



Emergency Response Plan

OSSINING ENERGY STORAGE 1, LLC

381 N Highland Ave, Ossining, NY

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Prepared By: XXXXX, Development Engineer

Reviewed By:

Approving Manager:

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1. Purpose

First Responders may include Emergency Services, Borrego Personnel, or other Borrego Third-Party Personnel.

The purpose of this document is to provide First Responders with awareness of typical but not exhaustive Risks & Hazards related to Energy Storage Systems during potential failure scenarios. Borrego wishes to thank emergency response professionals for their concern and efforts in protecting our clients and the general public.

Wherever national, state, or local regulations or buyer or subcontractor health, safety, and environmental requirements differ from those described herein, the more stringent requirements shall apply. All employees, vendors, contractors, subcontractors, and visitors shall comply with applicable Health and Safety requirements. Failure to do so may result in personal injury or death.



READ THIS PROCEDURE BEFORE ENTERING THE SITE

1. *Evaluate the site to determine if an alarm related to the battery containers is indicated by a red beacon on any of the battery containers. In the event a red beacon is visible STOP and evacuate the site. Under this situation, all personnel must remain outside the site area until Borrego is contacted and provides further guidance.*
2. *Above all, place physical distance of 100 feet between all personnel and the affected battery enclosure if an incident related to the batteries is suspected.*
3. *In the event the battery enclosure beacon is not alarming the site can be accessed. Proceed with caution and evacuate if fire or smoke is observed from the battery containers.*
4. *The Safety Systems of the Energy Storage Site run on the Auxiliary Power supply to the site. Therefore this must never be disconnected.*

This plan does not imply that a perfect response will always be practical or possible. No plan can protect individuals from all possible incident scenarios.

2. Project Contacts

NOTE: Site access instructions.



2.1 Customer Contacts

Customer Control Room (24x7):

2.2 Borrego Contacts

Borrego Support Team (24x7): +1 (555)-555-5555 | borrego@borregosolar.com

Borrego		
Contact Title	Site Service Manager	Address
Name		
Mobile		
E-mail		
Contact Title	Director, Operations Services	Address
Name		
Mobile		
E-mail		
Contact Title	Manager, Quality & Safety	Address
Name		
Mobile		
E-mail		

3. Ossining Energy Storage Site

Site Overview

The Ossining Energy Storage Facility is a system that comprises multiple lithium-ion battery modules in racks, which are in turn located inside a container. The racks of modules are connected to four DC/DC converters, then to inverters (AC / DC) and then to transformers before being connected to the grid.

Some of the main components in the system are:

- One oil-based 1600 kVA, 13.2 kV to 600 V Isolation Transformer
- One oil-based 112.5 kVA, 13.2 kV to 480 V Aux Transformer
- One Inverter Enclosure (1500 kW)
- Four DC/DC converters (500 kW)
- One battery container
 - Purpose-built containers made of concrete with steel doors along both sides
 - ~52 ft long, ~11.5 ft wide, and ~13 ft tall
 - Two HVAC units, one on each end



- 26 Battery racks in the container, totaling ~8.5 MWh of DC energy
- 22 NMC Lithium-Ion modules per rack, each module with ~14.9 kWh of energy
- Equipped with Novec 1230 Fire Suppression System
- Communications and controls equipment, to provide system status, with input and output routed into a control building which contains telecommunications equipment and switchgear.

3.2 Remote Monitoring

The energy storage site is monitored 24x7 by the Borrego Support Team. When an alarm is detected by the energy storage system, the following happen:

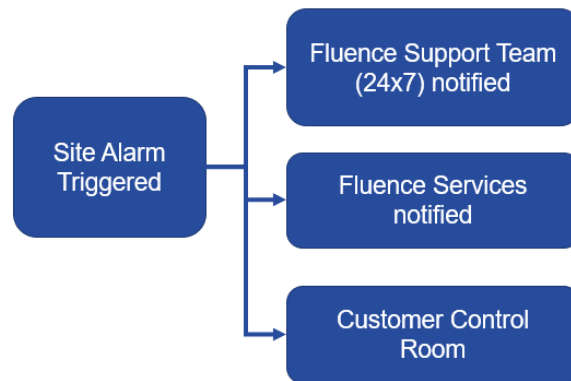


Figure 1: Borrego Remote Monitoring

4. Hazards

4.1 Chemical and Toxicity Hazards

4.1.1 Lithium Ion Batteries

Lithium ion batteries pose chemical risks. Please read the Safety Data Sheet for more information.

Under abnormal conditions, lithium ion batteries can produce toxic gases. However, from a toxicity perspective, the gases may be managed effectively through the appropriate Personal Protective Equipment (PPE), including Self Contained Breathing Apparatus (SCBA). The toxicity of gases released do not differ greatly from plastics fires. However, they should not be approached without SCBA, as concentrations of gases which cause immediate danger to life and health without PPE may be reached.



4.1.2 Fire Suppression Agent

The Fire Suppression Agent used at this facility is Novec 1230. When discharged in the event of a fire, the byproducts are known to cause eye and skin irritation and potential toxicity risks. Please read the Safety Data Sheet for more information.

4.2 Electrical Hazards

A Borrego Battery Energy Storage site contains electrical equipment with voltage ratings between 1500 V and 13.2 kV (or higher). Arc flash labels are present on all devices where arc flashes may occur.

The battery equipment contains stored electrical energy, even when disconnected. As such, care should be taken to not directly touch the battery equipment during the event or during overhaul operations. A subject matter expert should advise on how to handle stranded energy remaining in any of the damaged battery equipment.

The balance of plant equipment can be approached in the same way that other electrical equipment or industrial plant equipment which is under fire conditions.

4.3 Fire and explosion hazards

Lithium ion batteries, under normal operating conditions, do not produce any gases. However, under abnormal failure conditions, such batteries can rapidly evolve flammable/explosive gases. In the event of a fire in the container or other emergency where a battery failure in the container is suspected, stay outside of the site.

While clean agents are proven highly effective at extinguishing non-battery fires, explosive conditions may still develop when fire is not present as batteries continue to off-gas until cool.

4.4 Confined space hazards

The energy storage containers are not intended for occupancy but have space where a person may enter. During an event, first responders should not approach, open, or enter the containers, unless there is a risk to human life. The containers have doors along their entire length and, if entry is required, care should be taken to follow the local emergency responders' SOP for confined space entry.

5. Action Plan



- 1. Information in this section is to be reviewed alongside the attached Process Flow***
- 2. This process is only a Borrego Recommendation. Emergencies can be unpredictable, and First Responders are advised to use their training and best judgement***

The action plan describes the recommended personnel response during an emergency event based on its progression. The key players in the process flow are the First Responder Personnel and the Borrego Support Service Team i.e. Field Service Engineer or Service Subcontractor. The process flow is colour-coded to demarcate action/responsibility as shown below.



Failure Condition / System sensor Trigger

Fluence Support Service Team Action

Energy Storage System Self Protection

Fire Fighting Team Action

6. Site Information

6.1 Site Access

NOTE: *Site access instructions.*

Customer Control Room (24x7):

Example

1985 Southbridge Road



Figure 2: Site Access

Address:

Geo Code:

Site Perimeter:

Space for Fire Trucks:

Hydrants Present:

6.2 Site Layout

Note: Refer to the Customer Site Emergency Action Plan for Assembly Point information

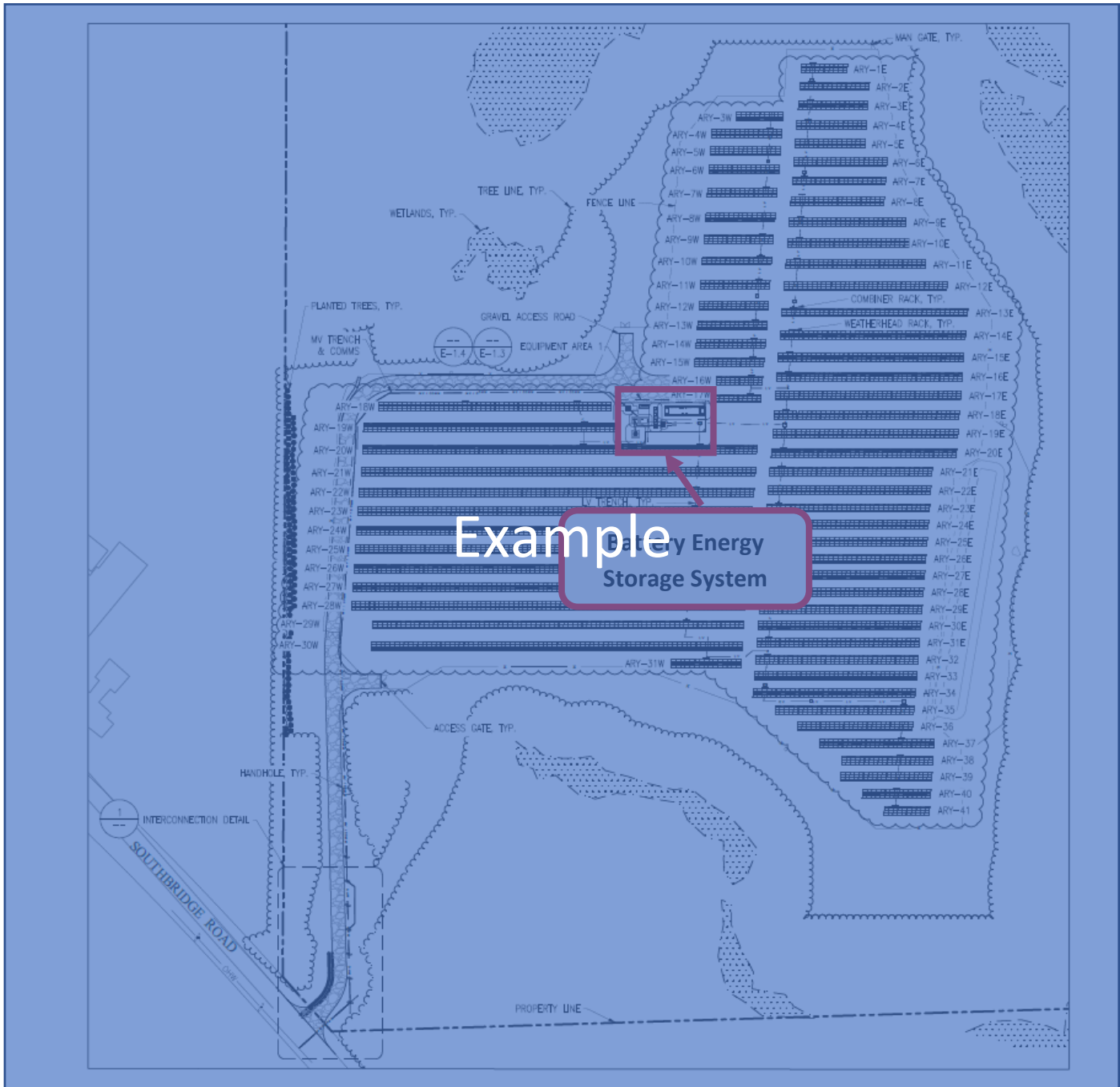


Figure 3: Overall Site Layout

6.3 Battery Container Access



Battery containers are not meant to be accessed during an event except if necessary for saving human life.

Container may be accessed through the side doors as shown below.

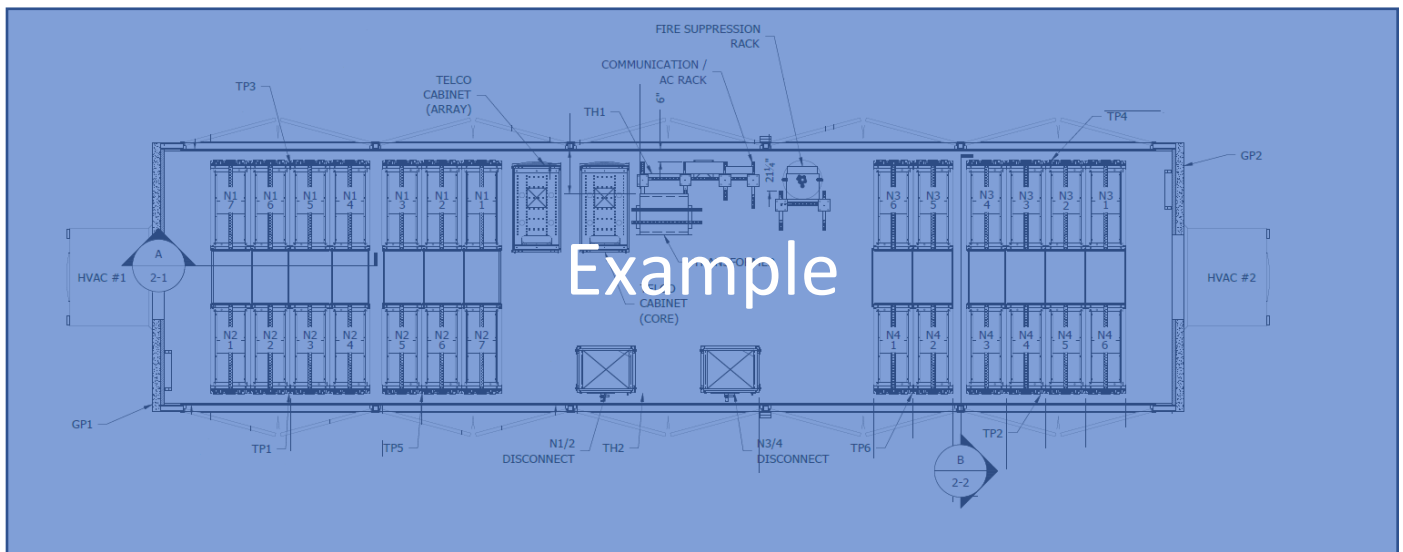
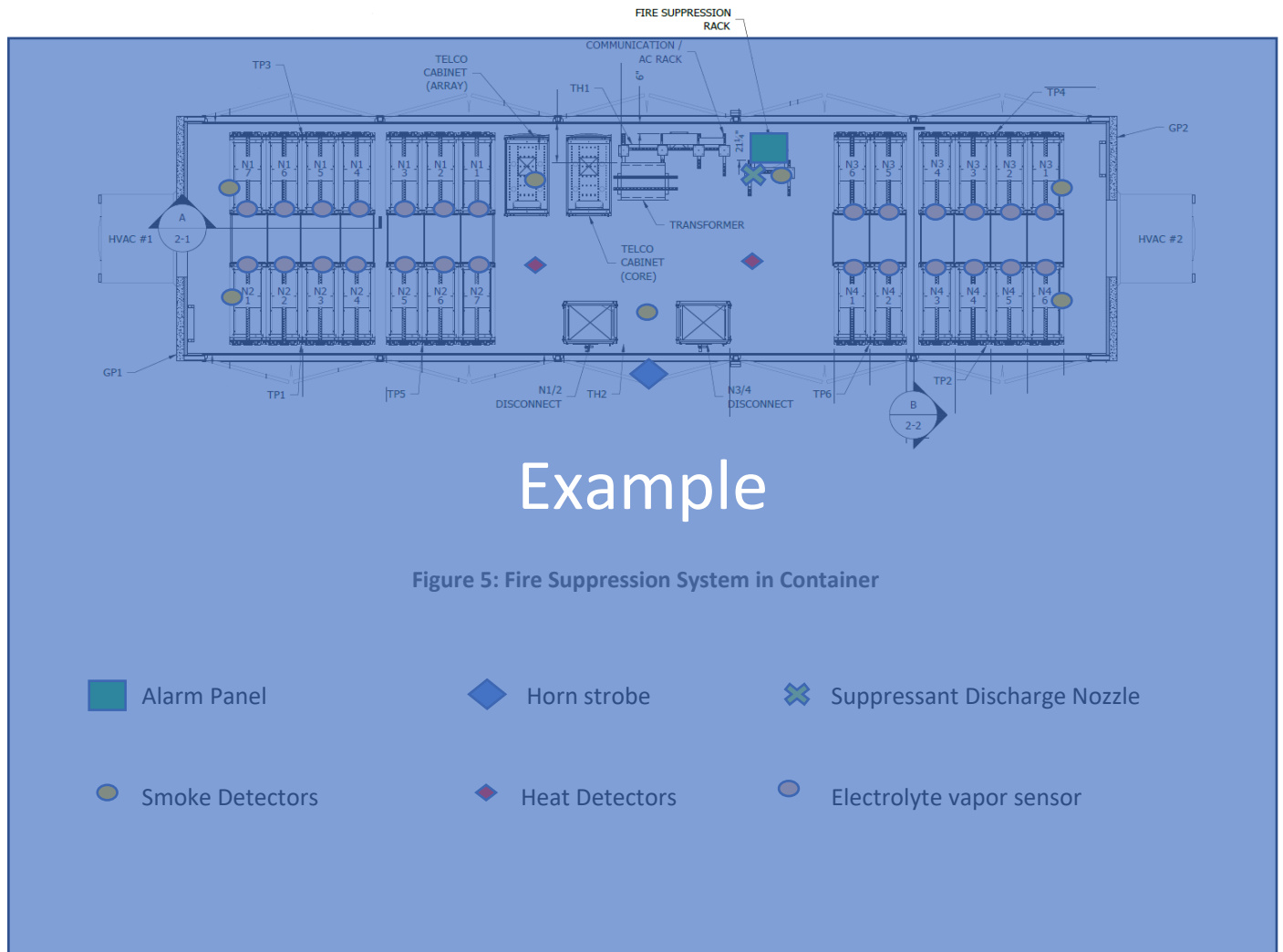


Figure 4: Battery Container Access

6.4 Battery Container Fire Suppression System

The Battery container is equipped with smoke detectors, heat detectors and a Novec 1230 suppression system, addressed to a fire alarm panel. In addition, the container has Li-ion battery electrolyte vapor sensors (Li-ion Tamer). Details of this system are shown below. The operation of any device (except electrolyte sensor) will cause all audible warning alarms to operate continuously in the area of activation, this signal is sent to the fire alarm system. The activation of a second sensor will begin a 30 second countdown, at the end of which, fire suppressant is released within the container. Container doors **MUST** remain closed at this time. Activation of the Li-ion battery electrolyte vapor sensors will cause the E-Stop circuit to activate.



6.5 Battery Energy Storage System E-Stop

The Battery Energy Storage System has a single E-stop circuit that consists of seven E-stop pushbuttons. They are located as follows:

- Two on the Battery Container
- One on each of the 4 DC/DC Converters

- One on the Inverter

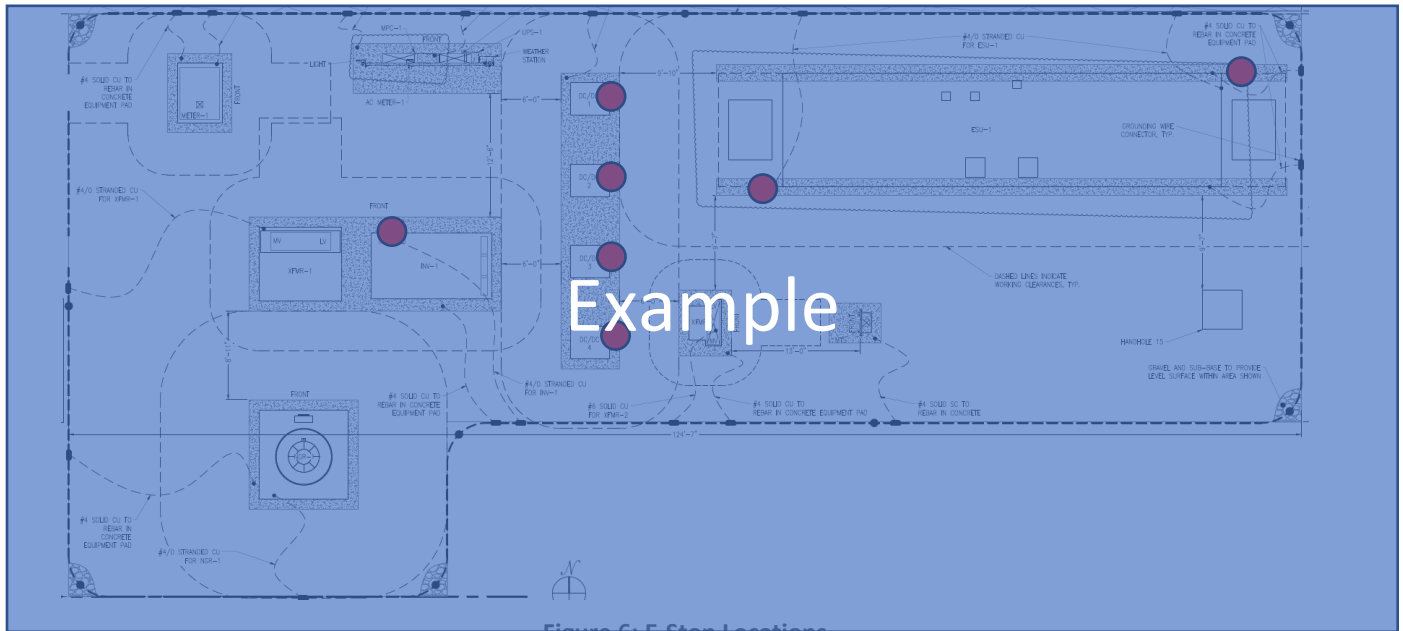


Figure 6: E-Stop Locations

Upon pushing any of the seven E-stop pushbuttons, the following actions will occur for the container and electrically attached equipment:

- Opens all BPU contactors in the battery racks
- Opens AC Breaker on the inverter
- De-energizes the DC/DC converter

