TRAIL ROAD BESS FACILITY

EMERGENCY RESPONSE PLAN (ERP)

Rev 4.0 | July 2026

Summary

This document serves as the Preliminary Emergency Response Plan (ERP) for the Trail Road energy storage facility to be located in Richmond, Ontario, Canada. This ERP will be finalized prior to commissioning.

Only an ERP with input from the local first responders can provide true guidance and pertinent information regarding the roles, responsibilities, and chain of communication and command of the System Owner / Operator, Property Owner, and other required Subject Matter Experts (SMEs) for preparing for, and safely responding to, a fire, overpressure event, or other battery-related incident requiring a public safety response at the energy storage facility.

LIFE SAFETY SHALL BE THE HIGHEST PRIORITY DURING ANY TYPE OF EVENT

Prepared For:

Evolugen
41 Victoria Street
Gatineau, QC J8X 2A1 Canada

Energy Storage Response Group LLC
dba Energy Safety Response Group
P.O. Box 12639
Columbus, OH 43212

www.energyresponsegroup.com
1-833-SAFE-ESS

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EMERGENCY CONTACT INFORMATION

IN CASE OF EMERGENCY CALL 911

LOCAL FIRE DEPARTMENT

Ottawa Fire Services

Phone: (613) 232-1551 (Non-emergency)

Address: 1445 Carling Avenue
Ottawa, ON K1Z 7L9
Canada

LOCAL POLICE DEPARTMENT

Ottawa Police Service

Phone: (613) 236-1222 (Non-emergency)

Address: 211 Huntmar Drive
Stittsville, ON K2V 1E2
Canada

HOSPITAL EMERGENCY ROOM

Queensway Carleton Hospital

Phone: (613) 721-2000

Address: 3045 Baseline Road
Ottawa, ON K2H 8P4

LOCAL BURN CENTER

The Ottawa Hospital, Civic Campus

Phone: (613) 722-7000

Address: 1053 Carling Avenue
Ottawa, ON K1Y 4E9

SUBJECT MATTER EXPERT (SME)

INTERIM – FOR CONSTRUCTION PHASE ONLY

(Will be updated prior to facility operation)

Carl Haeussler - *Project Management*
chaeussler@scoutcleanenergy.com **(226) 973-5933**

Leland Chumik – *Engineering*
lchumik@scoutcleanenergy.com **(403) 880-1424**

Francis Marquez - *Project Management*
fmarquez@scoutcleanenergy.com **(613) 796-5824**

Daniel Jenkins - *Site Management, Safety*
daniel.jenkins@alaskapower.com **(587) 821-4959**

Michael Aussant - *Safety*
michael.aussant@alaskapower.com **(780) 722-2829**

NETWORK OPERATIONS CENTER

Phone: **TBD**

SYSTEM OWNER / OPERATOR

XXXXXXXXXXXXXXXXX

Phone: (XXX) XXX-XXXX

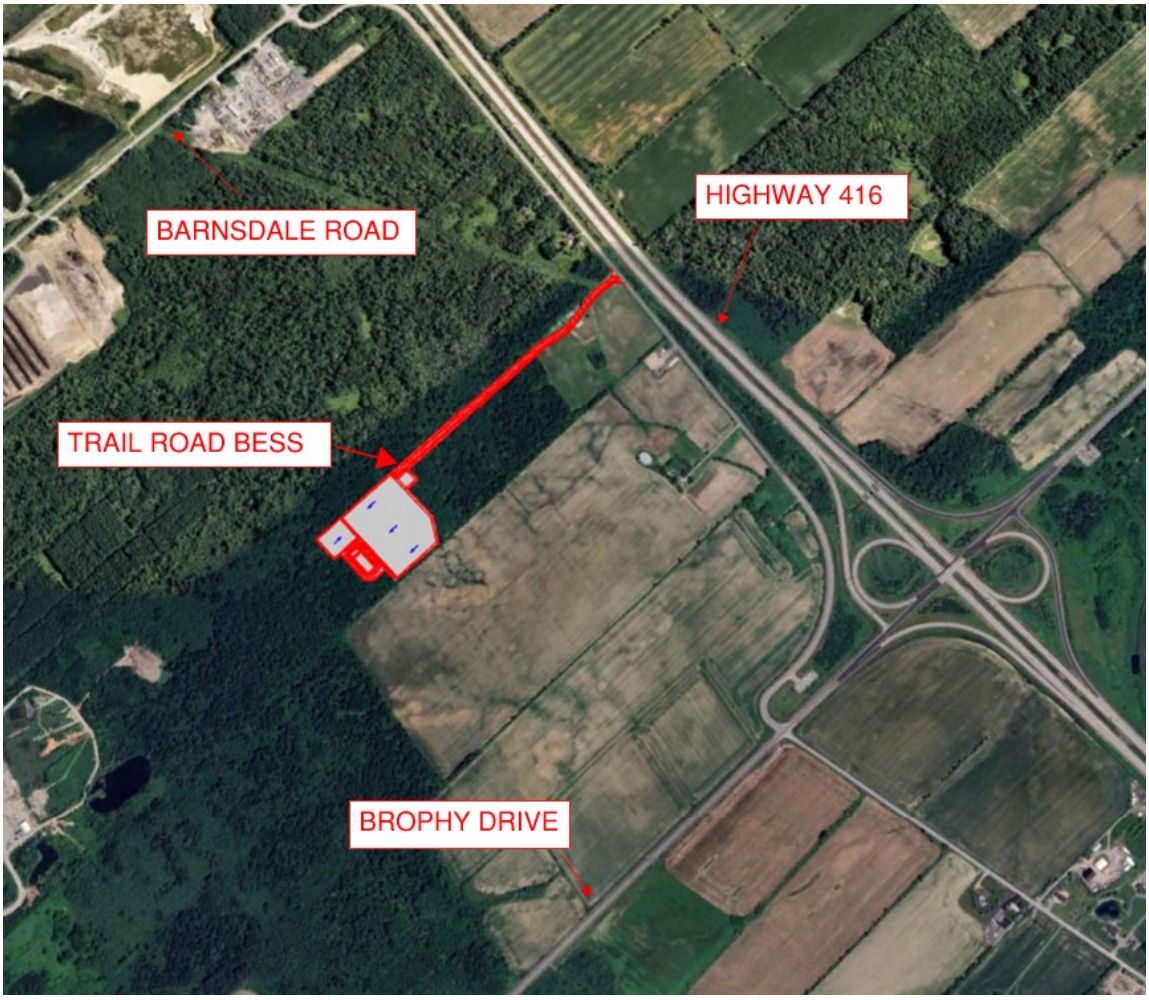
Address: XXXXXXXXXXXXX
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ENERGY STORAGE SYSTEM INFORMATION

TRAIL ROAD ENERGY STORAGE FACILITY

Site Address: 4186 William McEwen Drive
Richmond, ON K0A 2E0

GPS Coordinates: 45°12'52.11"N 75°45'1.17"W



ENERGY STORAGE SYSTEM

Make / Model: Sungrow PowerTitan 2.0

Total MW / MWh: 150MW / 600 MWh

 # Units: 156

FIRE DETECTION SYSTEMS

- Two (2) heat detectors per BESS enclosure
- Four (4) smoke detectors per BESS enclosure
- One (1) H2 gas detector per BESS enclosure
- One (1) CO gas detector per BESS enclosure
- Six (6) Deflagration Panels

EXPLOSION PROTECTION

Active exhaust ventilation system triggered by gas detectors within BESS enclosure to remove flammable gases from enclosure before explosive concentrations are able to accumulate.

WATER SUPPLY

85,000L water storage with remote hydrant system will be available on site to support fire department operations.

PROJECT INFORMATION

Project Name	**Trail Road Emergency Response Plan**
Project No.	25-20150
Prepared For	Evolugen 41 Victoria St. Gatineau, QC J8X 2A1 Canada
Revision No.	Rev 4.0
Document No.	
Date of Issue	7/3/2026

REVISION HISTORY

Revision No.	Date of Issue	Substance of Change
Rev 0.1	3/5/2025	Draft issue- G Baade
Rev 0.1a	5/2/2025	Updates as per client comments.
Rev 0.1b	5/27/2025	Updates as per client comments.
Rev 0.1d	7/7/2025	Updates as per client comments.
Rev 2.0	1/21/2026	Updates as per client comments.
Rev 3.0	1/26/2026	Updates as per client comments. Issued for permit-site plan control.
Rev 4.0	7/3/2026	Updates as per client comments.
		For a list of revisions made by the client, please see Appendix.

Note 1: *The information in this document is subject to change while in DRAFT status and may be modified in the event of modifications to equipment or other factors affecting the design of the system or site.*

Note 2: *During the operating life span of the project, it is expected that this document shall be reviewed annually, and that all pertinent information shall be appropriately updated as necessary. This ERP is compiled based upon current design and usage at the time of this writing.*

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Upon acceptance of this "as designed" interim draft, which may be made public as an "*as designed release*," ESRG shall treat this document as ready for release but shall not mark the document as "*as-built final*" until ESRG can confirm, via personnel on site, that the system, "*as-built,*" aligns with the reviewed and reported design.

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ACRONYMS

AR	Arc-Rated
BMS	Battery Management System
E-Stop / EPO	Emergency Stop / Emergency Power Off
ERP	Emergency Response Plan
EMS / ESMS	Emergency Management System / Energy Storage Management System
ERG	Emergency Response Guide (generic, product-level emergency response guide)
ESRG	Energy Safety Response Group
ESS / BESS	Energy Storage System / Battery Energy Storage Management System
FACP	Fire Alarm Control Panel
IC	Incident Commander
ICS	Incident Command System
kW	Kilowatt(s)
kWh	Kilowatt-hour(s)
LFL / LEL	Lower Flammability Limit / Lower Explosive Limit
LFP	Lithium Iron Phosphate
MW	Megawatt(s)
MWh	Megawatt-hour(s)
NOC	Network Operations Center
O&M	Operations and Maintenance
PCS	Power Conversion System
PPE	Personal Protective Equipment
SCBA	Self-Contained Breathing Apparatus
SDS	Safety Data Sheets
SME	Subject Matter Expert
SOC	State of Charge
UICS	Unified Incident Command System
UFL / UEL	Upper Flammability Limit / Upper Explosive Limit

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1 INTRODUCTION

1.1 Scope and Purpose

This Emergency Response Plan (ERP) is provided for the Trail Road Battery Energy Storage System (BESS) facility located at 4186 William McEwen Drive, Richmond ON, K0A 2E0, Canada. The purpose of this document is to provide guidance and pertinent information regarding the roles, responsibilities, and chain of communication and command of the System Owner / Operator, Property Owner, and other required Subject Matter Experts (SMEs) for preparing for, and safely responding to, a fire, explosion, or other battery-related incident requiring a public safety response at the energy storage facility.

A competent O&M manager will be hired and trained before the facility is operational. "On-site personnel" include all individuals on the facility property who are direct employees of the Owner / Operator or affiliated contractors. The Owner / Operator and contractors are similarly responsible for establishing and maintaining contractor-specific Emergency Response Plans and reporting procedures that will work in conjunction with the overall energy storage facility plan.

Life safety shall be the highest priority during any type of event.

1.2 Activation

This Emergency Response Plan shall be activated during any emergency response to a battery-related incident on-site.

1.3 Incident Command System (ICS)

The System Owner / Operator, Subject Matter Experts, Remote Monitoring Facility staff, and all energy storage system-related personnel shall comply with the orders of the Incident Commander (IC) and the command staff.

1.4 Operations and Maintenance (O&M)

Operations and maintenance procedures for the energy storage facility and associated equipment are outside the scope of this document. Please see Sungrow's ***Operation & Maintenance Instruction manual, PowerTitan 2.0 Series.***

Please refer to manufacturer Operations and Maintenance manuals for all associated equipment related to the site prior to beginning any work on this installation.

1.5 ERP Update Process

1.5.1 Issuance and Revisions

Dates for draft issuance, revisions, and final issuance of this ERP are provided on Page 5 of this document.

Updates to this ERP based on any major material changes to the installation are the responsibility of the System Owner / Operator and other relevant entities as required.

1.5.2 Annual Review

During the operating life span of this installation, it is expected that this document shall be reviewed annually, with all pertinent information updated as required.

1.5.3 Plan Retirement

All decommissioning procedures should be performed by trained and knowledgeable persons in alignment with the Decommissioning Plan provided for this installation. Decommissioning shall be performed under the supervision of the System Owner / Operator responsible for this installation.

Notification of decommissioning shall be provided to the Fire Department by the System Owner / Operator responsible for this installation.

1.6 Fire Department Training

Initial and recurring training will be provided to Ottawa Fire Services in accordance with the requirements set forth in NFPA 855.

The initial site training will include Ottawa Fire Services and any emergency response staff that OFS requests to attend. Attendance is at the discretion of OFS, based on who they feel should have knowledge of this facility to enhance the Fire Department's response to an incident.

The initial site training will include a site walkdown to teach staff about the site layout, including the location of the retention pond gate valve and the fire alarm control panel.

An emergency response dry run will also be completed, so the fire department can rehearse their response plan for an emergency scenario.

Recurring trainings will include yearly per the requirements of NFPA 855, and will focus on training new employees on the site, and updating all staff on changes to the facility, along with industry codes. Agendas for these trainings will be developed and circulated to OFS for comments prior to the session, to ensure they capture the needs of the Fire Department.

2 SITE OVERVIEW

2.1 Site Location

The Trail Road BESS Facility will be located on a 16.3-acre parcel of land located at 4186 William McEwen Drive, Richmond, ON, K0A 2E0, Canada. The site will consist of 156 Sungrow PowerTitan 2.0 BESS enclosures as depicted in Figure 1 below.

The site is located in a largely rural area, about 24 km south of Ottawa. It is surrounded by forest and open farmland on three sides, with the remaining side bordered by William McEwen Drive. Route 416/ Veterans Memorial Highway runs directly beside William McEwen Drive.

SITE INFORMATION		
Site Address:	4186 William McEwen Drive Richmond ON, K0A 2E0 Canada	
GPS Coordinates:	45°12'52.11"N 75°45'1.17"W	**Special Flood Zone:** No

Figure 1 – Site Layout

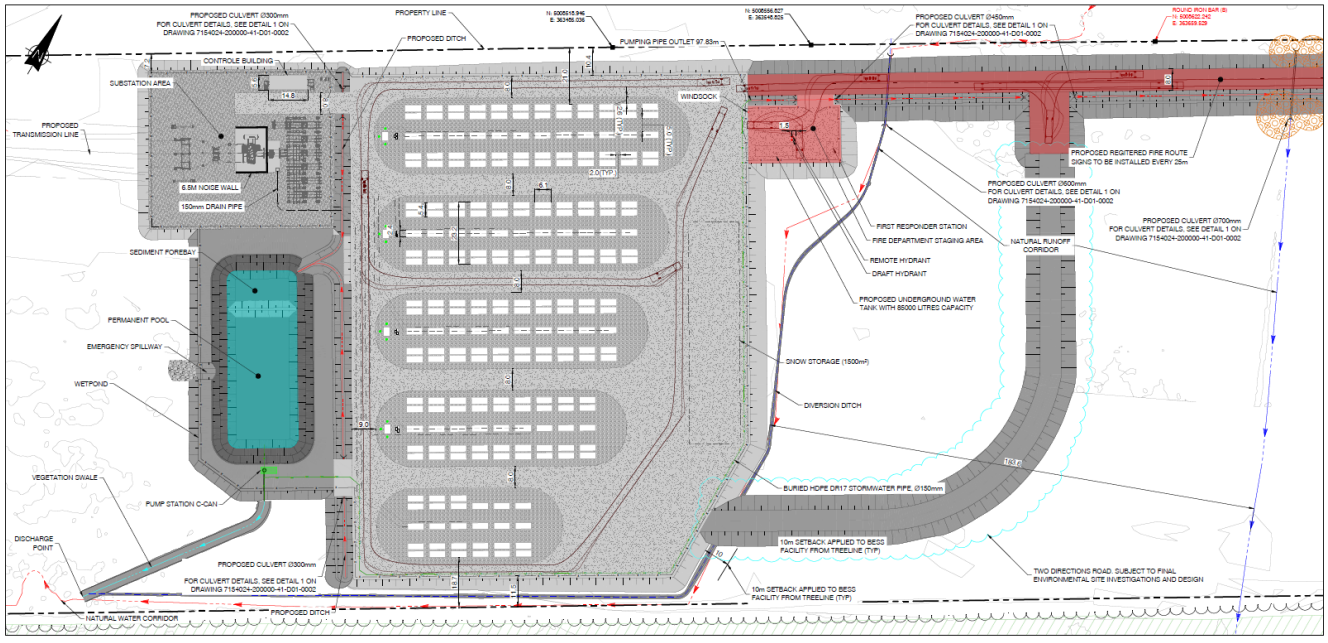


Figure 2 – Aerial View



2.2 Fire Department Staging Area

The fire department staging area and safety assembly area for any onsite personnel is located east of the BESS perimeter fence line.

It is recommended that fire department staging areas are established at angles relative to the sides of the BESS enclosures to reduce potential impact from flying projectiles or debris in the event of an explosion event.

The fire department should not attempt to enter the BESS fence line prior to incident size-up and coordination with the facility's designated SME, or as otherwise determined at the ultimate discretion of the IC.

2.3 First Responders Station

A weatherproof enclosure housing a physical copy of the Emergency Response Plan (ERP), operational permits, O&M logs, and product manuals will be located east of the BESS facility, just outside the gate in the Fire Department Staging Area. This is the

designated First Responder Station. The enclosure will be large enough to house the FACP, a small desk, chairs, and have electrical outlets for power.

2.4 Site Access

There will be an 8.0-meter-wide access road starting at the entrance off of William McEwen Drive that provides access to the northeast corner of the site and around all the BESS enclosures. A site access gate will be provided for fire department access. In addition, there will be a secondary access road loop that extends to the south and enters the facility at the southeast corner (Figure 1). As noted above, the fire department should not attempt to enter the site fence line unless there is a clear threat to life safety.

2.5 Lock Box Access

A lock box containing a physical copy of the ERP, operational permits, O&M logs, product manuals, etc., is provided at the site entrance.

2.6 Equipment Access

The Sungrow PowerTitan 2.0 BESS enclosures are only accessible for maintenance purposes via cabinet-style enclosure doors and cannot be physically entered by personnel at any time.

The Fire Department should not attempt to open the enclosure doors at any time.

2.7 Water Supply

There will be seven (7) fire hydrants on the site that will be fed by an 85,000-liter underground water tank. In addition, water from the onsite retention pond can also be utilized by responding FD personnel.

2.8 Fire Alarm Control Panel

The primary Fire Alarm Control Panel (FACP) will be located within the fire department staging area.

2.9 Water Retention

Best practice dictates not to use any water directly on an affected enclosure. However, if the IC deems fire hose streams necessary, the water runoff will be captured within the wet pond. The wet pond will be lined with an impermeable barrier that will not allow any contaminants to pass through. Upon arrival to the site, the IC shall order the control room to close the gate valve on the wet pond outlet. If the control room is unresponsive, or the control system has failed, the valve can be manually closed by responders by turning the handcrank on the valve.

The facility owner will complete soil and water testing pre-install to develop baseline soil and water compositions. After an event where the SME deems water or soil contamination

is possible, post-incident community sampling may be required. The following testing schedule will be adhered to:

- Within 1 week of event
- 1 month after event
- 3 months after event
- 6 months after event
- 1 year after event
- Ongoing as needed (determined by the appointed SME)

A City of Ottawa Program Manager of Environmental Remediation will work with the proponent SME, as required, to validate the testing completion.

2.10 Nearby Exposures

The facility site is surrounded on three sides by forest and open land, and William McEwen Drive on the remaining side. Additionally;

- A private residence (4160 William McEwen Dr) is located to the north, adjacent to the roadway, about 120m from the site property line.
- A small landscaping business sits at 4236 William McEwen Drive, adjacent to the site property line and William McEwen Drive.

Figure 3 - Nearby Exposures



2.11 Associated Electrical Equipment

- **Energy Storage System:** Sungrow PowerTitan 2.0
- **Medium Voltage Transformer (MVT):** Sungrow MVS5140-LS-US
- **Inverters / PCS:** Medium Voltage Transformer (MVT): Sungrow SC210HX-US

2.12 Site Maintenance

The facility's interior access roads shall be maintained to guarantee accessibility to the site by emergency personnel, especially during inclement weather. Owner/operator or their designee shall ensure landscaping and other ongoing upkeep activities are in place prior to construction.

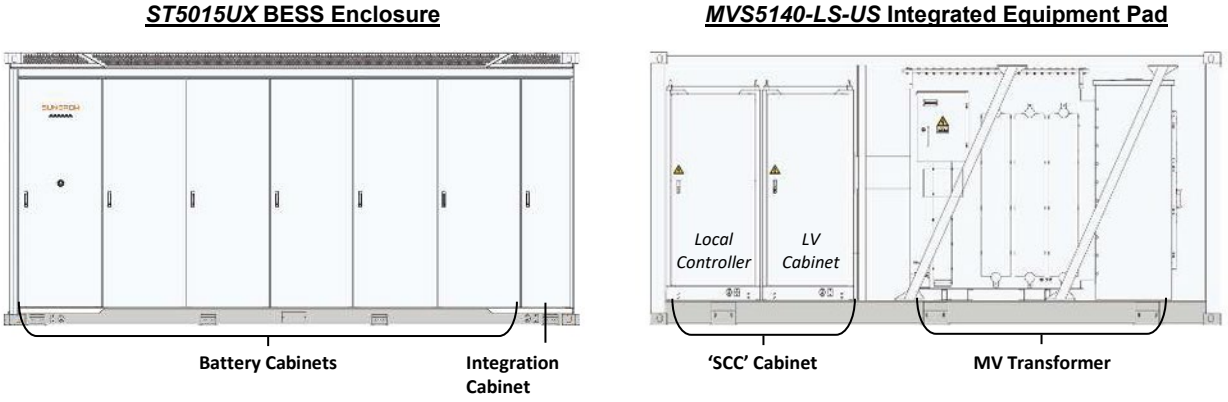
3 ENERGY STORAGE SYSTEM OVERVIEW

The Trail Road BESS facility will utilize 156 Sungrow PowerTitan 2.0 BESS enclosures, each providing approximately 5015 kWh. Each PowerTitan enclosure consists of battery modules utilizing lithium iron phosphate (LFP) battery cells.

Each PowerTitan enclosure is equipped with NFPA 68-compliant vent panels to control the release of pressure if the flammable gases released during battery failure ignite within the enclosure.

Each PowerTitan enclosure is equipped with four (4) smoke detectors, two (2) heat detectors, and two (2) gas detectors (one H2 and one CO), a battery management system (BMS), and an active NFPA 69 exhaust ventilation system for removal of flammable gases from within the enclosure in the event of a battery failure as well as deflagration panels. Additional information on fire protection systems is provided in Section 4 below.

Figure 4 -Typical Sungrow PowerTitan 2.0



4 FIRE PROTECTION SYSTEMS

4.1 Exhaust Ventilation System

The PowerTitan 2.0 is equipped with an exhaust ventilation system designed in accordance with NFPA 69: Standard on Explosion Prevention Systems to remove flammable gas from the enclosure before an explosive atmosphere is allowed to accumulate. The system consists of one exhaust fan with a rated flow rate of 750 m3/h (441 CFM). In the event that the flammable gas detector (described above) is activated, the FSS air intake equipment and FSS exhaust equipment are triggered.

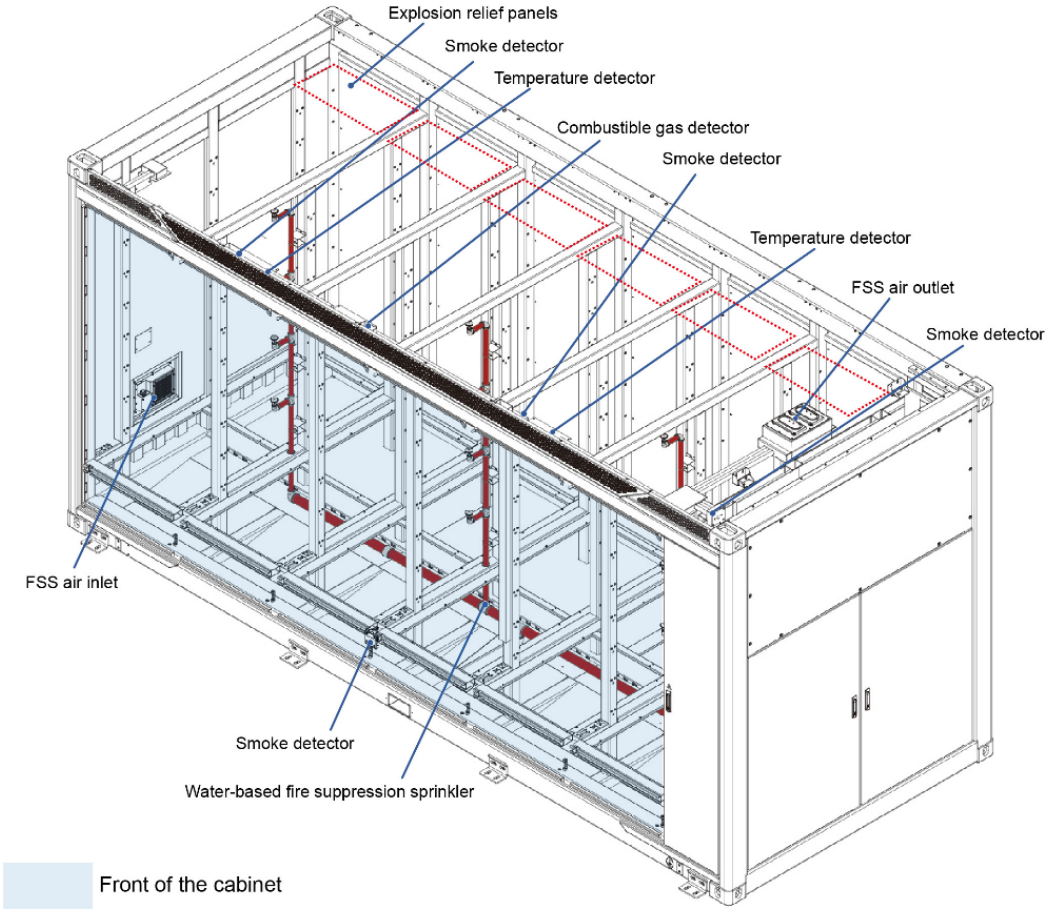
WARNING: Risk of Explosion / Deflagration	
	An explosion/deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. **Any failure or alarm condition should result in the assumption of an explosion risk.**

WARNING: Risk of Re-ignition	
	Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed.

4.2 Fire Protection

Each PowerTitan enclosure comes equipped with a number of fire safety devices (referred to as the “Fire Suppression System” or FSS in Sungrow documentation). By default, each enclosure includes two (2) heat detectors, four (4) smoke detectors, a dedicated UL 864-listed Fire Alarm Control Panel (FACP), and six (6) deflagration vent panels located in the roof of the enclosure. Additional features including flammable gas detectors, sounder beacon, internal sprinkler heads, and emergency ventilation system may be requested by customers on a project-specific basis.

Figure 5 - Fire and Life Safety Layout



WARNING: Risk of Re-ignition	
	Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed. The risk of battery re-ignition can remain present for hours or even days after the smoke/flame is initially detected.

WARNING: Risk of Explosion / Deflagration	
	An explosion/deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. **Any failure or alarm condition should result in the assumption of an explosion risk.**

WARNING: Electrical Shock Hazard	
	In case of flooding, stay out of the water if any part of the BESS enclosure(s) or wiring is submerged.

4.3 Emergency Shutoffs

Emergency shutoff is provided at multiple levels, though the Fire Department should not engage with E-Stops, as ESS shutdown may adversely affect the electrical grid.

The Fire Department should not engage with E-Stops, as ESS shutdown may adversely affect the electrical grid. Any interaction with E-Stops should only be initiated in coordination with the System Owner and other SMEs as is deemed necessary.

4.3.1 Site-Level E-Stop

Manual Emergency Stop (E-Stop) / Emergency Power Off (EPO) switch(es) are located within the facility. The exact location will be provided once the final layout is approved.

The Fire Department should not engage with E-Stops, as ESS shutdown may adversely affect the electrical grid. Any interaction with E-Stops should only be initiated in coordination with the System Owner and other SMEs as is deemed necessary.

4.3.2 Enclosure-Level E-Stop

Each PowerTitan enclosure is equipped with an AC circuit breaker located within the Electrical Cabinet and is to be used only by authorized maintenance or operations personnel.

In the event of a battery-related failure, the Fire Department should not approach any battery enclosures or engage with any enclosure E-Stops.

CAUTION: Risk of Stranded Energy	
	Shutting off power to the BESS enclosure(s) does not de-energize the battery and shock hazard may still be present. Always treat the batteries as Energetic Hazardous Materials, as they may maintain their State of Charge (SOC) long after the removal of power to the overall ESS.

WARNING: Risk of Fire and Explosion	
	Risk of fire or explosion may be present in the event of a battery failure. The Fire Department should not attempt to engage with any site or enclosure E-stops. Assistance in shutdown should be provided by the System Owner / Operator and any other required SMEs.

WARNING: Electrical Shock Hazard	
	In case of flooding, stay out of the water if any part of the BESS enclosure(s) or wiring is submerged.

4.4 Battery Management System (BMS)

An integrated Battery Management System (BMS) monitors key datapoints such as voltage, current, and state of charge (SOC) of battery cells, in addition to providing control of corrective and protective actions in response to any abnormal conditions. In the event of any abnormal conditions, the BMS will generally first raise an information warning, and then trigger a corresponding corrective action should certain levels be reached. Critical BMS sensing parameters include, but are not limited to:

- Over / under temperature limits
- Over / under voltage limits
- Over / under current limits
- Communications loss

BMS data is monitored by a 24/7 Network Operations Center (NOC) and is accessible to the System Owner / Operator and, based on the nature of a potential ESS failure, may provide information on the state of the batteries to corporate first responders.

5 FIRE DETECTION, ALARMING, AND NOTIFICATION

5.1 Fire Detection Systems

Each PowerTitan enclosure is equipped with four (4) smoke detectors and two (2) heat detectors to provide detection of fire or abnormally high temperatures within the enclosure.

Additionally, each PowerTitan enclosure is equipped with one (1) hydrogen gas detector, which, upon detection of flammable limits within the enclosure, activates the active exhaust ventilation system to remove flammable gases from the enclosure before explosive concentrations are allowed to accumulate. Lastly, each PowerTitan enclosure is equipped with one (1) carbon monoxide (CO) gas detector, which, upon detection of CO, activates the active exhaust ventilation system to remove CO gases from the enclosure before CO concentrations are allowed to accumulate.

Activation of smoke, heat, or gas detectors shall result in the following actions:

Actions Triggered Upon Smoke, Heat, and Gas Detection:

- Activation of any smoke or heat detector will automatically send an alarm signal to the Fire Alarm Control Panel (FACP).
- Activation of a combustible gas detector upon detection of 10% LFL will send a supervisory signal to the FACP and initiate the explosion prevention (exhaust ventilation) system.
- The master FACP reports to a Network Operations Center (NOC), which then transmits to the System Owner / Operator
- All alarms are tied into the BMS and are available to the NOC.

5.2 Central Station Monitoring

In the event of heat, smoke, or gas detection within the BESS enclosure, the site FACP shall send Alarm and Supervisory signals to the Central Station, which shall then be relayed to the local fire department to coordinate dispatch of responding units.

Table 1 – Central Station Monitoring Facility Information

Central Station Monitoring Facility Name ▪ **Phone:** TBD ▪ **Additional Information:** TBD

5.3 Remote Monitoring Facility

In addition to monitoring by the Central Station, remote monitoring of BMS operation is provided by the 24/7 Operations Center. In the event of a battery-related failure transmitted by the BMS, alarm notifications and other pertinent information on the state of the ESS shall be sent to the System Owner to inform potential emergency response procedures as needed.

Additionally, if more detailed information on the state of the Sungrow PowerTitan 2.0 BESS unit is required, the Operations Center should be contacted.

Table 2 – 24/7 Network Operations Center Information

24/7 Network Operations Center (for Emergency Use)

- **24/7 Emergency Hotline: TBD**
- **Email Support: TBD**

6 GENERAL HAZARDS ASSOCIATED WITH BATTERY ENERGY STORAGE SYSTEMS

Lithium-ion battery failures pose several major risks, as briefly described in the sections below. Specific response procedures for different incident scenarios are provided in Section 8 of this document.

6.1 Thermal Runaway

The defining characteristic of lithium-ion battery failures is a state known as thermal runaway. Thermal runaway is a chemical process where self-heating in a battery exceeds the rate of cooling, causing high internal temperatures, melting, off-gassing/venting, and in some cases, fire or explosion. Thermal, mechanical, and electrical abuse can lead to thermal runaway; internal short circuit from manufacturing defects; or the development of metallic dendrites that form an internal short over time.

Flammable and potentially explosive gases (generally white in color) typically evolve when a BESS goes into thermal runaway and may be released in large quantities from battery cells or modules. Fire and explosive incidents may result, and precautions as described in sections below should be observed.

6.2 Fire and Re-ignition

Lithium-ion battery fires burn extremely hot (upwards of 1,000 – 1,500°C) and are generally not easily extinguished. Fire growth may be slow, fast, or ultra-fast (e.g., during a deflagration event) in nature, and may last for several hours before the battery modules are completely consumed. Furthermore, even when a lithium-ion battery fire appears to be fully extinguished, re-ignition risk may still be present hours or even days after there are no visible signs of fire.

Application of water directly to affected battery modules may potentially prolong the incident, and the decision to apply water should be made in coordination with the System Owner / Operator and any other required SMEs.

WARNING: Risk of Re-ignition	
	Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed. The risk of battery re-ignition can remain present for hours or even days after the smoke/flame is initially detected.

NOTICE	
	Indicators which may provide insight into what is happening or about to happen during an incident may include: ▪ Smoke or flames ▪ Change in smoke color ▪ Change in velocity or volume of smoke production ▪ Sounds – popping and/or hissing ▪ Smell – sweet smell

6.3 Explosion

Lithium-ion batteries release flammable off-gases during thermal runaway which, if allowed to accumulate within the enclosure, may create an explosive atmosphere, posing serious risk to first responders and nearby exposures. These gases may accumulate within the BESS enclosure at levels above the Lower Explosive Limit (LEL). At sufficiently high accumulations, gases can also exceed their Upper Explosive Limit (UEL), at which point ventilation may bring the environment back into flammable limits, thus creating a new explosion risk.

It may be difficult to discern conditions within the enclosure if smoke and gas are not visible outside of the enclosure. Furthermore, a single battery cell may release enough flammable off-gas to generate an explosive atmosphere within the enclosure. Therefore, any failure or alarm condition should always result in the assumption of a potential explosion risk.

WARNING: Risk of Explosion / Deflagration	
	An explosion/deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. **Any failure or alarm condition should result in the assumption of an explosion risk.**

6.4 Electric Shock

Even if a battery may look to be destroyed by fire and/or other means, there is potential that the battery still contains stranded energy and remains energized. De-energization of the system or any removal of the battery or battery component shall only be performed by a trained and competent individual with appropriate PPE.

Normal overhaul of the BESS enclosure should not be attempted by the fire department in any circumstances, as there are considerations for handling damaged batteries requiring equipment and expertise not readily available. Once the scene is secured, these actions may be undertaken by trained experts under close supervision.

WARNING: Risk of Stranded Energy	
	Always treat the batteries as Energetic Hazardous Materials, as stranded energy is likely to remain present. Traditional Fire Department overhaul should **NOT** be conducted due to the potential for stranded energy.

6.5 Arc Flash

All BESS systems and related electrical equipment shall always be treated as energized (Energetic Hazardous Material).

Arc-rated PPE and appropriately trained personnel are required when working on or accessing equipment within an Arc Flash Boundary. In general, when in direct proximity of the battery enclosure, wear a non-melting or untreated natural fiber long-sleeve shirt, long pants, safety glasses, hearing protection, and leather gloves. AR plant clothing is also acceptable. Maintain arc flash boundary until completion of any particular task.

6.6 Toxic Smoke and Gas Emission

Lithium-ion batteries may release large quantities of flammable and toxic gas when undergoing failure and pose an inhalation hazard. Chemicals consumed during a thermal runaway event will produce copious amounts of smoke.

The BESS site perimeter should not be entered during a fire or off-gassing event unless there is an imminent threat to life safety, at which time only properly trained and equipped public safety personnel may enter. This entry shall be with full firefighter protective gear to include self-contained breathing apparatus (SCBA).

A fog pattern from a handline or monitor nozzle may be an effective way to control the off-gassing event on the exterior of the battery container from migrating to unwanted areas. However, if water is used in extinguishing flames, these gases can become acids, which may cause skin irritation.

WARNING: Toxic Gases	
	Large quantities of toxic smoke and gas may be emitted from the BESS enclosure(s) during battery off-gassing or fire situations. **Proper PPE including SCBA should be worn by first responders.**

NOTICE	
	Typical composition of battery off-gassing event may include: ▪ High concentrations (>10%) of Hydrogen, Carbon Monoxide, Carbon Dioxide ▪ Lower concentration (<10%) of Methane, Ethane, or other flammable hydrocarbons

6.7 Additional Hazards and Considerations

For additional hazards associated with leaked coolant, leaked refrigerant, leaked electrolyte, or emergency considerations during storage, operation, transportation, or first aid measures, and disposal procedures, please see product-level Emergency Response Guide.

7 EMERGENCY RESPONSE CONSIDERATIONS

7.1 Emergency Contacts

A list of emergency contacts associated with this installation is provided on Page 3.

7.2 Equipment and Personnel Protective Equipment (PPE)

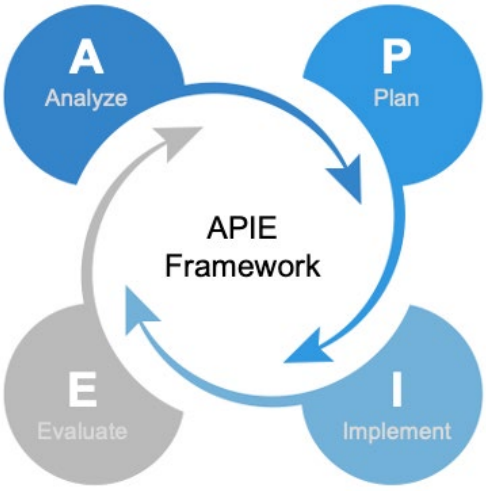
Full firefighter protective gear shall be worn in any response to a fire and/or explosion event or if there is any indication a fire may be present or likely to be present at any time during the event.

If there is no risk of fire or explosion present, arc-rated (AR) protective clothing to protect against arc flash and electrical shock shall be worn. Jewelry, such as necklaces, shall be removed to avoid contact with any electrical hazard.

Proper PPE shall include use of Self-Contained Breathing Apparatus (SCBA).

7.3 APIE (Analyze, Plan, Implement, and Evaluate) Framework

APIE is a framework commonly used for emergency incident preparation and development of appropriate response protocol(s). The four elements of the framework are Analyze, Plan, Implement, and Evaluate. An example APIE framework with simplified sample details pertaining to an emergency incident is as follows:



Analyze: Provide signs and monitoring signals that indicate incident escalation (e.g., fire or explosion) may take place, which first responders should be aware of

Plan: Delineate the danger zone to mitigate risk to first responders and bystanders (pedestrians, vehicular traffic, etc.)

Implement: Once a plan is developed and proper resources and equipment installed, implement respective safety actions as deemed necessary.

Evaluate: Provide continuous monitoring and feedback of the incident and adjust accordingly to ensure ongoing safety of any bystander or responder in the impact area.

7.4 General Emergency Response Recommendations

Initiation of emergency response shall be activated per current protocol.

Table 3 - General Emergency Response Recommendations

General Emergency Response Recommendations:

1. **If there is any threat or potential threat to life or safety, 911 shall be called immediately to summon the aid of public safety responders.**
2. **An initial scene assessment shall be conducted from all sides** (360-degree scene size-up) if possible, and a clear, concise assessment shall be given to incoming responders. Hazards and facility safety concerns such as high voltage areas or other electrical concerns shall be announced to all responders. The scene assessment shall include the following in plain language (no code or terms):
    - Where the incident is located
    - What has happened
    - What is occurring
    - Any injuries or unaccounted for individuals
    - What needs or other resources should be requested
3. **An Incident Command System (ICS) shall be established immediately and shall include designation of roles.** The primary command post location shall be located at the Fire Department Staging Area at the front of the site. If Public Safety is summoned to the incident, the ICS shall be a Unified Incident Command System (UICS).
4. **On-site staff (if applicable) shall immediately go to a designated muster point,** which will be the command post location unless designated differently by the Incident Commander.
5. **Incident Command shall designate the individual in charge of accountability.** Accountability shall be reported as soon as possible. If available, another individual shall control any traffic and guide first responders to the scene.

Notes:

- At the same time as these activities are occurring, the System Owner / Operator or other designated SME shall immediately contact the 24/7 Network Operations Center to establish available data from the BMS and communicate this to the Incident Commander or other appropriate individual.
- It is recommended that a safe perimeter is set up and maintained around the site to keep any persons or personnel a safe distance from the incident.

WARNING: Risk of Explosion / Deflagration	
	An explosion/deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. **Any failure or alarm condition should result in the assumption of an explosion risk.**

WARNING: Toxic Gases	
	Large quantities of toxic smoke and gas may be emitted from the ESS during battery off-gassing or fire situations. **Proper PPE including SCBA should be worn by first responders.**

7.5 Determine Fire Protection Approach

Caution should be exercised if water is applied directly to the exterior of an affected BESS enclosure, as this will not stop a thermal runaway event and may potentially delay eventual combustion of the entire ESS product. Defensive firefighting tactics are generally recommended, with water being applied to nearby exposures for cooling, as necessary. Any hoseline operations should be limited to hose and master stream application from outside of the construction perimeter as far back as hose and stream ranges allow. The decision to provide thermal cooling via hoselines should be made in coordination with System Owner / Operator and any other required SMEs.

A fog pattern from a handline or monitor nozzle may potentially be utilized to control smoke and gases released from the affected enclosure and prevent them from migrating to unwanted areas.

In all instances, power shutdown and isolation involving any high voltage feeder lines must be confirmed before any defensive measures are taken involving application of water to the site.

WARNING: Risk of Re-ignition	
	Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed. The risk of battery re-ignition can remain present for hours or even days after the smoke/flame is initially detected.

7.6 Incident Monitoring and Evaluation:

Continuous monitoring and feedback on the incident should be provided as the situation evolves. Consultation with the System Owner / Operator and any other required SMEs should be held to guide incident response and determine appropriate next steps.

If available, real-time BMS data from the 24/7 Network Operations Center should be utilized (e.g., temperature, voltage, or other critical measurements) to monitor the spread of failure and assess the health of adjacent BESS enclosures to help guide response procedures as the event unfolds.

8 INCIDENT SCENARIOS AND RESPONSE PROCEDURES

8.1 Explosion Incident

Lithium-ion batteries release flammable off-gases during thermal runaway, which, if allowed to accumulate within the enclosure, may create an explosive atmosphere, posing serious risk to first responders and nearby exposures. Furthermore, it may be difficult to discern conditions within the enclosure if smoke and gas are not visible outside of the unit.

In case of fire or thermal runaway event, an explosive or deflagration event may occur, potentially subjecting personnel to overpressure and projectile hazards. An initial exclusion area should be established, based on the discretion of the Incident Commander, to guard against any blast overpressure. Fire Department staging or operations should not be in direct alignment with the BESS enclosures and should be established at angles relative to the sides of the enclosures if possible. If available, shielding via the built environment should be utilized to protect against high temperatures, overpressure events, or projectile hazards.

A safe stand-off distance of at least 30m shall be maintained between individuals and the BESS enclosure(s) exhibiting fire conditions. Staging of personnel and equipment shall be on the angles of the BESS enclosure to stay out of the potential blast radius of any enclosure doors or other possible projectiles.

WARNING: Risk of Explosion / Deflagration	
	An explosion/deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. **Any failure or alarm condition should result in the assumption of an explosion risk.**

8.2 Fire Incident

Upon detection of fire or excessive heat emanating from an affected BESS enclosure by the heat or smoke detectors, an audible and visual alarm shall be signaled at the Annunciator Panel. Smoke and flames may be visible from the outside of the BESS enclosure. Fire growth may be slow, fast, or ultra-fast (e.g., during a deflagration event) in nature.

A safe stand-off distance of at least 30m shall be maintained between individuals and the BESS enclosure(s) exhibiting fire conditions. Staging of personnel and equipment shall be on the angles of the BESS enclosure to stay out of the potential blast radius of any enclosure doors or other possible projectiles. Attempt to extinguish the fire only if an imminent threat to life safety exists.

If there is no immediate threat to life safety:

1. Allow the BESS to burn in a controlled fashion until all fuel sources inside are depleted.
2. A defensive approach should be considered utilizing water to cool and protect adjacent exposures and mitigate the spread of fire to areas outside of the fenced installation. Manage the fire incident utilizing the reach of the hose stream to protect exposures and control the off-gassing and smoke from the enclosure.
3. Remember that even after the BESS enclosure is isolated from the electric grid, there may still be considerable stored energy in the batteries that poses a potential electric shock hazard to anyone in the nearby vicinity.

Additionally, chemicals released during a fire or explosion event will be in a gaseous form and primarily pose an inhalation hazard. A fog pattern from a handline or monitor nozzle may provide an effective means of controlling an off-gassing event on the exterior of the battery enclosure from migrating to unwanted areas such as public muster points, emergency responders, building intakes, etc.

Hose streams may also be applied to adjacent exposures for cooling purposes based on consultation with System Owner / Operator and other required SMEs. BMS data available via the 24/7 Network Operations Center should be closely monitored for the adjacent system(s) for any indicators of heat impact or water damage to any adjacent BESS enclosures and relayed to the appropriate individual within the Incident Command System.

Following partial or complete consumption of the system by fire, batteries may continue to emit flammable gases and toxic gases for an extended period of time. Continuous monitoring of gas levels in and around the incident location is recommended. Full firefighter PPE and SCBA shall be utilized until gas levels are confirmed to be at a safe level. A Firewatch shall be provided to ensure the continued safety of the site after the situation appears stable.

WARNING: Risk of Re-ignition	
	Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed. The risk of battery re-ignition can remain present for hours or even days after the smoke/flame is initially detected.

8.3 Thermal Runaway or Off-Gassing Incident

A thermal runaway incident, as described in Section 6.1, is the characteristic failure mode of lithium-ion batteries. A thermal runaway event may begin suddenly, and the nature of the situation may evolve rapidly depending on a number of different factors. Combustion of flammable gases may result in fire or explosion, and considerations in Section 8.1 and Section 8.2 above should be observed based on the nature of the event as it unfolds.

A thermal runaway event may result in large quantities of smoke and gas being released, which may or may not be visible outside of the BESS enclosure itself; therefore, it is critical that any failure or alarm condition result in the assumption of an explosion or fire risk.

In the event of a thermal runaway or suspected off-gassing event, the following actions should be taken:

1. Evacuate the area to a safe location a sufficient distance from the troubled enclosure
2. If the alarm system has not already signaled the Fire Department, immediately call 911
3. Call any required Subject Matter Experts designated for the site
4. Call the 24/7 Network Operations Center listed on Page 3 & Page 22
5. Establish a safety perimeter around all sides of the BESS facility and remain outside the fenced area. Do not allow personnel other than firefighters in proper PPE to enter the safety perimeter and stay upwind of any smoke or off-gassing. (Note: the safety perimeter may extend beyond the boundary of the fenced area).
6. As the incident evolves, a fire or explosion event may occur, and procedures outlined in Section 8.1 and Section 8.2 above should be followed based on the situation as it progresses.

WARNING: Risk of Explosion / Deflagration	
	An explosion/deflagration / over-pressure event is a critical hazard, and any emergency on-site should always be addressed with full awareness of potential factors which may lead to such an event. **Any failure or alarm condition should result in the assumption of an explosion risk.**

WARNING: Risk of Re-ignition	
	Do **NOT** assume the fire is out as the fire event unfolds. A lithium-ion battery fire which has seemingly been extinguished may flare up again if all cells within the enclosure have not been completely consumed. The risk of battery re-ignition can remain present for hours or even days after the smoke/flame is initially detected.

WARNING: Toxic Gases	
	Large quantities of toxic smoke and gas may be emitted from the BESS enclosure(s) during battery off-gassing or fire situations. **Proper PPE, including SCBA, should be worn by first responders.**

NOTICE	
	Indicators which may provide insight into what is happening or about to happen during an incident may include: ▪ Smoke or flames ▪ Change in smoke color ▪ Change in velocity or volume of smoke production ▪ Sounds – popping and/or hissing ▪ Smell – sweet smell

8.4 Alarm Incident

In the event of an alarm activation, the following actions should be taken:

1. Evacuate the area to a safe location a sufficient distance from the troubled enclosure
2. If the alarm system has not already signaled the Fire Department, immediately call 911
3. Call any required Subject Matter Experts designated for the site
4. Call the 24/7 Network Operations Center listed on Page 3 & Page 24
5. Establish a safety perimeter around all sides of the BESS facility and remain outside the fenced area. Do not allow personnel other than firefighters in proper PPE to enter the safety perimeter and stay upwind of any smoke or off-gassing. (Note: the safety perimeter may extend beyond the boundary of the fenced area).

8.5 External Fire / Thermal Exposure Incident

For any type of external heat source or fire impingement (i.e., not stemming from the battery system itself), the Incident Commander should be advised to look at the state of health information from the BMS data (e.g., increasing temperature in target BESS enclosures) available from the 24/7 Network Operations Center to evaluate severity of the incident and treat as an ESS emergency. All precautions previously noted for fire and explosion incidents should be observed.

8.6 External Impact Incident

In the event that an enclosure is severely impacted, causing crushing or puncturing of the outer shell of the enclosure, treat this as an emergency - notify 911 and other required parties.

9 POST INCIDENT / HANDOFF PROCEDURES

9.1 Handoff Procedures

When an energy storage site is deemed safe, upon determination by the Incident Commander (IC), the Subject Matter Expert (SME) shall ensure that the site is safeguarded until the damaged system is removed, repaired, or replaced based on the approved Decommissioning Plan filed with this installation.

9.2 Activation of Decommissioning Plan

Decommissioning of the system shall take place in accordance with the approved Decommissioning Plan filed with this installation. Deactivation, de-energizing, dismantling, and removal of the system shall be conducted by trained and knowledgeable persons in accordance with manufacturer's specifications.

APPENDICES

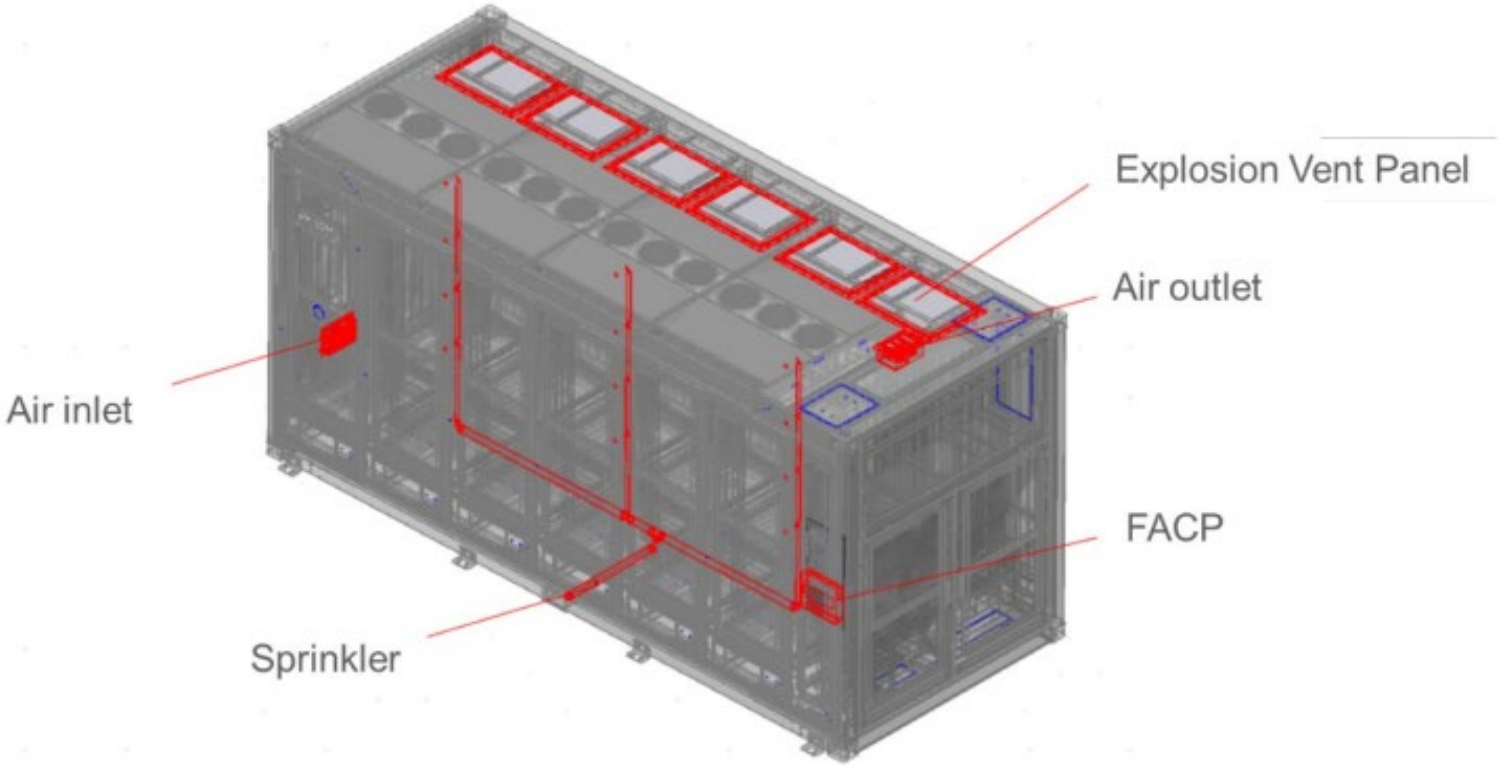
APPENDIX A – Additional Site Photos

Final site photos to be added prior to facility operation.

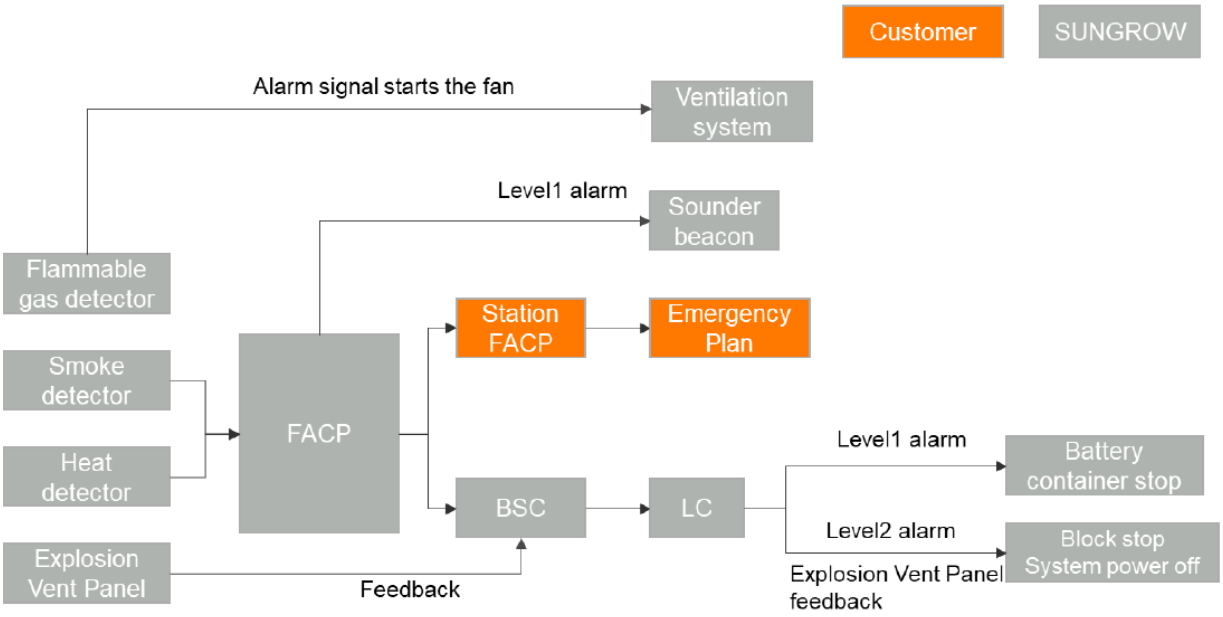


APPENDIX B – Additional Information

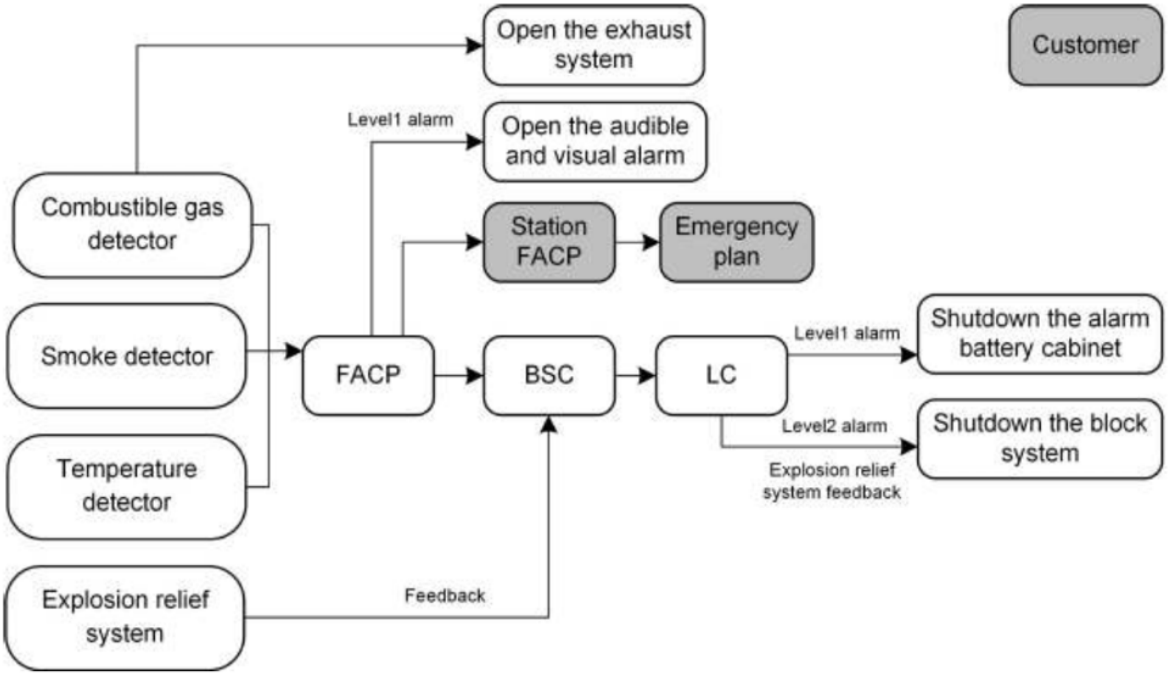


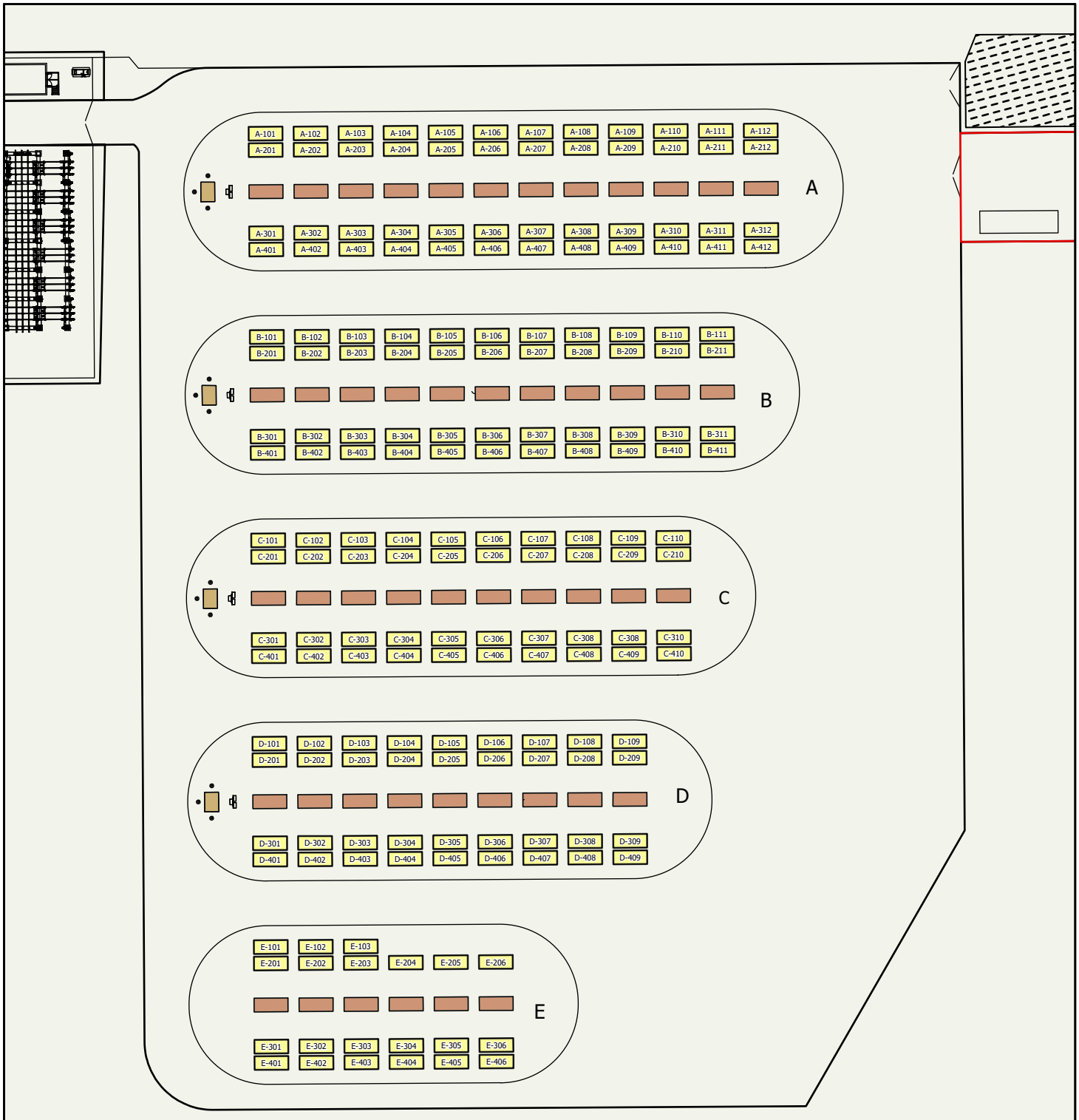


Fire Signal control logic (Optional Version) – *Sungrow FSS Design document*



Control Logic of Exhaust System – *Sungrow US Systems manual*





Legend

- Battery container
- Medium voltage transformer
- Auxiliary transformer
- Site access road
- Substation and equipement
- Fire departement staging area

Trail Road

Brookfield Renewable

7154024-200000-41-D20-0002

Prepared by : Geospatial

HATCH

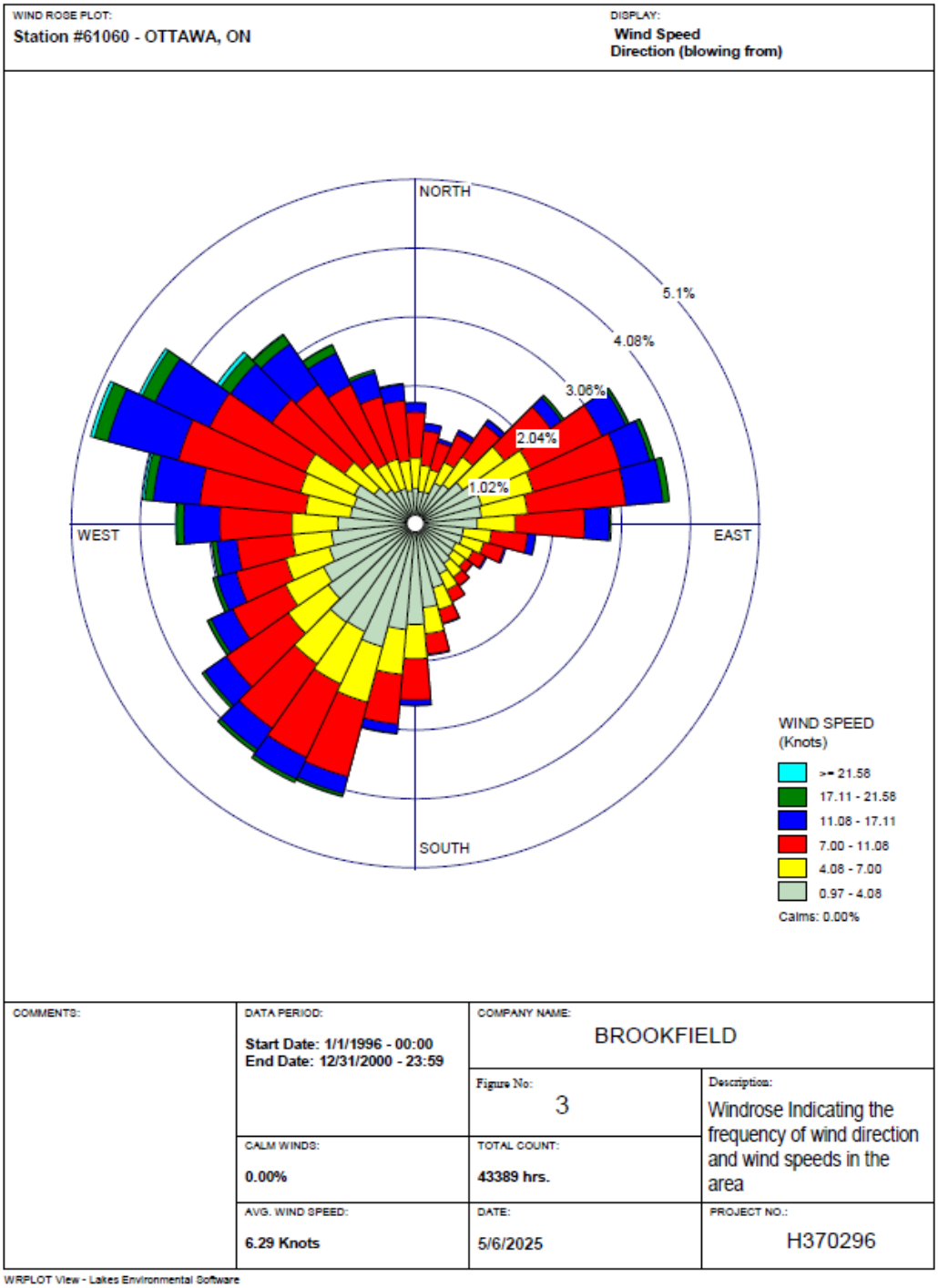
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APPENDIX C - Revision History (Client)

Revision No.	Date of Issue	Substance of Change
Rev 0.1c	7/3/2025	Edits based on OFS comments
Rev 0.1e	10/2/2025	Updated for ZBLA Application

APPENDIX D – Windrose



APPENDIX E - Sungrow PowerTitan 2.0 Operation & Maintenance Instruction