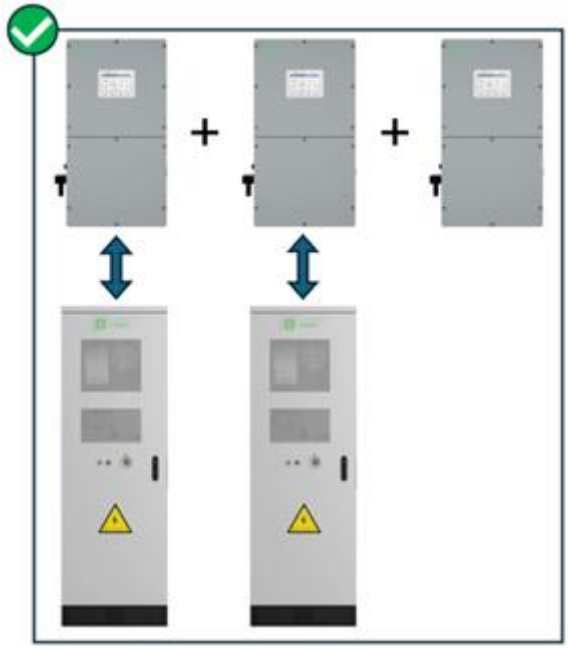
- Two Nano inverters may not share one battery or one battery group (multiple of them interconnected)



Modularity and Scalability

Visualizing Some of the Do-s and Don’t-s

- When multiple Nano inverters are working in parallel, there may be one or more inverters without a battery connection



Since we've mentioned the batteries…

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Battery

There are four types to choose from:

Outdoor Rated

60kWh

40kWh

- Built-in HVAC System
- Built-in Fire Safety System
- Built-in UPS
- Inverter May be Mounted On Directly
- Sophisticated Battery Management
- Tier 1 LFP cells
- 10-year / 8000 Cycle warranty
- 1C Discharge Rated

Indoor Only

40kWh

60kWh

Battery-Inverter Compatibility

60kW 480V

30kW 480V

30kW 208V

All Nano inverters are compatible with all Nano Batteries

But

all necessary measures are to be taken to ensure that the inverter, if its power rating is higher than that of the battery, **can't** overstresses the batteries

60kWh

40kWh

40kWh

60kWh

Battery-Inverter Compatibility

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30kW 480V

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Although one inverter is not allowed to have multiple batteries of different type, parallel inverters each can have a battery type different from each other.

60kWh **40kWh** **40kWh** **60kWh**

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Battery-Inverter Compatibility

60kW 480V

30kW 480V

30kW 208V

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Inverters and batteries are to be commissioned and used in closed-loop communication with one another

60kWh

40kWh

40kWh

60kWh

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Battery-Inverter Compatibility

60kW 480V

30kW 480V

30kW 208V

All Nano inverters are compatible with all Nano Batteries

But

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Although one inverter is not allowed to have multiple batteries of different type, parallel inverters each can have a battery type different from each other.

Inverters and batteries are to be commissioned and used in closed-loop communication with one another

---

26kVA / 40kWh → **360kVA / 1.08MWh**

60kWh

40kWh

40kWh

60kWh

Remember??

kW Threshold Based

12 CHA & 12 DCH Intervals recurring daily Programmed:
- *Target SOC*
- *Power*
- *Time Range*

Supports

- Self-Consumption
- Backup
- Export Priority
- Off-Grid
- Peak-Shaving
- Time-of-Use
- Advanced EMS-controlled

Modes Of Operations

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PRO Package

CATEGORY / FEATURE	STANDARD*	PRO EMS**
1. HARDWARE		
Guardian Dongle	Included	Included
Keystone Controller Package *Indoor controller, power supply, cellular modem*	N/A	Included
Keystone Controller Cabinet *Outdoor upgrade (UL508A + UPS)*	N/A	Optional
eGauge Package Site-level energy metering	N/A	Included
2. APPLICATION		
Target Application	STANDARD	ADVANCED
3. MONITORING & MANAGEMENT		
Cloud Dashboard	✓	✓
Device Monitoring	STANDARD (AC sources and loads connected directly to the ESS to the dedicated ports, one set of CTs used to monitor power flow to/from the grid)	ADVANCED (everything in standard PLUS Up to 6 sets of CTs for individual AC circuit monitoring)
Fleet Management	✓	✓
Alerts & Notifications	✓	✓
Local Data Backup	✗	✓

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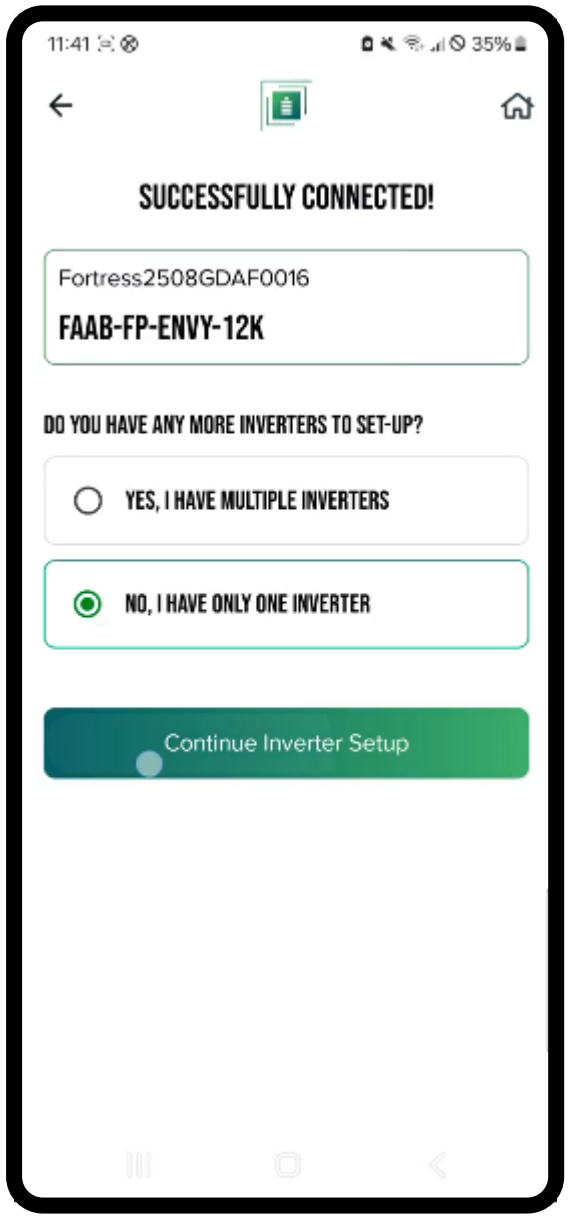
PRO Package

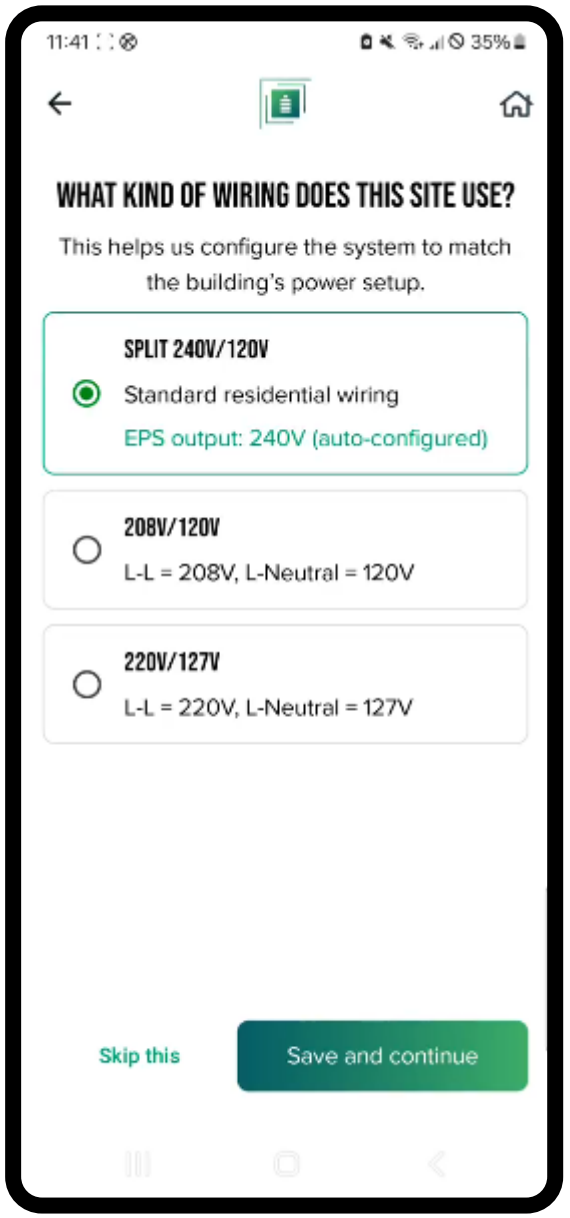
CATEGORY / FEATURE	STANDARD*	PRO EMS**
4. ENERGY OPTIMIZATION		
Peak Shaving	STANDARD (single kW threshold based)	ADVANCED (complex utility rate optimization logic)
Time-of-Use (TOU)	STANDARD (up to 6 CHA and 6 DCH intervals)	ADVANCED (complex utility rate optimization schedule)
Solar Maximization	STANDARD (PV power is distributed as per inverter mode of operation; if present, AC-coupled must be connected directly to or upstream of the ESS; Production curtailed via frequency shifting)	ADVANCED (complex utility rate optimization logic; if present, AC-coupled may be connected upstream or downstream of the ESS; Production curtailed via digital communication)
5. ENTERPRISE FEATURES		
Utility Compliance Reporting	✗	✓
VPP Integration	✗	✓
6. SUPPORT & SERVICES		
Initial Setup	Tier 1	Tier 2***
Configuration	Tier 1	Tier 2***
Optimization Tuning	Tier 1	Tier 2***
Ongoing Management and monitoring	✓	✓

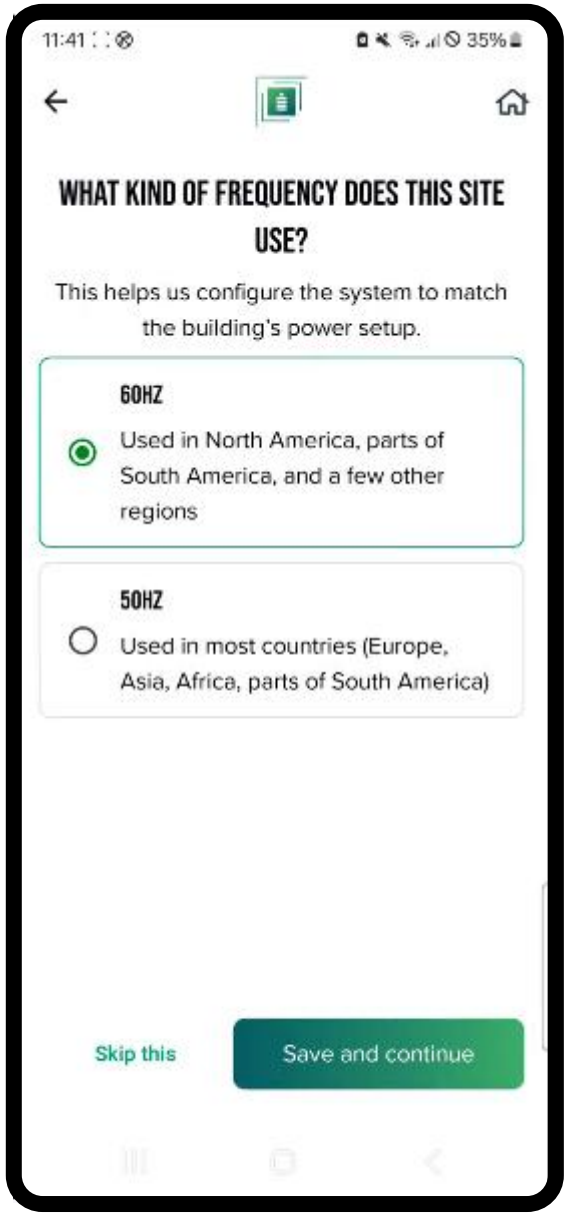
Fortress Power PRO App

FORTRESS POWER

Illustrative Screenshots

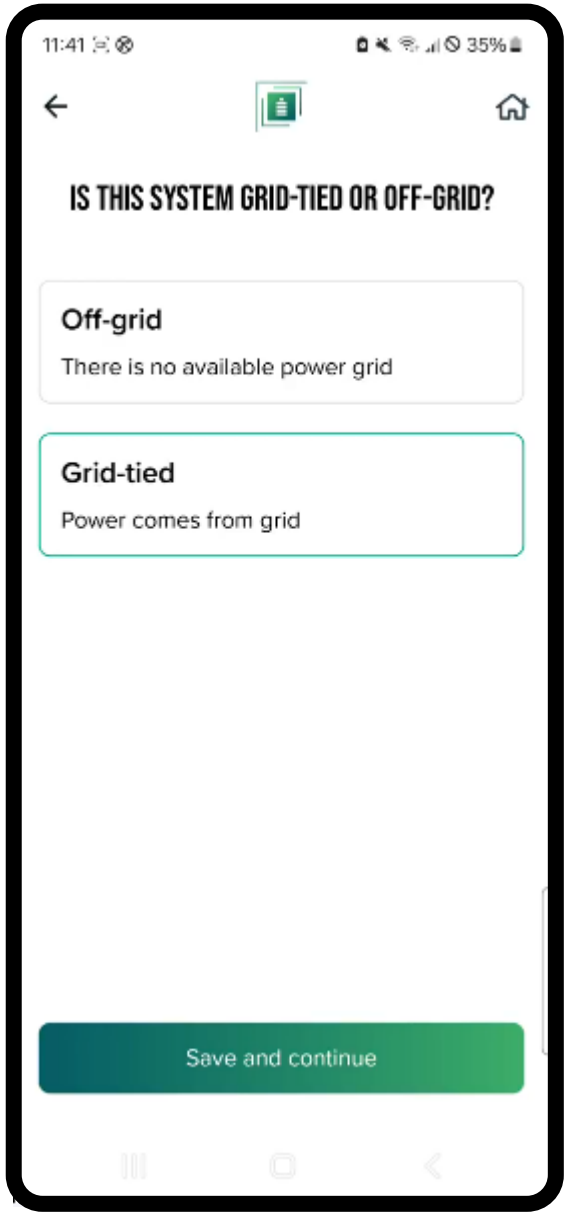


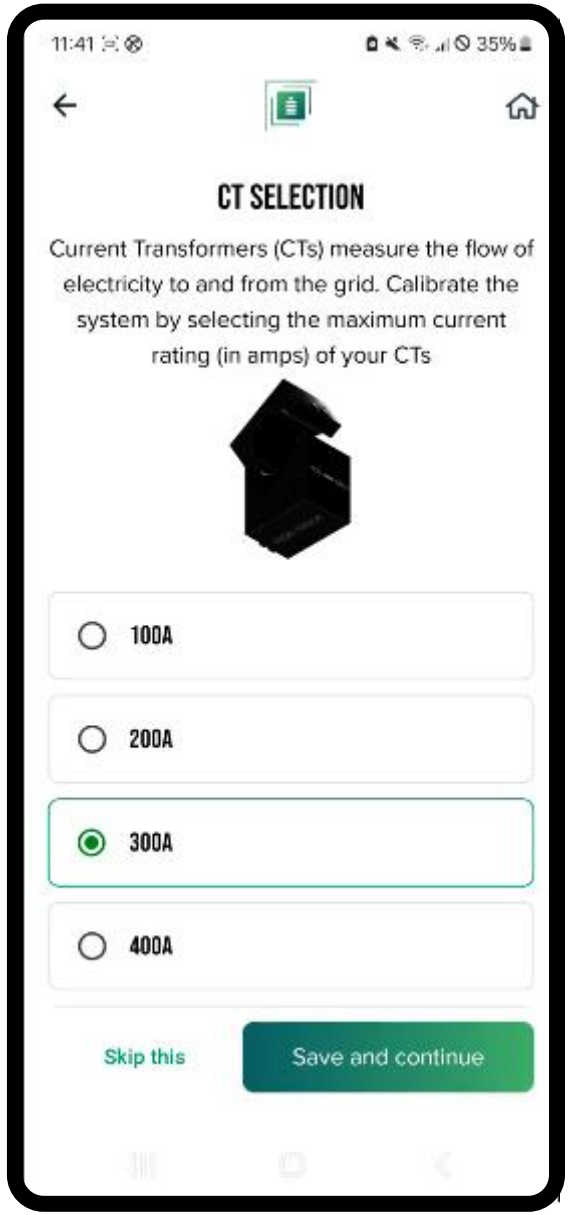


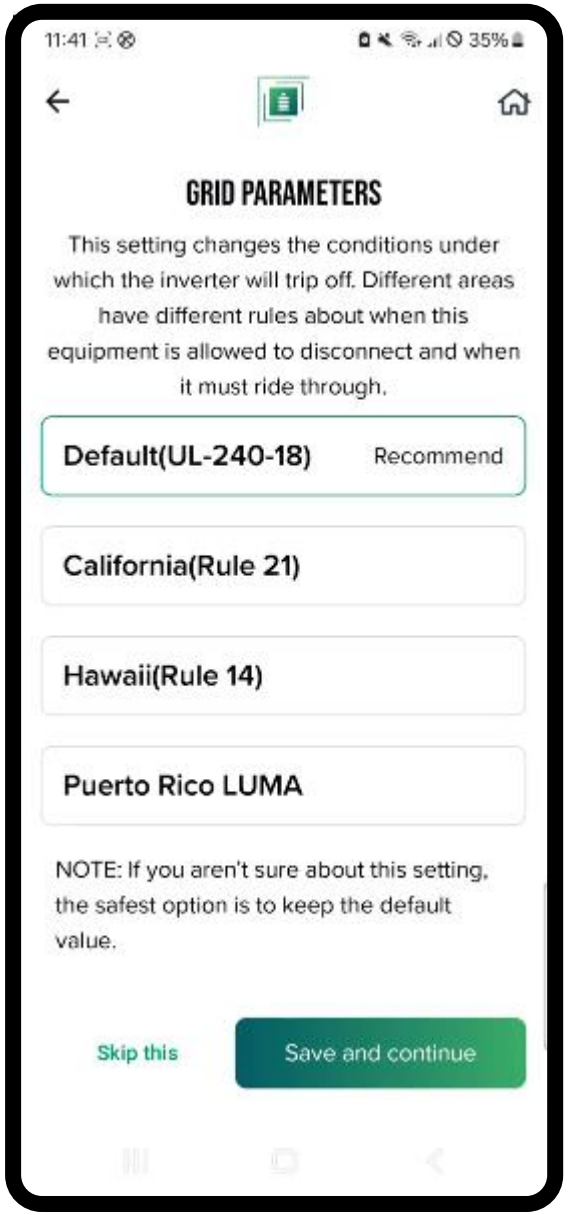


Fortress Power PRO App

Illustrative Screenshots







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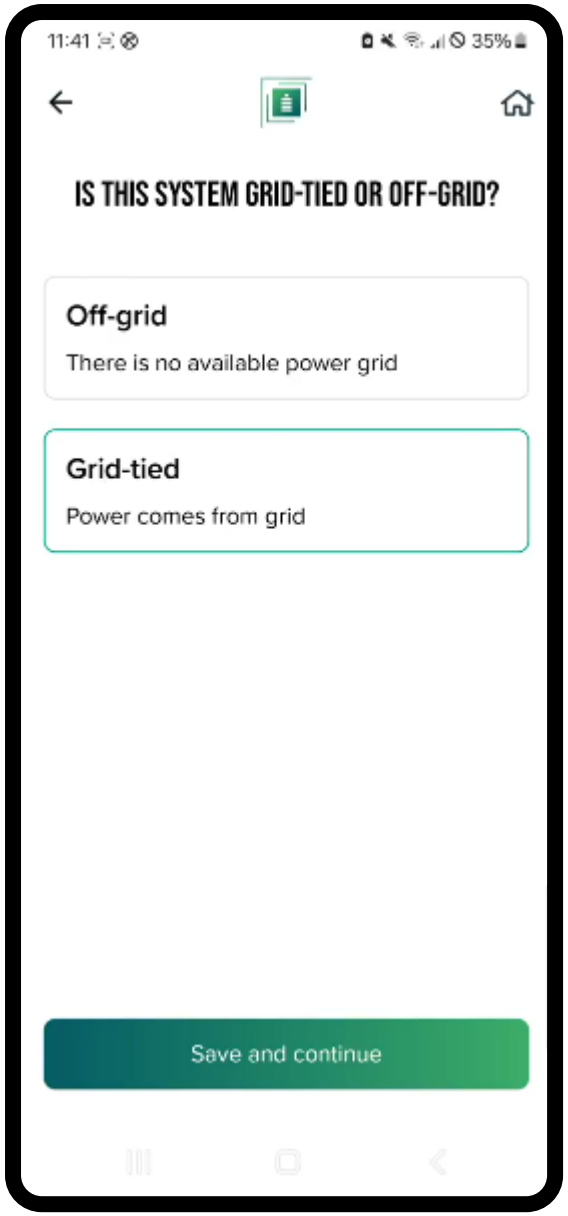

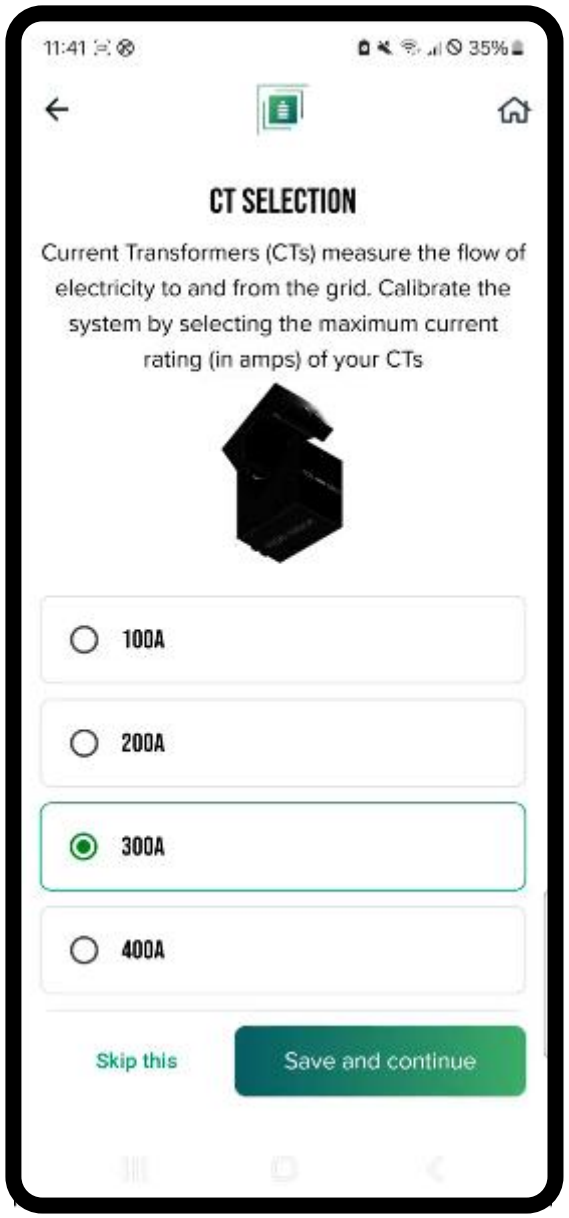

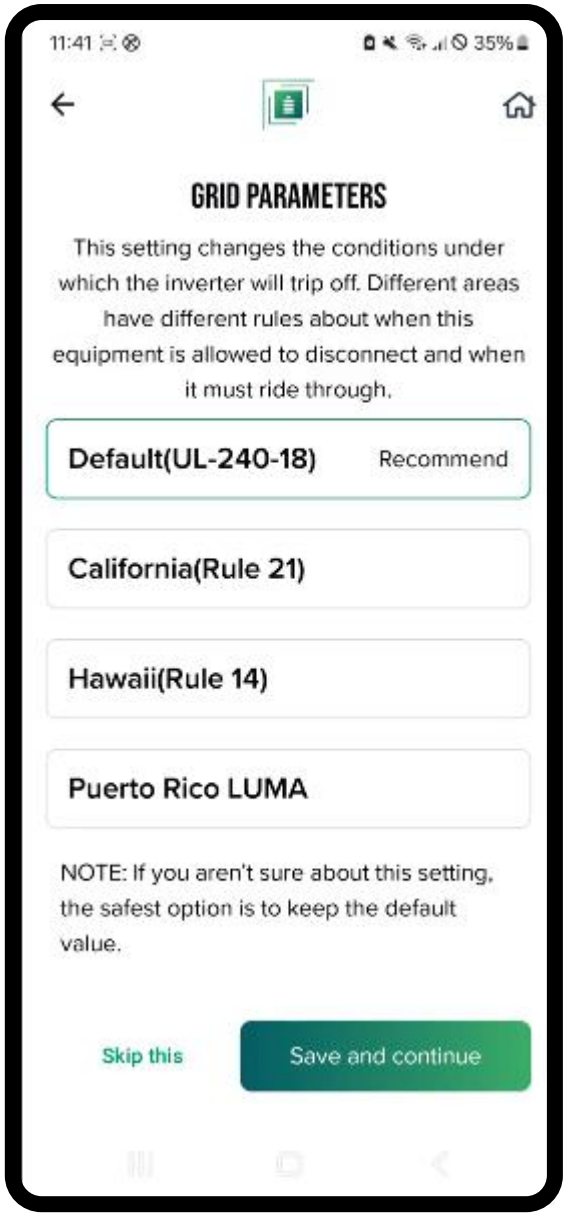

Fortress Power PRO App

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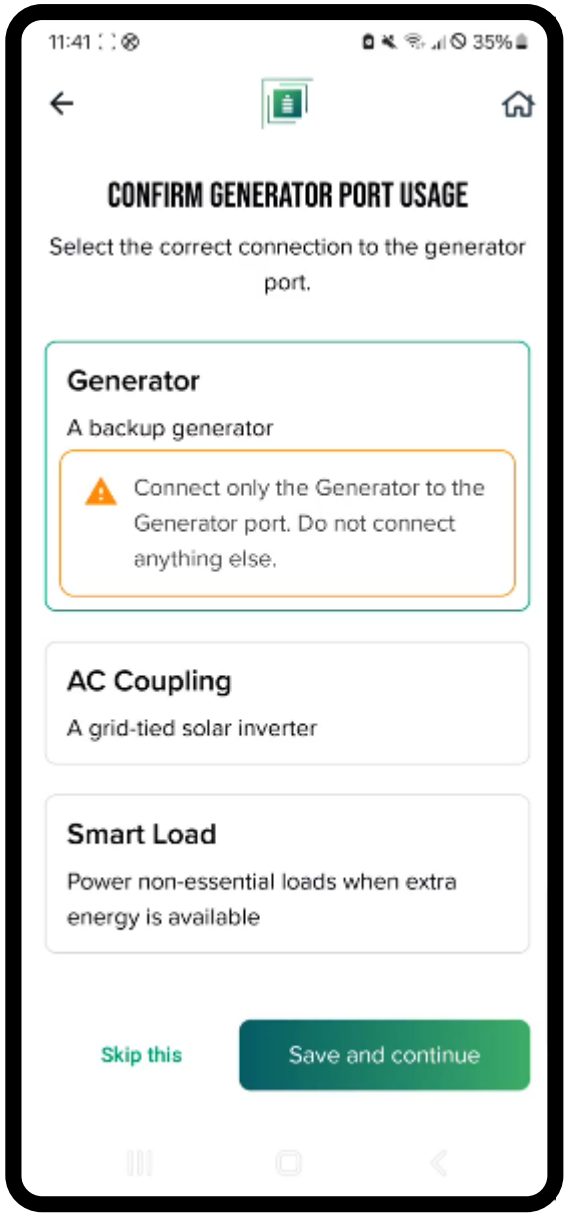
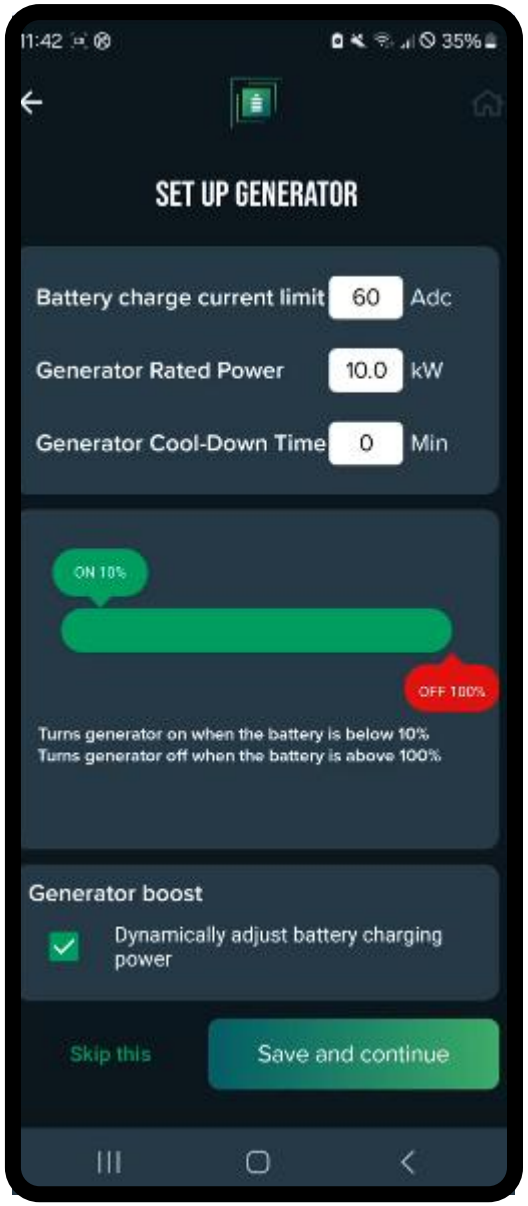
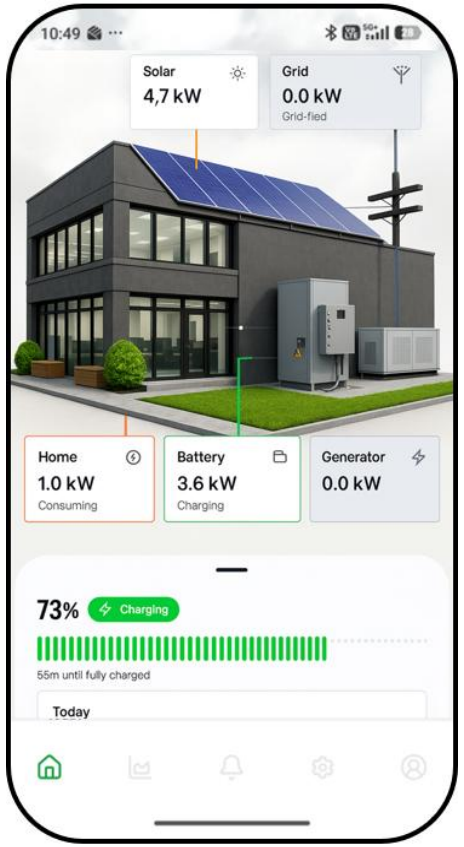
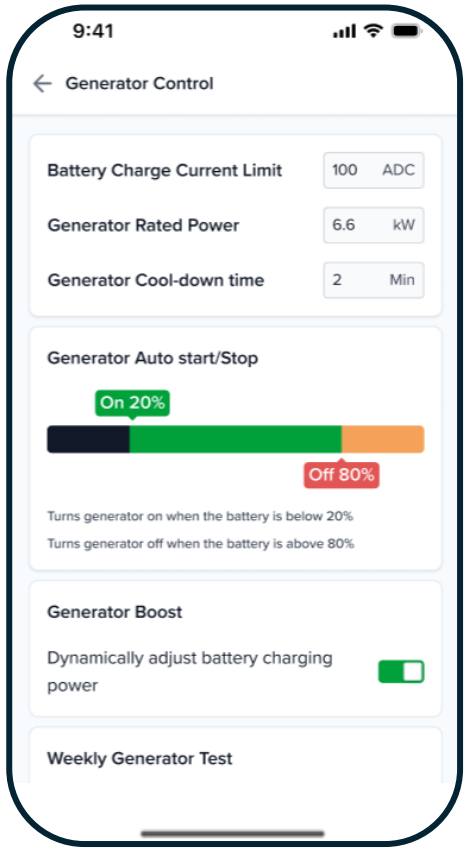


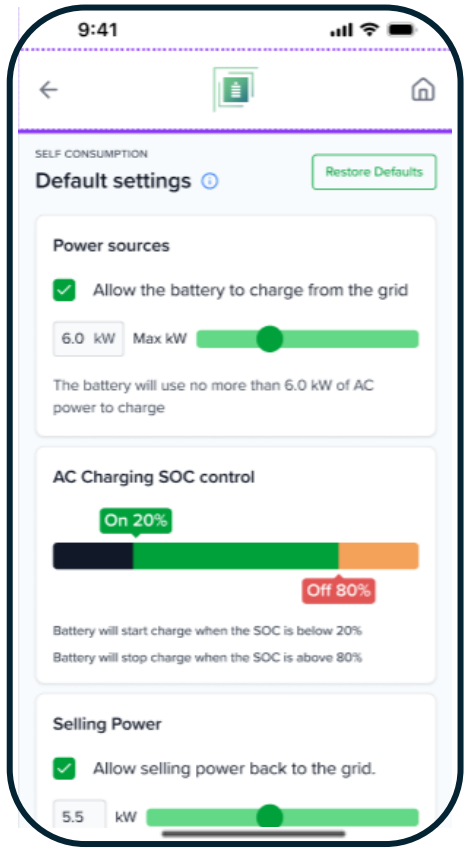


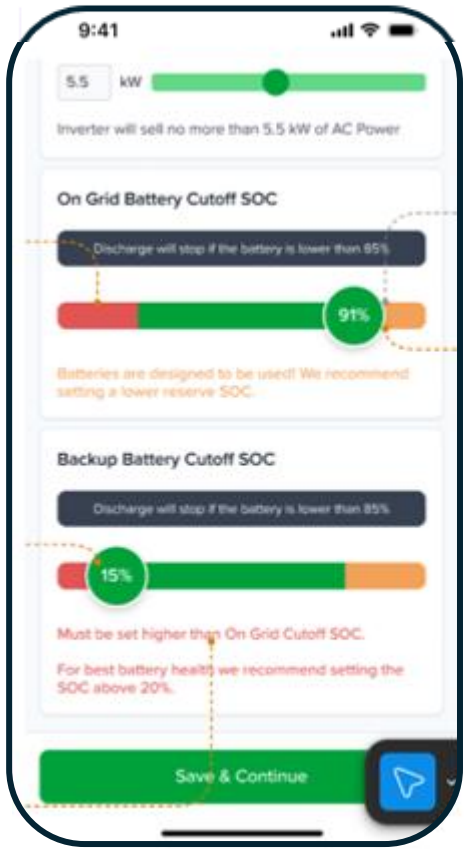
Fortress Power Owner App

Illustrative Screenshots



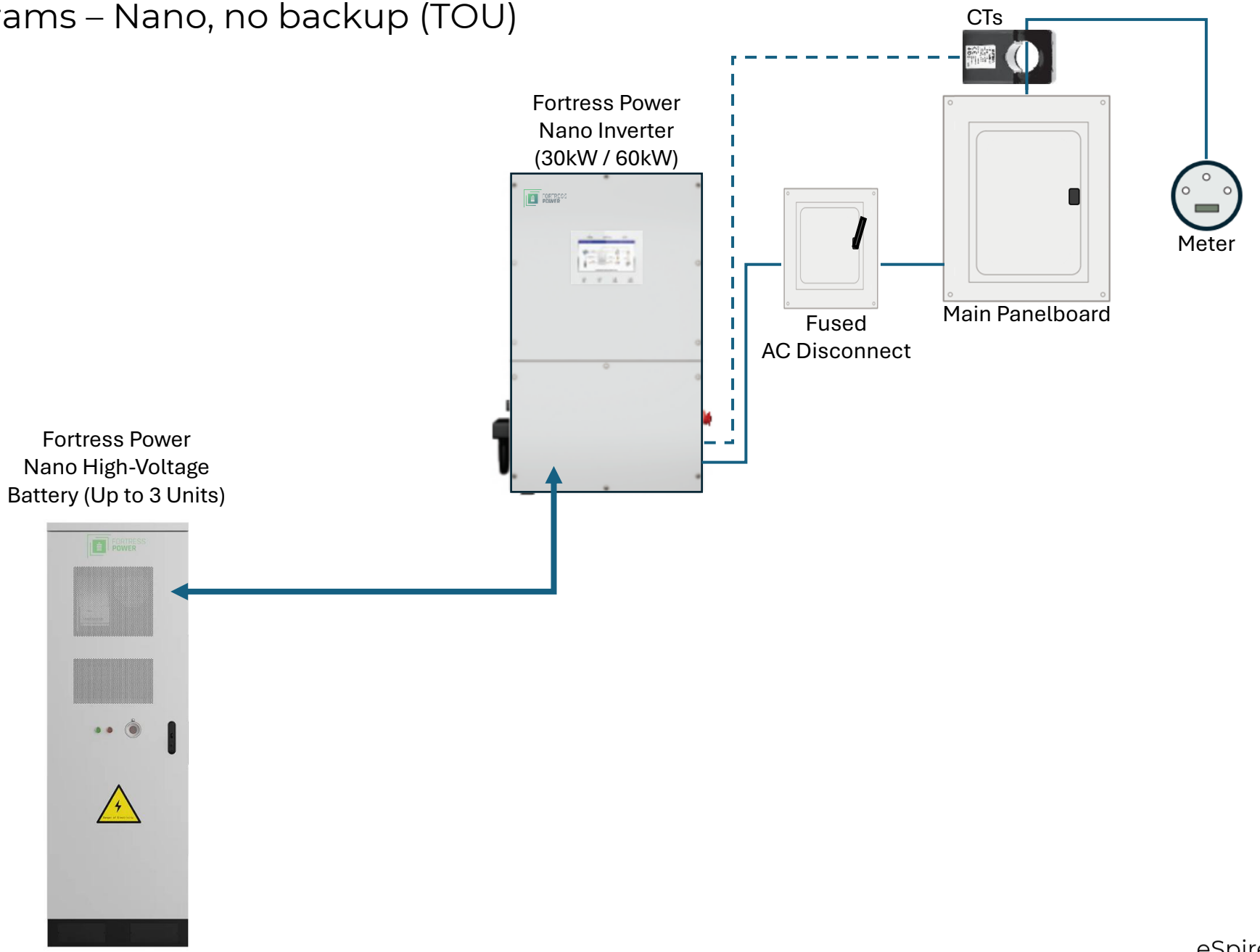






eSpire **Nano** Applications

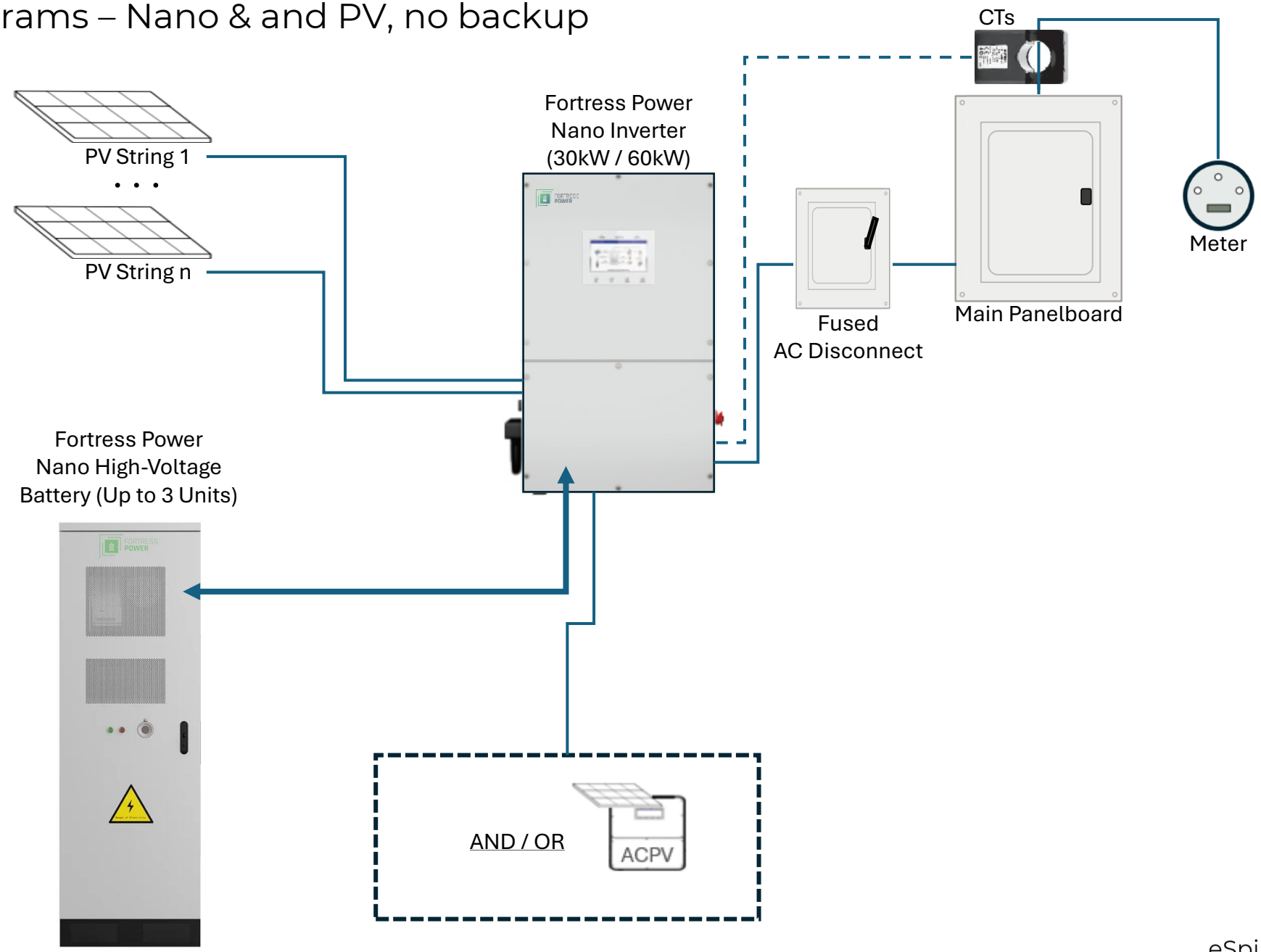
Sample Conceptual Diagrams – Nano, no backup (TOU)



- AC Disconnect may be "skipped"
  If it is allowed to have only breaker as an only OCPD
- In many cases, Rogowski coils are used instead of CTs
- Included meter is not shown but is assumed to be present

eSpire **Nano** Applications

Sample Conceptual Diagrams – Nano & and PV, no backup



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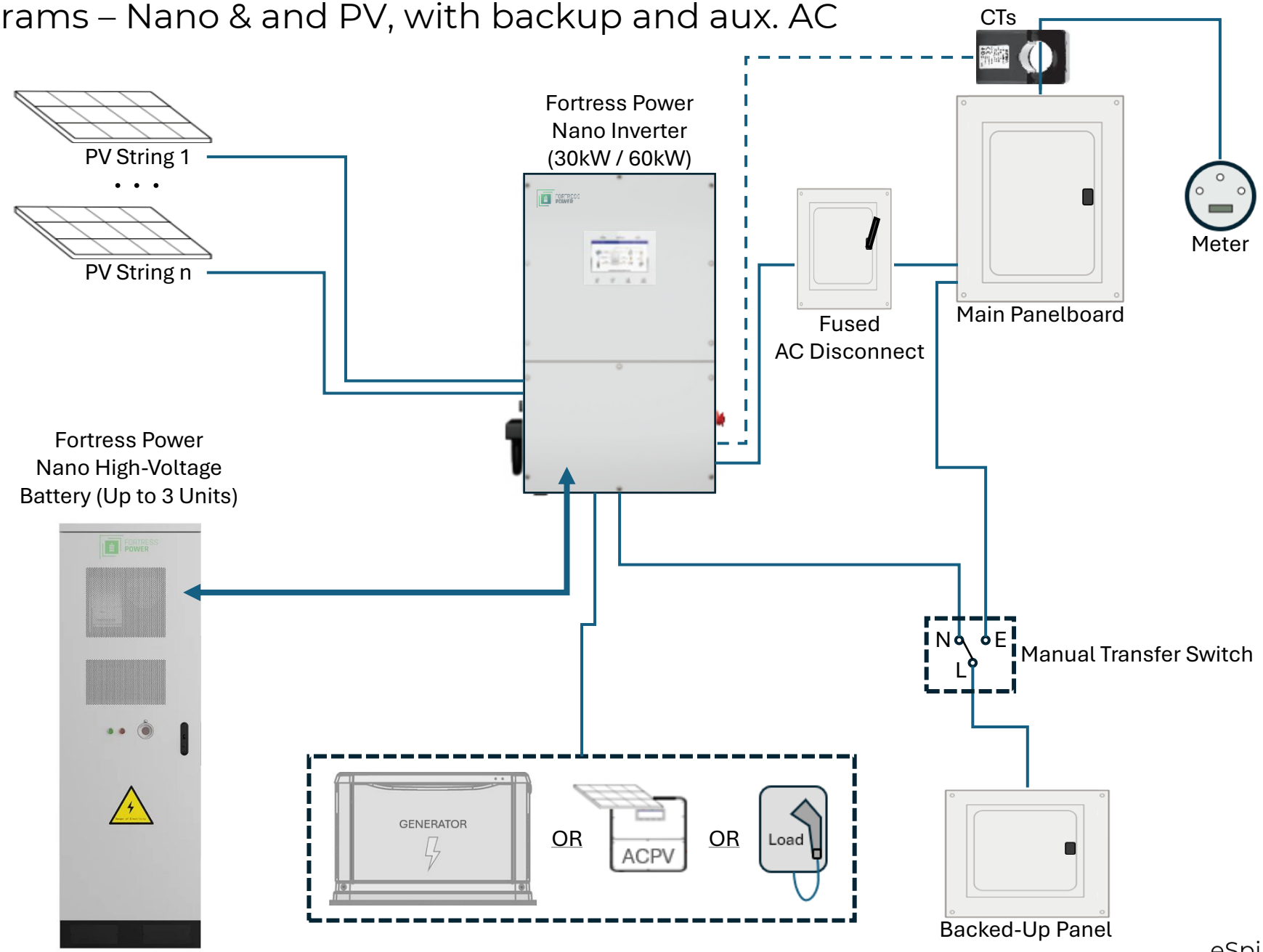
eSpire **Nano** Applications

Sample Conceptual Diagrams – Nano & and PV, with backup and aux. AC



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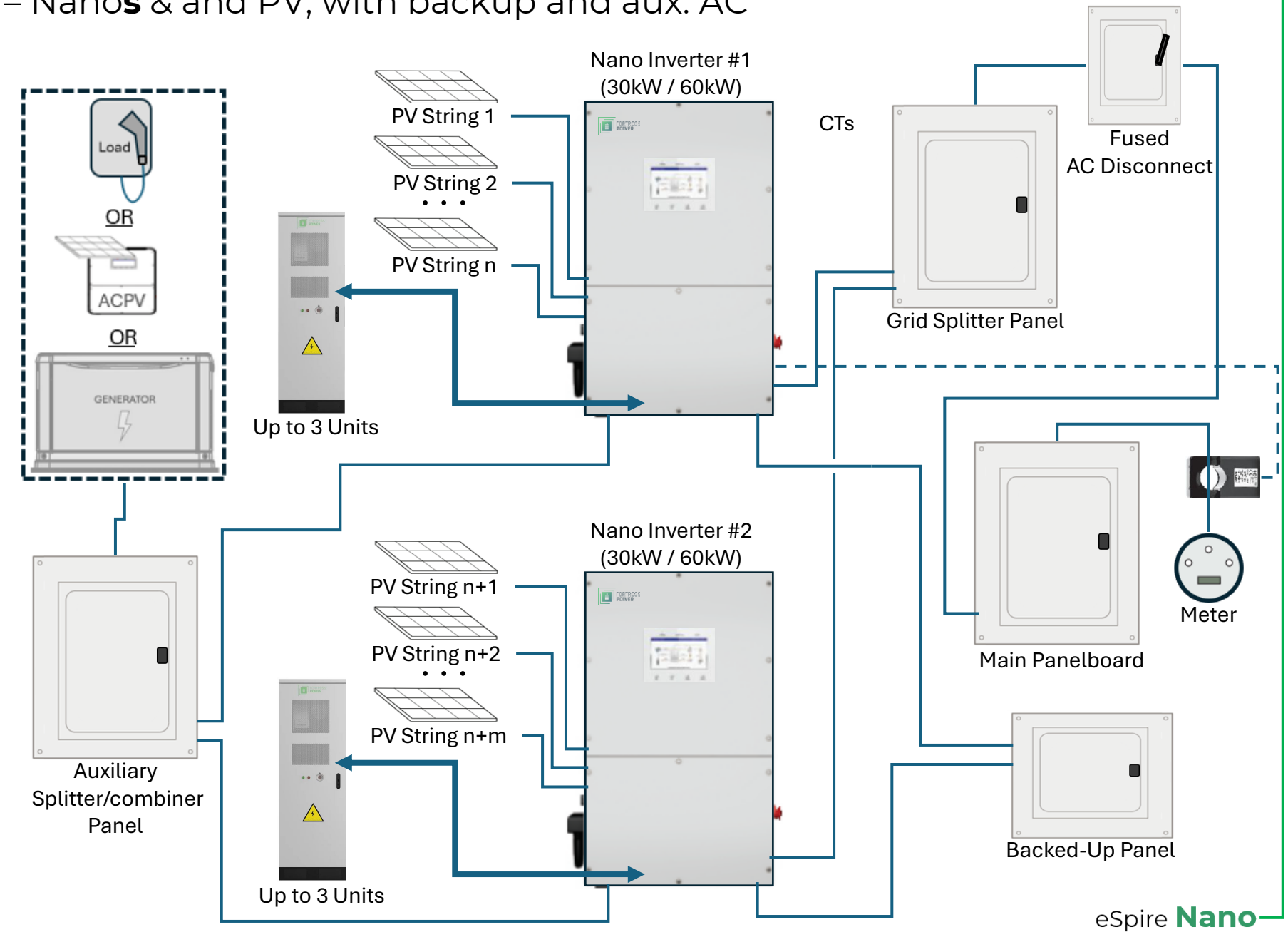
- Manual Transfer/bypass switch is an optional, but a recommended item

eSpire **Nano** Applications

Sample Conceptual Diagrams – Nano**s** & and PV, with backup and aux. AC



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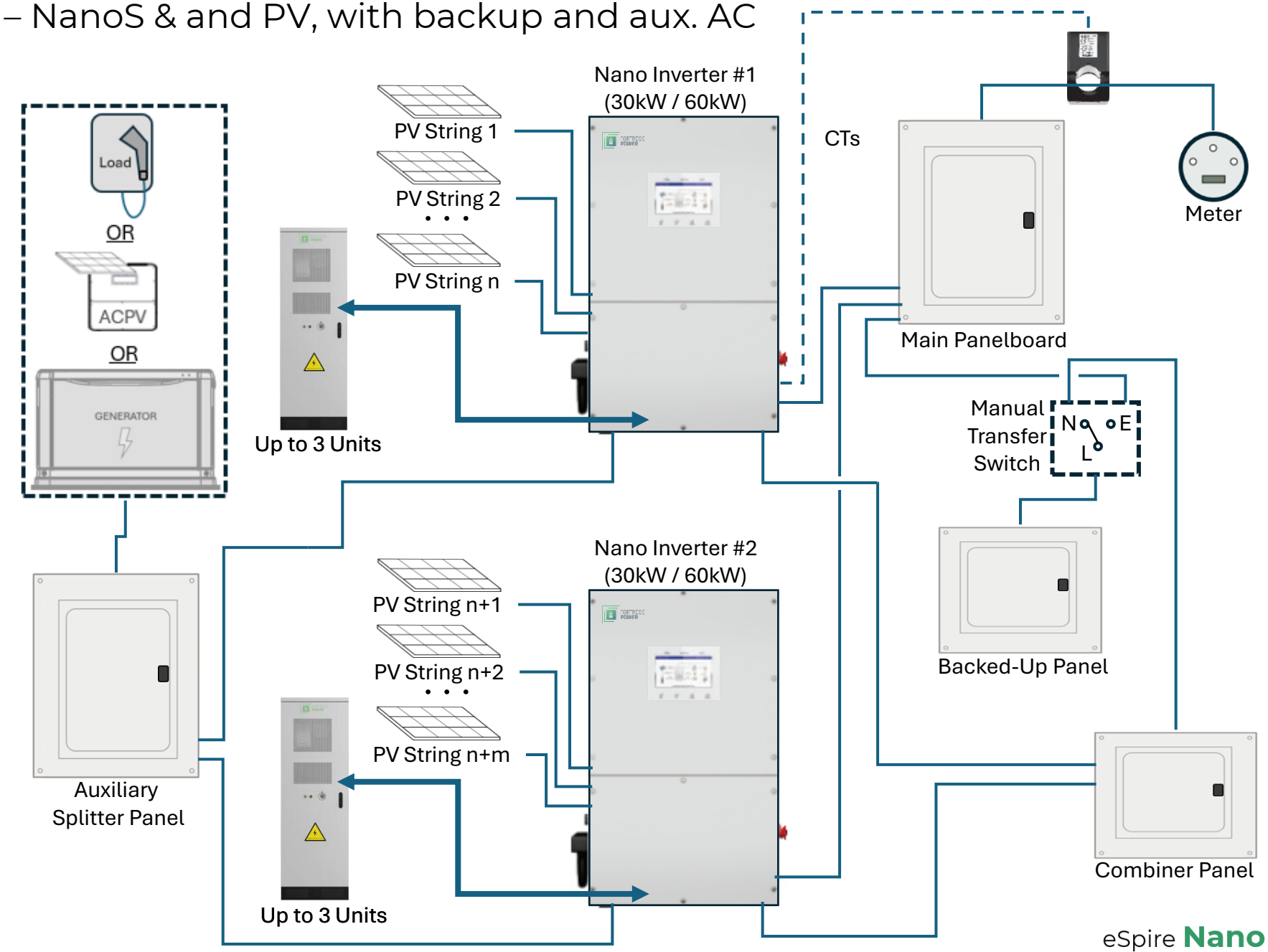
OR

eSpire **Nano** Applications

Sample Conceptual Diagrams – NanoS & and PV, with backup and aux. AC



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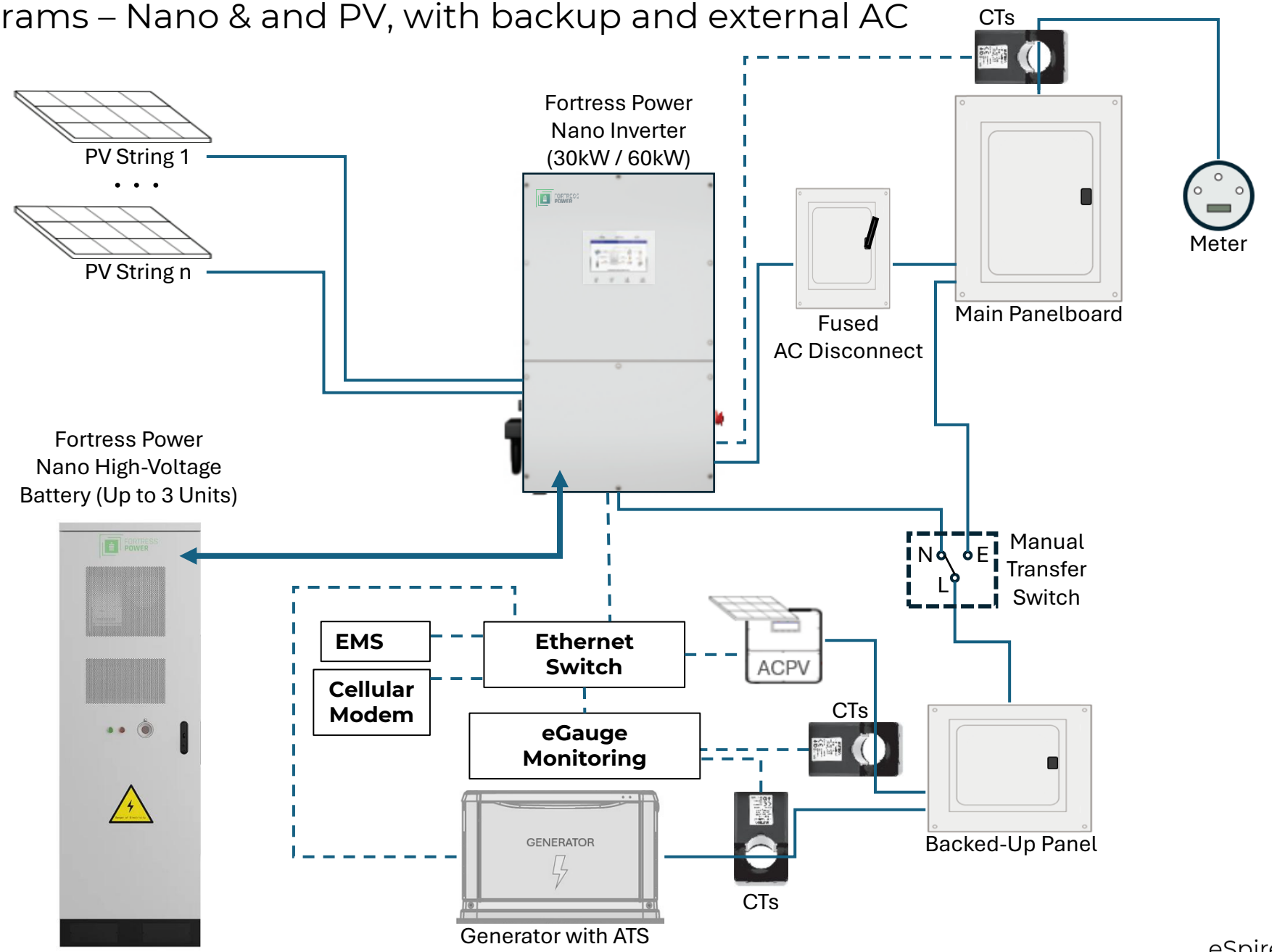
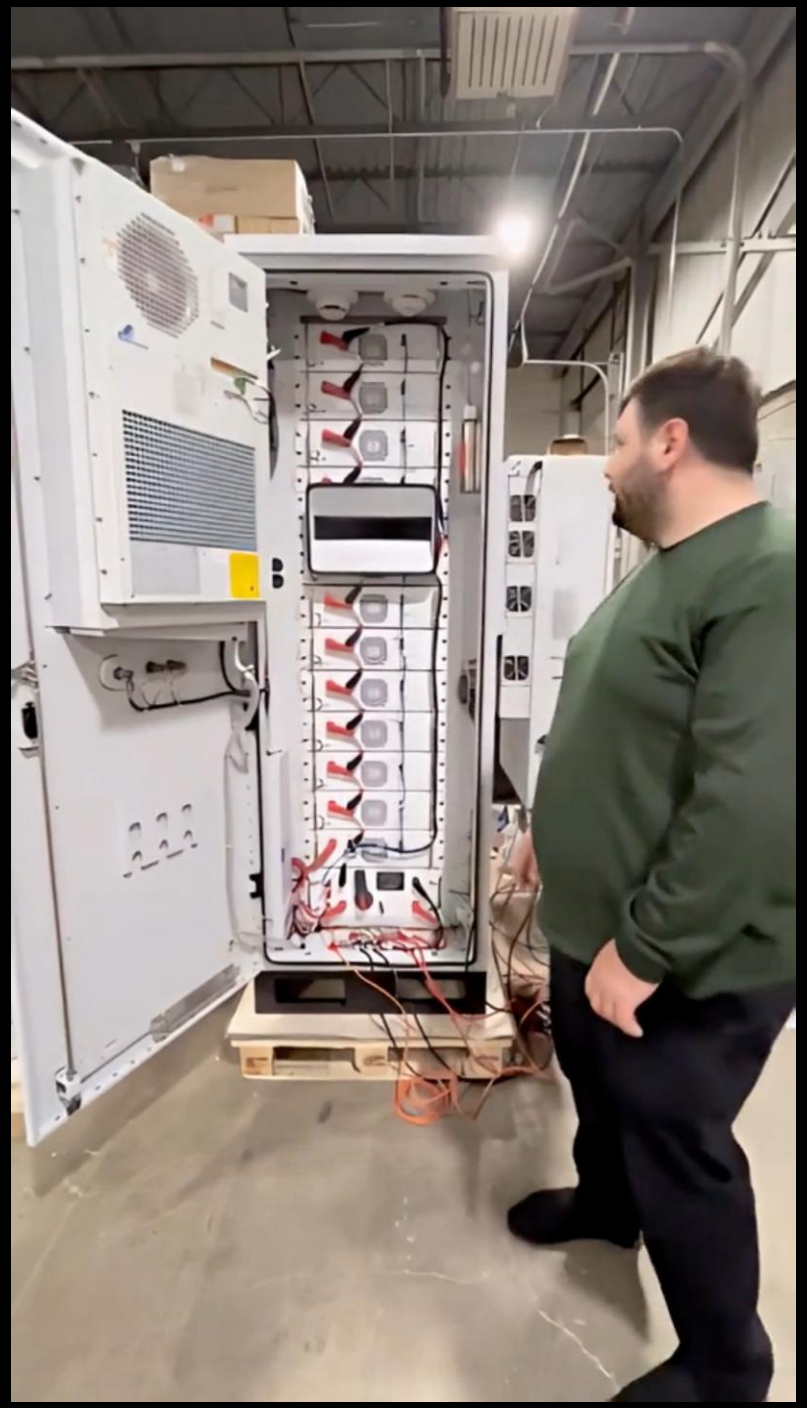
eSpire **Nano** Applications

Sample Conceptual Diagrams – Nano & and PV, with backup and external AC

EMS USE CASE



- AC Disconnect may be "skipped"
  If it is allowed to have only breaker as an OCPD
- In many cases, Rogowski coils are used instead of CTs
- Included meter is not shown but is assumed to be present
- Manual Transfer/bypass switch is an optional, but a recommended item



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Thank You!
See you At the Next One:

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03/25/26 | 2PM EDT

Installation Overview

By **Fortress Power, Your Residential & Commercial Energy Storage Solution Partner**