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1.0 Introduction

The Tanager Battery Energy Storage System Project (“Tanager BESS Project”) consists of the installation of an up to 200-megawatt (“MW”) lithium-ion battery energy storage system (“BESS”), interconnection, and communication system. The Tanager BESS Project is located in the City of San Jose at the former laydown and construction parking area for the Los Esteros Critical Energy Facility (“LECEF”). The Tanager BESS Project will provide grid support and reliability services to the Bay Area Local Reliability Area.

A Hazard Mitigation Analysis (HMA) evaluates the potential consequences of the single failure modes in accordance with California Fire Code (CFC) section 1207, *et seq.* This draft HMA identifies the framework by which an HMA will be prepared for the Tanager BESS Project, including reference, where appropriate, to the National Fire Protection Association (“NFPA”) 855, 2023 edition. Following approval by the California Energy Commission (“CEC”) of the Tanager BESS Project and finalization of the site design, battery product, and detailed design process, an HMA will be prepared in consultation with the California Energy Commission and San Jose Fire Department.

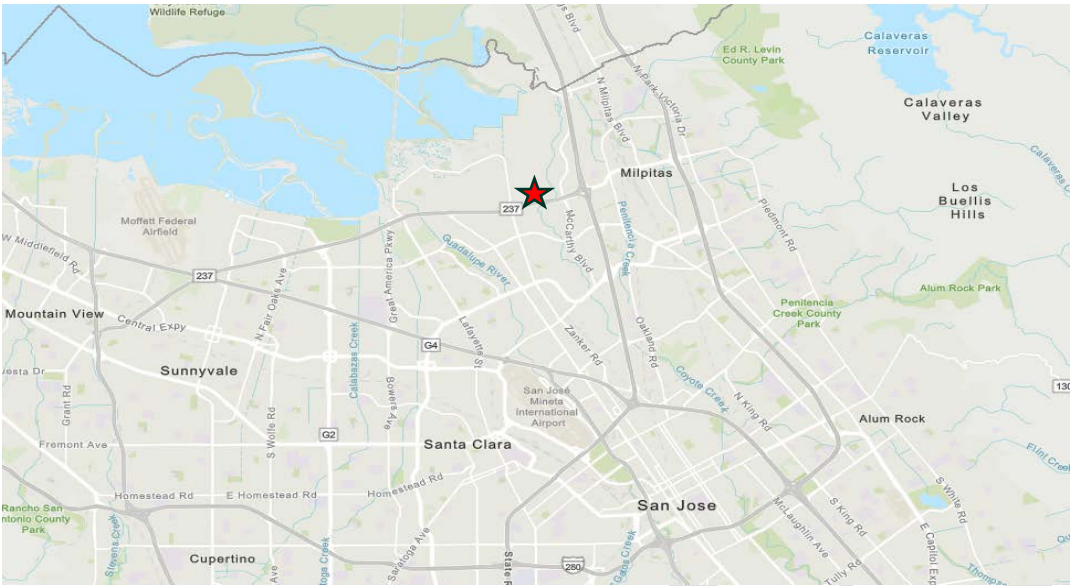
1.1 BESS Description

The Tanager Bess Project is a 200MW 4-hour battery storage project. The BESS facility will use the Hithium Infinity Block Generation 2 BESS, a pre-assembled, NWI style lithium-ion BESS container with an energy capacity of approximately 5,015 kWh. The Hithium lithium phosphate (LFP) battery technology was selected for its controlled failure behavior, stable thermal performance, and suitability for utility-scale energy storage. Containers will be outdoor-rated, remotely monitored, and function as a non-walk-in installation.

1.2 Site

The project site is located immediately south of LECEF at 800 Thomas Foon Chew Way in northern San Jose, within a utility and industrial corridor near Zanker Road and Coyote Creek (Figure 1-1). Both LECEF and the Tanager BESS Project are located on Assessor Parcel Number (“APN”) 015-31-072. Proximities of Project components to existing infrastructure will be evaluated in final design.

Figure 1-1. Project Site Location



1.3 Applicable Standards and Codes

The Authority Having Jurisdiction (AHJ) in the City of San Jose is the San Jose Fire Department. For CEC jurisdictional facilities, the CEC acts as the AHJ, but will nevertheless consult the San Jose Fire Department. The applicable codes with regards to fire protection and life safety, with local amendments, are listed below.

Standard	Title/Purpose
CA Fire Code (2025), as modified and adopted by the City of San Jose	Provisions applicable to stationary and mobile electrical energy storage systems.
NFPA 855 (2023)	Standard for the Installation of Stationary Energy Storage Systems
UL 9540 / UL 1973	Standard for Energy Storage Systems and Equipment
UL 9540A	Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
NFPA 70 ,NEC (2023)	National Electrical Code
NFPA 69	Standard on Explosion Prevention Systems

Notes:
ESS = Electronic Security System
HMA = Hazard Mitigation Analysis
IFC = International Fire Code
NEC = National Electrical Code
NFPA = National Fire Protection Association
UL = Underwriters Laboratories

The design approach for this BESS follows regulatory requirements applied to stationary energy storage installations. Codes and standards related to electrical safety, fire protection, enclosure configuration, and hazard mitigation will be followed to support compliance review by the AHJ. The

BESS configuration and control strategy are consistent with code-based practices for utility-scale outdoor lithium iron phosphate energy storage systems.

1.4 Battery Testing Requirements

Battery system deployment must follow safety testing requirements and regulatory evaluation related to system performance, thermal behavior, hazardous material management, and operating limitations. Compliance with established standards verifies that the installation meets recognized safety expectations for stationary energy storage systems.

Battery-related testing requirements include:

- Demonstration of thermal propagation control
- Identification of safety limits and activation triggers
- Evaluation of isolation capability within battery clusters
- Documentation of regulatory compliance for installation site
- Confirmation that system design follows accepted industry guidelines

The Hithium LFP system is supported by manufacturer-provided UL 9540A test documentation, confirming certification testing at the cluster level in accordance with current industry safety requirements.

2.0 BESS System Overview

The Tanager BESS will use Hithium LFP technology in outdoor-rated, containerized enclosures. Each enclosure will include battery racks, monitoring hardware, thermal management systems, internal protective devices, and isolation mechanisms operated through the Battery Management System (BMS) and Supervisory Control and Data Acquisition (SCADA) network. System control, status, and fault detection will be performed externally through automated interfaces. Routine personnel opening of the enclosures is not required and the enclosures/containers cannot be physically occupied by employees once constructed (i.e., the containers function as a non-walk-in installation).

The Tanager BESS Project and LECEF will utilize a shared firewater tank consisting of 483,000 gallons. It is estimated that a firewater supply of 2 hours duration, with firewater tank usage of approximately 120,000 gallons, is adequate for a potential fire at the Tanager BESS Project. A fire loop for the Tanager BESS Project will be incorporated into the LECEF system, with the addition of fire hydrants.

2.1 System Configuration

Each BESS enclosure includes:

- LFP battery modules stacked in racks
- Battery Management System (BMS) with cell-level monitoring
- Temperature and voltage sensors
- Active liquid cooling system
- Protective barriers and cable routing
- High-speed direct current (DC) disconnect hardware
- SCADA interface to facility controls

2.2 Battery Racks and Modules

The enclosure contains multiple LFP battery racks with sensors and internal separation to reduce escalation during abnormal conditions. The BMS analyzes electrical and thermal data and initiates isolation when required.

Rack-Level Safety Features

Safety Measure	Purpose
Temperature monitoring	Detect abnormal thermal events
Module separation	Reduce propagation risk
Cable routing protection	Limit escalation potential
Fault isolation	Shutdown at rack/module level
Passive barriers	Support containment strategy

2.3 Integrated Safety Controls

Multiple safety features are included at the cell, module, rack, and system level to support controlled response to abnormal conditions. Modules include internal monitoring sensors that provide voltage and temperature data to the BMS. The BMS evaluates this data and determines whether corrective actions or isolation procedures are required. Automated shutdown can occur at the cell, module, or rack level depending on the condition detected.

Safety Functions by Category

Safety Function	Method
Cell-level monitoring	Continuous voltage and temperature tracking
Module-level response	BMS detection of abnormal conditions
Rack-level isolation	Automatic or manual shutdown commands
Thermal management	Liquid cooling and de-rating
Structural protection	Internal separation and protective barriers
Electrical fault protection	Disconnects and limited cable routing
Propagation limitation	Compartment spacing and venting strategy
Alarm notification	SCADA alerts with status reporting
Enclosure classification	Non-walk-in equipment design

Note:
BMS = Battery Management System
SCADA = Supervisory Control and Data Acquisition

Safety Response Strategy (Industry-Aligned)

The BESS is designed to respond progressively to abnormal conditions. The BMS applies tiered safety logic that can reduce power output, isolate a rack, or deactivate a module depending on the identified fault. Structural spacing, cable routing, and passive separation features are included to reduce the potential for rapid escalation. Enclosures are designed to prevent direct personnel exposure, and external isolation equipment allows the system to be de-energized without entering the container.

2.4 Control and Monitoring

System control, monitoring, and fault detection are managed through the BMS and SCADA interface. Temperature, voltage, current, and operating status are evaluated continuously. Racks and modules may be isolated automatically if abnormal conditions are detected. Personnel do not need to enter the enclosures during normal operation, and shutdown procedures can be initiated externally.

Primary Monitoring and Control Functions

- Cell temperature and voltage tracking
- Charging and discharging coordination
- Rack-level isolation commands
- Alarm notifications during abnormal operation
- Remote shutdown capability

- Operational data reporting and performance review

The control infrastructure allows automated logic between the BMS, SCADA, Power Conversion System (PCS), and facility interconnection equipment, supporting fault response without personnel exposure inside the enclosure.

2.5 Power Conversion and Interconnection

The BESS will connect to the facility electrical system using a dedicated PCS, inverter equipment, grounding, metering, switchgear, and protective devices. PCS functions will include control of charging, discharging, isolation, and operational limits based on commands received from the BMS and SCADA systems.

The PCS integrates electrically with each BESS container, permitting individual control or energy dispatch based on system-level demand. Protective devices, external isolation hardware, and transformer interconnection equipment allow fault response and shutdown procedures to occur without personnel entering the enclosure area.

Primary PCS / Interconnection Functions

- Inverter coordination with BMS and SCADA
- Charging and discharging regulation
- Isolation and shutdown commands
- Voltage and current monitoring
- Grounding and metering equipment
- Integration with switchgear and transformer system

3.0 Code Compliance Analysis

The design approach for this BESS follows regulatory requirements applied to stationary energy storage installations. Codes and standards related to electrical safety, fire protection, enclosure configuration, and hazard mitigation will be followed to support compliance review by the AHJ.

Applicable codes are described above in Section 1.3, and include:

- **CA Fire Code (2025), as modified and adopted the City of San Jose**
- **NFPA 855** – Installation requirements for energy storage systems
- **NFPA 70, National Electrical Code (NEC) 2023** – Electrical installation and protection standards
- **UL 9540 and UL 1973** – System-level and battery module certifications
- **UL 9540A** – Thermal propagation testing methodology

The BESS configuration and control strategy are consistent with code-based practices for utility-scale outdoor lithium iron phosphate energy storage systems.

3.1 CA Fire Code, as adopted by the City of San Jose (CFC)

CFC §§ 1207-1207.11 *et seq.* and the San Jose Fire Code (SJFC) sets forth the requirements for electrical energy storage (ESS) installations, including indoor, outdoor, stationary, or mobile installations. The San Jose Fire Code consists of the 2025 California Fire Code as otherwise amended by the City. (San Jose Code § 17.12.010.)

3.1.1 Listings

CFC § 1207.3.1 requires ESS to be listed in accordance with UL 9540. CFC § 1207.3.2 requires chargers, inverters and energy storage management systems (ESMS) to be covered as part of the UL 9540 listing. If not covered, those components must be listed separately. CFC § 1207.3.3 requires inverters to be listed and labeled according to UL 1741.

The Tanager BESS Project will use ESS, chargers, inverters, and ESMS listed in accordance with UL 9540.

3.1.2 Energy Storage Management System (ESMS)

CFC §1207.3.4 provides that if required by the ESS listing, an approved ESMS must be provided that monitors and balances cell voltages, currents, and temperatures within the manufacturer's specifications.

3.1.3 Electrical Disconnects

CFC §1207.4.1 requires placards or directories to be installed at the location of the main electrical service disconnecting means indicating the location of stationary storage battery system disconnecting means in accordance with NFPA 70 when the ESS disconnecting means is not within sight of the main electrical service disconnecting means.

3.1.4 Working Clearances

CFC § 1207.4.2 requires access and working space to be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment in accordance with NFPA 70 and the manufacturer's instructions.

3.1.5 Vehicle Impact Protection

CFC § 1207.4.5 requires energy storage systems that may be subject to impact by a motor vehicle to be provided with vehicle impact protection in accordance with Section 312.

3.1.6 Combustible Storage

CFC § 1207.4.6 does not permit combustible materials to be stored in ESS rooms, areas or walk-in units.

The Tanager BESS Project will be designed with non-walk-in battery containers that lack additional storage space.

3.1.7 Toxic and Highly Toxic Gases

CFC § 1207.4.7 requires that ESS with the potential to release toxic and highly toxic gas during charging, discharging and normal use conditions must operate and maintain hazardous exhaust systems.

The Hithium BESS utilizes listed lithium iron phosphate (LFP) cells that do not vent toxic or highly toxic gases (or any gases) during charging, discharging, or normal use conditions. Therefore, no hazardous exhaust system is required for the Hithium container.

3.1.8 Signage

CFC §1207.4.8 requires approved signs to be provided on or adjacent to all entry doors for ESS rooms or areas and on enclosures of ESS cabinets and walk-in units located outdoors. The signage must include the following or equivalent:

1. "ENERGY STORAGE SYSTEM," "BATTERY STORAGE SYSTEM," "CAPACITOR ENERGY STORAGE SYSTEM," or the equivalent.
2. The identification of the electrochemical ESS technology present.
3. "ENERGIZED ELECTRICAL CIRCUITS."
4. Where water-reactive electrochemical ESS are present, the signage shall include "APPLY NO WATER."
5. Current contact information, including phone number, for personnel authorized to service the equipment and for fire mitigation personnel required by Section 1207.1.6.1.

The Tanager BESS Project will be designed with non-walk-in battery containers and signage compliant with section 1207.4.8 will not be required.

3.1.9 Security of Installations

CFC §1 207.4.9 requires rooms, areas, and walk-in units in which electrochemical ESS are located to be secured against unauthorized entry and safeguarded in an approved manner.

3.1.10 Maximum Allowable Quantities

CFC § 1207.5.2 provides a maximum allowable quantity threshold limit for fire areas within rooms, areas, and walk-in units containing ESS. The Hithium BESS is a non-occupiable enclosure that is installed outdoors, not within rooms or buildings. Therefore, the maximum allowable quantity threshold does not apply.

3.1.11 Fire Detection System

CFC § 1207.5.4 requires an approved automatic smoke detection system or radiant energy-sensing fire detection system complying with CFC § 907.2 to be installed in rooms, indoor areas and walk-in units containing electrochemical ESS. A fire detection system is only required for outdoor BESS installations in open parking garages and rooftop installations; the Tanager BESS Project will not incorporate either technique.

3.1.12 Fire Suppression Systems

CFC § 1207.5.5 requires rooms and areas within buildings and walk-in units containing electrochemical ESS to be protected by an automatic fire suppression system. The Hithium BESS is a non-occupiable enclosure that is installed outdoors, not within rooms or buildings.

3.1.13 Maximum Enclosure Size

CFC § 1207.5.6 limits outdoor walk-in units housing ESS to a maximum size of 53 ft x 8 ft x 9.5 ft high, not including bolt-on HVAC and related equipment. The Hithium BESS is a NWI style BESS that is installed outdoors. As such, the Hithium BESS is not required to comply with the maximum enclosure size requirement.

3.1.14 Vegetation Control

CFC § 1207.5.7 requires areas within 10 feet on each side of outdoor ESS to be cleared of combustible vegetation and other combustible growth.

3.1.15 Means of Egress

CFC § 1207.5.8 requires ESS located outdoors to be separated from any means of egress as required by the fire code official to ensure safe egress under fire conditions.

3.1.16 Thermal Runaway

CFC § 1207.6.5 requires lithium-ion batteries to be provided with a listed device or other approved method to prevent, detect and minimize the impact of thermal runaway. The thermal runaway protection is permitted to be part of a BMS that has been evaluated with the battery as part of the evaluation to UL 9540.

3.1.17 Outdoor ESS Classification

Because the Tanager BESS Project is an outdoor installation, it must meet the requirements of CFC § 1207.8, which provides, "Outdoor installations shall be in accordance with Sections 1207.8.1 through 1207.8.3."

3.1.18 Clearance to Exposures and Setbacks

CFC § 1207.8.3 requires ESS located outdoors to be separated by a minimum of 10 ft (3,048 mm) from lot lines, public ways, buildings, stored combustible materials, hazardous materials, highpiled stock, and other exposure hazards.

3.1.19 Access Roads

CFC § 1207.8.3 requires ESS located outdoors to be separated by a minimum of 10 ft (3,048 mm) from lot lines, public ways, buildings, stored combustible materials, hazardous materials, highpiled stock, and other exposure hazards.

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4 Hazard Mitigation Analysis

CFC § 1207.1.6.1 provides that the HMA must evaluate the consequences of the following single failure modes:

- A thermal runaway condition in a single electrochemical ESS unit.
- Failure of any battery (energy) management system or fire protection system within the ESS equipment that is not covered by the product listing failure mode effects analysis (FMEA).
- Failure of any required protection system external to the ESS, including but not limited to ventilation (HVAC), exhaust ventilation, smoke detection, fire detection, gas detection, or fire suppression system.

NFPA 855 establishes criteria for risk evaluation and control of energy storage systems based on stored energy, location, separation distance, access routes, and hazard response strategy. The HMA addresses system configuration, operational limits, propagation risk, and emergency support functions.

NFPA 855 elements integrated into the Tanager BESS Project include:

- Maximum energy thresholds and equipment installation type
- Required access lanes and work-area clearances
- Evaluation of propagation risk between battery modules
- Monitoring and shutdown logic through automated control systems
- Protective measures for outdoor installation using LFP chemistry
- Emergency response coordination with local fire authority

These provisions guide the development of design constraints and support mitigation planning for safe operation of the BESS.

4.1 UL 9540/ UL 9540A Test Data Review

UL 9540A testing verifies thermal propagation behavior and containment performance under controlled initiation. A certified cluster-level UL 9540A test was performed on the **Hithium LC083502** system, in accordance with **UL 9540A (2019, Fourth Edition)**. The test triggered thermal runaway in a module and recorded the system's response.

Confirmed Results – Hithium UL 9540A Cluster-Level Test

- No propagation to adjacent modules
- Structural containment maintained
- No explosion or enclosure breach
- Hydrogen detection remained below operational limits

The test confirmed controlled thermal behavior and validated system design compatibility with outdoor BESS applications. This performance supported the selection of the Hithium LFP system for its hazard mitigation capabilities and operational safety in compliance with current industry standards.

Thermal initiation testing was completed on the Hithium LFP system following UL 9540A procedures at the cluster level. The following health risk assessment is based solely on the actual outcomes recorded during testing and not on assumptions.

Observed Test Results (Hithium UL 9540A)

- Thermal event remained fully contained within the initiating module
- No visible flame or smoke observed outside the enclosure
- Hydrogen gas and volatile organic compound (VOC) levels did not exceed sensor thresholds
- Heat release was limited and did not migrate to adjacent modules
- Test concluded without external fire, structural damage, or personnel hazard

Risk Assessment — Derived From Verified Test Behavior

Risk Factor	Evaluation Based on Test Results
Exposure likelihood	Low — no emissions outside enclosure
Exposure duration	Short — event remained localized
Propagation risk	Contained — no spread beyond test module
Personnel safety	Non-walk-in design eliminated exposure
Proximity hazard	Outdoor setup prevented accumulation

All conclusions in the table above are **directly supported by the verified test results** recorded for the Hithium system.

4.2 Failure Mode Effects Analysis (FMEA)

The Failure Modes and Effects Analysis evaluates potential fault conditions within the Hithium LFP Battery Energy Storage System and analyzes their possible effects, likelihood, and mitigation strategies. This assessment supports the hazard mitigation framework and aligns with current safety design requirements for outdoor non-walk-in energy storage installations.

4.2.1 Methodology

Failure modes are analyzed using the following criteria:

- Likely cause or trigger mechanism
- Potential effect on equipment or surrounding area
- Detection method and response time
- Severity and probability
- Reliability of control measures
- Degree of containment during abnormal event

Primary safety inputs include:

- Hithium UL 9540A cluster-level test results
- Manufacturer safety system configuration and monitoring capabilities
- Standard BESS control logic for shutdown and isolation

- Physical separation between enclosure and occupied areas

4.2.2 Identified Failure Modes

The following table lists potential failure modes that may occur during operation or fault conditions:

Failure Mode	Potential Cause	Primary Effects
Cell thermal runaway	Internal defect or damage	Heat generation and gas release
DC bus fault	Short circuit or insulation failure	Overcurrent / arc risk
Overvoltage / overcurrent	PCS or control failure	Stress to module components
Loss of cooling function	Component failure	Local temperature increase
Sensor malfunction	Faulty signal	Delayed fault response
External mechanical impact	Vehicle/equipment strike	Structural damage to container
Fire exposure from surroundings	Wildfire or nearby ignition	Heat stress to enclosure

Note:

DC = direct current

PCS = Power Conversion System

4.2.3 Mitigation and Control Measures

The Hithium system incorporates layered mitigation strategies addressing each failure mode through automated detection and isolation. Control measures include:

System-Based Controls

- BMS detection at cell, module, and cluster levels
- PCS current regulation and protective shutdown
- SCADA monitoring with operational alarms
- Remote disconnection capability from inverter and grid tie
- Enclosure-level venting to prevent pressure buildup

Design-Based Controls

- LFP chemistry with limited propagation potential
- Module separation and layout spacing
- Non-walk-in enclosure eliminates personnel exposure
- Outdoor installation prevents gas concentration
- Access lanes provided for external fire response

4.2.4 Severity and Likelihood Evaluation

Assessment of severity and likelihood is based on manufacturer test data and operational behavior under simulated fault conditions. The UL 9540A testing showed that a single cell-level event did **not propagate** beyond the initiating module, which supports a reduced likelihood classification for thermal propagation.

Failure Mode	Severity	Likelihood	Mitigation Basis
Cell thermal event	High	Low	UL 9540A test: no propagation beyond module
DC bus fault	Moderate	Low	Protective relays + shutdown logic
Overvoltage / overcurrent	Moderate	Low–Moderate	PCS control + monitoring
Cooling loss	Moderate	Low–Moderate	BMS alerts & thermal shutdown
Sensor malfunction	Low–Moderate	Low	System-level redundancy
Mechanical impact	Moderate	Low	Clearances + physical barriers
External ignition	High	Low	Outdoor rating & setback distance

Notes:

BMS = Battery Management System

DC = direct current

PCS = Power Conversion System

UL = Underwriters Laboratories

4.2.5 Consequences of Failure Modes

This section evaluates potential consequences that may result from abnormal operation of the Lithium LFP Battery Energy Storage System. All assessments are based on verified system performance characteristics, enclosure design, and observed thermal behavior during cluster-level testing.

4.3 Exposure Assessment

The system operates as a non-walk-in enclosure with no routine personnel entry. Exposure risk was evaluated considering containment capability and natural outdoor dispersion conditions.

Exposure Control Factors

Possible Exposure	Assessment Basis
Toxic gases	No concentrations exceeded sensor thresholds during testing
Combustion byproducts	No external flame or visible smoke observed outside enclosure
Human contact	Prevented by enclosure isolation and outdoor configuration
Gas buildup	Dispersed naturally due to outdoor airflow and container spacing

With no recorded external emissions during thermal initiation testing and no routine access required, exposure potential is assessed as **low**.

4.4 Fire Water Flows and Contamination

If emergency suppression is applied, water must be controlled to prevent drainage contact with adjacent areas. The installation method reduces discharge risk.

Environmental Control Measures

- Site drainage will be included in updated site Stormwater Pollution Prevention Plan (SWPPP)
- Fire response can be performed externally without enclosure entry

Based on system configuration and enclosure placement, contamination potential is **low** when standard response practices are followed.

4.5 Isolation and Protective Action Distances

Clearance distances and access routes protect personnel and support emergency response during abnormal operating events.

Isolation Measures

Measure	Purpose
Setback from occupied areas	Reduce exposure potential during abnormal events
Containerized BESS	Limit propagation between adjacent units
Dedicated fire lane access	Maintain unobstructed emergency approach
Equipment spacing	Limit propagation between adjacent units
Remote disconnect capability	Allow isolation without enclosure entry
Outdoor ventilation	Reduce risk of gas concentration

5 Emergency Response Guidelines

Emergency response procedures for the Lithium LFP Battery Energy Storage System are based on the outdoor equipment configuration, non-walk-in enclosure design, monitored operating status, and externally accessible shutdown controls. All actions can be performed without entering the enclosure.

5.1 Protocols for Thermal Runaway and Fires

The system is designed to allow external response and isolation if a thermal event is detected. Emergency measures are based on system monitoring data, fire department access, and protective clearances.

Standard Response Protocol

- Initiate system shutdown through external disconnect or control interface
- Maintain setback distance from enclosure during incident
- Shut off power flow at inverter and grid connection points
- Do not enter enclosure — control actions remain external at all times
- Use fire suppression from outside container only if necessary
- Verify temperature decline through BMS and monitoring interface

On-Site Support Provisions

Response Element	Purpose
Clear access lane	Allows fire department vehicle approach
External disconnect	Enables isolation without physical entry
Enclosure separation	Reduces propagation potential
Monitoring interface	Provides temperature and system status data
Outdoor configuration	Prevents gas accumulation during response

All emergency procedures are targeted at maintaining personnel safety and limiting propagation risk. The system's operational design eliminates the need for enclosure entry during any stage of emergency response.

6 Recommendations

The following recommendations are based on system operation characteristics of the Hithium LFP BESS and accepted emergency response principles. These measures enhance safe operation, reduce hazard potential, and support coordinated response during abnormal events and will be implemented by the project to mitigate potential hazards.

6.1 Fire Detection & Prevention

- Integrate infrared temperature monitoring across enclosure areas.
- Install gas detection sensors to support early intervention.
- Maintain automatic shutdown capability through BMS logic.
- All exterior access points must remain clear for suppression activity.

6.2 Containment & Runoff Management

- Grade and drainage should direct water away from personnel areas.
- Periodically review surface condition and clear areas of debris or blockage.

6.3 Emergency Response Planning

- Establish external isolation points using PCS and grid disconnects.
- Keep response access lanes clear in all directions of the equipment.
- Provide emergency responders with equipment layout and access map.
- Identify response leadership roles and define communication channels.
- Use real-time monitoring to identify thermal trends and support decision-making.

6.4 Community Notification

- Implement automated alert capability for critical alarms.
- Maintain signage and contact reference at designated access points.
- Preserve operational records and event logs for external reporting.
- Provide structured notifications to authorities during major incidents.

6.5 Ongoing Maintenance

- Review BMS monitoring trends as part of routine inspection cycles.
- Verify enclosure integrity, hardware connection points, and clearances.
- Maintain debris-free zones around system exterior.
- Keep external isolation devices accessible during all stages of operation.

6.6 Responder Training

- Support responder orientation on system configuration and hazards.

- Present disconnect locations and exterior isolation
- Review safety zones and recommended standoff distances.
- Provide periodic refresher sessions for local emergency personnel.

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7 Conclusion

The Tanager BESS Project has been preliminarily evaluated based on system configuration, safety design features, and verified performance under recognized lithium-ion testing criteria. The review confirms that the Hithium LFP system satisfies the essential requirements for hazard mitigation and supports the conditions for safe utility-scale operation.

The following safety objectives are met by system design and test behavior:

1. Thermal events remain contained within a single enclosure.
2. Internal detection methods identify combustion products early enough to initiate protective response.
3. No hazardous gas levels reach areas of personnel access during controlled failure conditions.
4. Flammable gas release remains within acceptable limits during charging, discharging, and normal operation.
5. Isolation procedures and protective spacing limit propagation between nearby equipment.

These measures demonstrate controlled system behavior and alignment with accepted safety objectives for energy storage installations. The combination of external shutdown capability, operational monitoring, emergency response planning, and maintenance strategies provides a comprehensive hazard mitigation framework consistent with current regulatory standards and codes. To the extent the final project design could impact these product-based conclusions, supplemental analysis will be conducted in consultation with the San Jose Fire Department and the CEC.

Acronyms

AHJ	authority having jurisdiction
BESS	Battery Energy Storage System
BMS	Battery Management System
DC	direct current
ESS	electrical energy storage
FMEA	Failure Modes and Effects Analysis
HMA	Hazard Mitigation Analysis
IFC	International Fire Code
kW	kilowatt
LECEF	Los Esteros Critical Energy Facility
LFP	lithium iron phosphate
MJ	millijoules
MW	megawatt
NEC	National Electrical Code
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PCS	Power Conversion System
PEL	permissible exposure limits
REL	recommended exposure limits
SCADA	Supervisory Control and Data Acquisition
SWPPP	Stormwater Pollution Prevention Plan
UL	Underwriters Laboratories
VOC	volatile organic compound