



Florida Division of State Fire Marshal

The Florida Fire Marshals and Inspectors Association,
"Organization" (§633.026)

Informal Interpretation Request

Date: 10/12/23

NFPA Document Number: NFPA 1

Paragraph Reference: Chapter 52.3.2

Explain how the Petitioner's substantial interests are being affected by the question below:

Viridi (a manufacturer of lithium ion-based energy storage systems) is requesting consideration of its SBR30-150 ("SBR")1 mobile power unit ("MPU"). The SBR is a lithium-ion battery energy storage MPU. Among other electrical components, the SBR is comprised of three (3) 48.9 kWh lithium-ion battery packs, an inverter, and telematics that are enclosed and mounted to a skid. The skid can be connected to a trailer for quick and efficient deployments during emergency response and peak situations or can be semi-permanently installed at a fixed location. The SBR contains 146.9 kWh of total installed energy capacity, and 131 kWh of usable energy capacity, and can be charged from any energy generation source.



Skid-Mount RPS Power Unit

KEY BENEFITS

- Zero emissions
- On-Grid Charging
- Off-Grid Discharging
- On-Grid Discharging
- Generator Hybridization Operation
- Micro-Grid Forming & Participation
- Minimal Noise

DISCHARGE PARAMETERS¹

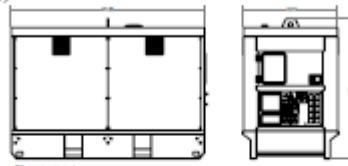
- Minimum to maximum operating temperature: -20°C to 45°C (-4°F to 113°F)²
- Max continuous power: 30 kW

CHARGE PARAMETERS¹

- Minimum to maximum operating temperature: -20°C to 45°C (-4°F to 113°F)²
- Max continuous power: 30 kW

PHYSICAL PARAMETERS

- Length: 9055 in
- Width: 4370 in
- Height: 6535 in
- Estimated at 5,270lbs



ELECTRICAL FEATURES

- 1 X NEMA 14-50R
1000VAC, 30kVA
- 2 X CS Twist Lock Receptacles
1000VAC, 30kVA
- 2 X NEMA 5-20R
1000VAC, 30kVA
- 2 X AC Cam-Locks
1000VAC, 1000VAC, 1000VAC, 1000VAC

PERFORMANCE

- Max Continuous Power¹
- 30kW Charge
- 30kW Discharge
- Battery System
- 146.7 kWh Nominal
- 130,000 Cycles at Usable Capacity

MECHANICAL FEATURES

- Skid-Based Design
Compatible w/ Trailer Mount
- Side Access Fork-Lift Pockets
- Single-Top Lift Point
- Full Custom Enclosure
1000VAC, 1000VAC

CERTIFICATIONS

- UL 9843 (cell/module)
- UL 1644 (cell)
- UL 1973 (pack tested but not listed)
- UL 9540A (cell/module/pack tested)
- UL 9540 (Field listed with ESS)
- All Electrical Components Are UL Certified

Rulings herein expressed are not the formal position of the Florida State Fire Marshal's Office

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Website: www.FFMIA.org | Email: info@fmia.org | http://www.myfloridacfo.com/sfm/bfpr/bfpr_index.htm



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The SBR contains Viridi's UL 9540A-tested energy storage battery pack that utilizes anti-propagation technology and can stop a thermal event before the affected cell propagates within the pack without any external fire suppression system. As demonstrated in the testing documents provided, the SBR's key to safety is incorporated within the pack architecture. The SBR has full connectivity through our IoT system and can be remotely monitored in real-time.

This product is intended to be used as a zero-emission replacement for a portable diesel generator, particularly in a power-as-a-service model during peak times and outages. Deployment of the SBR is aligned with Florida's renewable energy goals and can efficiently store and transport renewable energy from its generation site to the point of use – all behind the electric meter. In function, it is no different than the battery on an electric vehicle – a portable block of energy. However, as noted in the documents, it is failsafe by design.

Enter the Petitioner's question concerning an interpretation of the FFPC:

Questions:

Chapter 52.3.2 of the Code states that certain requirements apply to "stationary storage battery systems" without providing a definition of "stationary." Does our mobile power unit fall under this definition thus requiring compliance with Chapter 52.3.2

Answer: No

NFPA 1 chapter 52 is not applicable in reference to the SBR30-150 (SBR) 1 as this chapter is for stationary battery systems and not mobile as defined below. The correct NFPA standard for application would be NFPA 855 Standard for the installation of stationary Energy Storage systems 2020 edition that states that it applies to "mobile and portable energy storage systems installed in a stationary situation." It also goes on to mention that the storage of lithium-ion batteries is included in the scope of the document. The application section then limits the application of the standard to certain-sized mobile energy storage systems. For all types of lithium-ion batteries, the threshold is 20 kWh (72 MJ) before the requirements of NFPA 855 apply.

Definition 3.3.9.5 Mobile Energy Storage System.

An energy storage system capable of being moved and utilized as a temporary source of power.

In addition to the previous question, Viridi submits this request to determine the interpretation of "listed" as defined by Code Chapter 52.3.2.5, *et seq.* As demonstrated by Viridi's submitted documentation, the Inverter on the SBR is listed to UL, and the RPS50 base pack technology is tested to UL 1973 and UL 9540 Rule. Each RPS50

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battery pack is manufactured (via its ISO 9001 quality management system) in a manner that is representative of, and with the same components in, the RPS50 pack tested by CSA to the relevant UL standards. Over the past year, Viridi has undertaken steps for the RPS50 and SBR to be UL-listed. That process remains ongoing. With full listing pending.

Question:

Would a field evaluation on each battery pack and corresponding sticker that conforms to the tested standards meet the requirements of a "listed" system as required by NFPA 1 Chapter 52.

Answer: No

NFPA 855 2020 edition requires that all ESS systems be listed in accordance with UL 9540 unless exempted in other sections as follows:

NFPA 855 4.2.1.1

Lead-acid and nickel-cadmium battery systems less than 50 V ac, 60 V dc in telecommunications facilities for installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations that are in compliance with NFPA 76 are not required to be listed in accordance with UL 9540.

NFPA 855 4.2.1.2

Lead-acid and nickel-cadmium battery systems that are designed in accordance with IEEE C2, used for dc power for control of substations and control or safe shutdown of generating stations under the exclusive control of the electric utility, and located outdoors or in building spaces used exclusively for such installations shall not be required to be listed in accordance with UL 9540.

NFPA 855 4.2.1.3

Lead-acid battery systems in uninterruptible power supplies listed and labeled in accordance with UL 1778 and utilized for standby power applications shall not be required to be listed in accordance with UL 9540.

Definition NFPA 855 3.2.3 Labeled.

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Definition 3.2.4 Listed.

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing

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states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

Region 1 - Delegate: Byron Bennett, North Bay Fire Control District
Alternate: William (Michael) Hall, Marianna Fire Rescue

Region 2 - Delegate: Jason R. Greisl, Tallahassee Fire
Alternate: Vacant

Region 3 - Delegate: James Groff, Jacksonville F. R. (Committee Chair)
Alternate: Silver Chip Ware

Region 4 - Delegate: Taylor Riley, Lakeland Fire Rescue
Alternate: Karl Thompson

Region 5 - Delegate: Anthony Apfelbeck, Altamonte Springs Building Department
Alternate: Christina Diaz, Seminole County Fire Department

Region 6 - Delegate: Robert Salvaggio, Cape Coral Fire Rescue
Alternate: Vacant

Region 7 - Delegate: (Kenneth) Sean Brown, Broward Sheriff Fire Rescue & Emergency Services
Alternate: Rebecca Geimer Tamarac Fire Rescue

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