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Petition for Modification
Tanager Battery Energy Storage System Project

Data Response Set 1A

Los Esteros Critical Energy Facility
03-AFC-02C

Submitted to
California Energy Commission

Submitted by
Los Esteros Critical Energy Facility, LLC

October 2025

LOS ESTEROS CRITICAL ENERGY FACILITY (03-AFC-02C)

Petition for Modification- Tanager BESS Project

DATA RESPONSE SET 1A

Los Esteros Critical Energy Facility, LLC, on behalf of Tanager Power, LLC, provides the following responses to the California Energy Commission ("CEC") Staff's Data Request Set 1, A1 through A41, for the Tanager Battery Energy Storage System ("BESS") Project ("Project").

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as presented in CEC Staff's Data Request Set 1[1] and are keyed to the Data Request numbers.

CONSTRUCTION IMPACTS ANALYSIS

DATA REQUESTS

A1. Please provide a construction emission estimate or a comparison of the construction activities with the original project construction. If California Emissions Estimator Model (CalEEMod) is used to quantify construction emissions, please use the most recent version (version 2022.1.1.29 as of April 4, 2025) and provide a JSON file containing the CalEEMod project.

Response: A construction emissions estimate using CalEEMod is underway and will be provided as part of Data Response Set 1B.

A2. Please provide an ambient air quality impacts analysis for criteria pollutants during construction of the project modifications to show compliance with the California Ambient Air Quality Standards and the National Ambient Air Quality Standards or justify why such analysis is not needed.

Response: An ambient air quality analysis is underway and will be provided as part of Data Response Set 1B.

A3. Please provide a health risk assessment for toxic air contaminants during construction of the project modifications to show the health risks are below the Bay Area Air Quality Management District (BAAQMD) thresholds or justify why such assessment is not needed.

Response: A health risk assessment underway and will be provided as part of Data Response Set 1B.

A4. If the result of cancer risk is greater than 10 in one million, please provide a map containing health risk isopleths, including an isopleth showing the risk value of 10 in one million.

Response: A health risk assessment underway and will be provided as part of Data Response Set 1B.

[1] TN: 264452.

OPERATIONAL IMPACTS ANALYSIS

DATA REQUESTS

A5. Provide an estimate for the additional operational emissions expected from the proposed BESS project (using CalEEMod if possible). If CalEEMod is used to quantify additional operational emissions, please use the most recent version (version 2022.1.1.29 as of April 4, 2025) and provide a JSON file containing the CalEEMod project.

Response: Typically, BESS projects do not increase the emissions of criteria pollutants during operations. Implementation of the Project would not result in a significant increase in emissions relative to existing conditions.

A6. If the project intends to use SF_6 in any new GIE, please provide an estimate for annual leakage from the GIE in metric tons of carbon dioxide equivalent. Further, state how the use of SF_6 complies with the SF_6 phase-out regulation.

Response: The Project will include a breaker with a capacity of 176 pounds of SF_6. The breaker is rated at 245kV, with a rated short circuit current of 63000A. According to Title 17 of the California Code of Regulations, section 95352, the phase out date for gas insulating equipment with these specifications is January 1, 2031. Tanager will comply with the phase out regulations by satisfying either 17 CCR 95352(a)(2) or 17 CCR 95352(a)(3). Modern SF_6 breakers are hermetically sealed and designed to prevent leakage. Based on the maximum allowable emission rate established under Title 17 of the California Code of Regulations, section 95352, and the global warming potential ("GWP") of SF_6 of 22,800, the Project's maximum estimated annual leakage from the GIE is approximately 18.2 metric tons of carbon dioxide equivalent ("MT CO_2e"). The GWP value of SF_6 used in the calculation is consistent with the value applied to SF_6 in the current California greenhouse gas emissions inventory, available at: https://ww2.arb.ca.gov/sites/default/files/2024-09/nc-2000_2022_ghg_inventory_trends.pdf .

A7. Please confirm whether any refrigerant would be used for BESS cooling. Please provide the specifications if any refrigerants would be used on the project, including an annual GHG emissions calculation due to refrigerant leakage (in metric tons of carbon dioxide equivalent). Please demonstrate that the proposed refrigerant would comply with the HFC prohibition regulation.

Response: Each BESS container will be equipped with a liquid cooling unit. The liquid cooling unit will contain the refrigerant R410A or similar refrigerant. The cooling capacity of the unit has a rated value of ≥60 kW. R410A has a GWP value of 2,088. Pursuant to Senate Bill 1206,

hydrofluorocarbons (HFCs) that exceed a GWP value of 1,500, including R410A, will be prohibited as of January 1, 2030. The Project will phase out the use of R410A (as applicable) in compliance with the timeline and requirements set by Senate Bill 1206.

It is estimated that approximately 0.82 MT CO2e per year would be generated due to refrigerant leakage. This calculation assumes that each BESS container cooling unit would require approximately 10 pounds of refrigerant, an annual operational leak rate of 0.040%, and a service leak rate of 0.040%.

THERMAL RUNAWAY

A8. Provide the exact locations (latitude and longitude or UTM coordinates) and dimensions of the BESS enclosures for modeling purposes. Also include the following input parameters for a dispersion modeling analysis of all potential criteria air pollutants, greenhouse gases, and toxic air contaminants (TACs) that could be generated during combustion: emission rates (in grams/second), exhaust temperature, exhaust diameter, pressure, and exhaust gas velocity resulting from battery damage or thermal runaway of the whole project. Note to include the calculation worksheet, if available.

Response: Air modeling is underway and will be provided as part of Data Response Set 1B.

A9. A copy of the dispersion modeling analysis of all potential criteria air pollutants and TACs for the thermal runaway scenario using a well-validated model (AERMOD preferred).

Response: Air modeling is underway and will be provided as part of Data Response Set 1B.

A10. A comparison of the modeled fire-related TACs concentrations to the U.S. EPA Acute Exposure Guideline Levels (AEGL) and the OEHHA/CARB acute Reference Exposure Levels (RELs) and demonstrate whether the acute hazard Index (HI) of TACs would be higher than the significance threshold of 1 at sensitive receptors. Please demonstrate whether the criteria air pollutant impacts would cause or contribute to any exceedance of ambient air quality standards. If exceedances occur, provide a detailed Emergency Response Plan and outline the applicable regulatory notification requirements.

Response: Air modeling is underway and will be provided as part of Data Response Set 1B.

BURROWING OWL INCIDENTAL TAKE AUTHORIZATION

DATA REQUESTS

A11. If the project owner would like to pursue incidental take coverage, please provide

all information that would be required in an ITP application for CESA- listed or candidate species, specifically burrowing owl, including an impacts analysis and proposed mitigation measures (Cal. Code of Regs., tit.14, § 783.2). Information regarding the project description, schedule, and location has already been provided.

Information on what is required in a typical ITP application can be located here: https://wildlife.ca.gov/Conservation/CESA/Permitting/Incidental-Take-Permits

Response: A response to Data Request A11 will be provided as part of Data Response Set 1B.

A12. Please describe any existing compensatory mitigation for the Los Esteros Critical Energy Facility (03-AFC-02C) and how this could potentially apply to the amendment activities for the Tanager BESS and issuance of an incidental take for the project.

Response: A response to Data Request A11 will be provided as part of Data Response Set 1B.

*A13. If the project owner declines to pursue incidental take coverage, please provide a revised **BIO-11** or other avoidance and minimization measures to fully avoid take of burrowing owl.*

Response: A response to Data Request A11 will be provided as part of Data Response Set 1B.

DESCRIPTION AND CHARACTERIZATION OF EXCAVATION

DATA REQUESTS

A14. Please describe and characterize the scale of excavation (particularly depth) required for various project components, including:

1. *Demolition of existing site elements and landscaping*
2. *Site grading*
3. *Construction of new entrances*
4. *Construction of internal roads and surface parking*
5. *Landscaping and fences*
6. *Stormwater features and site drainage*
7. *Hydrants and water lines*
8. *Utility interconnects*
9. *Security and operational lightning*

Response: The Project will include grading and installation of new features as described below. All grading and excavation at the project site will be subject to the cultural resource avoidance and minimization measures

specified in the Los Esteros Critical Energy Facility (LECEF) Conditions of Certification (CUL-1 through CUL-11). Excavations for the project components identified in Data Request A14 are as follows:

1. **Demolition of existing site elements and landscaping**.
   The Project site was previously used for staging and laydown during construction of the LECEF. At this time, the Project anticipates removal of a portion of the berm, as well as some trees and landscaping that border the south end of the developed LECEF. Prior to site grading, the existing site elements described would be removed and vegetation would be cleared. Changes to these features would be made only on the side of the berm facing the BESS facility. It is anticipated that excavations for these existing site elements will not exceed five to fifteen feet below grade, as described below.
2. **Site grading**
   The site will be graded and leveled to the depth needed for construction of access routes and foundations for the battery containers. The existing berm along the northern margin of the BESS site, adjacent to the LECEF would be partially removed. Excess soil, gravel or other material will be removed from the site in accordance with the site Soils Management Plan. Except for the concrete foundations for the battery containers, grading is not expected to exceed a depth of 1-2 feet and would be similar to the depth of soil that was disturbed during construction of the LECEF. The concrete foundations for the battery containers would require the excavation of soil to a depth of approximately five feet or the installation of piles to a depth of approximately 15 feet below grade.
3. **Construction of new entrances**
   Two new entrances would be constructed as shown on page 33 of the Petition. The entrances and associated access routes in the Project area will be constructed by grading and the installation of an asphalt path, designed to accommodate emergency vehicles, as required. However, grading for the entrances and internal access routes is not anticipated to affect undisturbed, naturally occurring soil layers.
4. **Construction of internal roads and surface parking**
   The Project will construct internal access routes along the outside margins of the site and between the battery container banks as shown on the layout presented on page 33 of the Petition. No additional parking or offsite laydown is proposed as part of the Project. During construction, portions of the Project site will be used for laydown and parking. A typical plan and profile detail of the access routes is provided in the site layout as part of the Petition. Grading for the internal roads and surface parking is not anticipated to affect

undisturbed, naturally occurring soil layers.

5. **Landscaping and fences**
   A design for landscaping and fences is still in process. Excavation and fill for landscape installation is anticipated to be one to five feet. Excavations for the installation of fences will be approximately five feet.

6. **Stormwater features and site drainage**
   A design for the stormwater retention basin and site drainage is in process. The stormwater drainage system will be developed based on development of the entire Project site.

   The retention basin shown on the Project layout presented on page 33 of the Petition would be excavated to an estimated depth of 10 feet. Final dimensions will be determined by a hydrological analysis. The excavation for the retention basin may affect previously undisturbed soil layers.

7. **Hydrants and water lines**
   A water study is in process by the Project team to determine the size and number of water lines and hydrants required for the proposed facility. The Project will place a dedicated water tank onsite or connect to the existing fire water system for the LECEF in accordance with applicable LORS. Water lines would typically be placed in trenches excavated to a depth of approximately five to six feet.

8. **Utility interconnects**
   A new generation transmission line would connect the Tanager BESS Project to the PG&E 230-kV bus at the Los Esteros Substation. The generation transmission line would be installed on above-ground poles to the northeastern corner of the parcel. At this location, the line would transition to a buried conduit that would connect to the Point of Interconnection at the Los Esteros Substation. The conduit would be buried approximately 10-15 feet below the final grade elevation. Excavations for generation transmission poles are estimated to be 60 feet.

9. **Security and operational lighting**
   The design of the security and operational lighting is in process. Poles for lighting and security systems would be installed on concrete foundations that may be approximately five feet deep. Electrical and communications wiring for the security and lighting systems would be installed in conduits that would be buried at a

depth of two to five feet below grade.

SUBSURFACE TESTING REPORT

DATA REQUESTS

A15. Please clarify for staff, if the Project Owner is referring to subsurface testing that occurred in the Project Area, or if they are referring to previous excavations nearby in the broader Study Area. Provide a reference for the Phase 2 Environmental Site Assessment referred to in the Petition and identify where in the Petition package the referenced report is located. If the report was not included in the Petition documents, provide a copy of the Phase 2 Environmental Site Assessment substantiating the claim of the Project Owner.

Response: According to Busby (2002a and 2002b), subsurface testing was implemented for the LECEF site in February 2002, and within the access road and linear alignments in August 2002. The Project Area was utilized as laydown for the LECEF and no subsurface testing was completed within the Tanager BESS Project site in 2002.

The following reports were submitted with a repeated application for confidential designation concurrent with this filing.

Busby, Colin I. 2002a. Memorandum to Mr. Jerry Salamy, CH2M Hill, Initial Results Los Esteros [Critical Energy Facility (LECEF)], San Jose, Santa Clara County Presence/Absence Testing Program [completed] February 16, 2002. Dated February 22, 2002. Basin Research Associates, San Leandro California.

Busby, Colin I. 2002b. Memorandum to John Larsen and Steve De Young, Calpine and Jerry Salamy, CH2M Hill. Los Esteros Critical Energy Facility [LECEF], City of San Jose, Santa Clara County. Field Report; Mechanically Assisted Presence/Absence Testing of the Los Esteros Critical Energy Facility [LECEF], San Jose, Santa Clara County Access Road and Linear Alignments. Basin Research Associates, San Leandro California.

NATIVE AMERICAN CONTACTS AND EFFORTS TO IDENTIFY POTENTIAL TRIBAL CULTURAL RESOURCES

DATA REQUESTS

A16. Please provide a copy of the Native American Contacts List that accompanied the NAHC's response letter.

Response: The Native American Contacts List provided by the NAHC is provided as Attachment DR-A16.

A17. Provide a narrative description of the efforts made to contact tribal

representatives regarding the identification of Native American traditional cultural resources or potential tribal cultural resources in the Study Area.

Response: No additional tribal outreach was conducted for this Petition, as consultation was completed for the original AFC (03-AFC-02).

SITE SECURITY

DATA REQUESTS

A18. Please provide a description of proposed site security measures during the construction and operation phases of the proposed BESS project.

Response: The Project site will be fenced, and access will be controlled by a locked gate. During construction, the selected Engineering, Procurement, and Construction (EPC) contractor will be responsible for implementation of site security. Site security measures will include installation and maintenance of secure fencing, the installation of lighting with motion-activated controls, locked gates with restricted access, tracking logs for all personnel entry/exit, deliveries, and visitors to the site, as needed.

A19. Please clarify whether the proposed BESS project will be amended to the existing Los Esteros Critical Energy Facility Construction Security Plan and Operation Security Plan.

Response: During construction, the EPC contractor will retain control of the site, separately from the Los Esteros Critical Energy Facility. A new Construction Security Plan will be prepared pursuant to Condition of Certification COM-8. Once in operation, a new Operation Security Plan will be created in accordance with Condition of Certification COM-8 to include the Tanager BESS.

TOXIC AND FLAMMABLE GASES GENERATED, AND EXPLOSION CONTROL

DATA REQUESTS

A20. Please provide a discussion of the toxic vapors/emissions that could be produced if a battery container is damaged, or thermal runaway occurs.

Response: No toxic air emissions from the Project would occur during normal operations. To prevent battery cell malfunctions, the Project will be equipped with

1. Monitoring and control systems,
2. Fire detection and protection systems, and
3. Gas ventilation systems.

The proposed safety systems would prevent, monitor, and/or control any battery cell malfunctions. A thermal runaway event and/or a fire would

only occur in the unlikely event of multiple safety and ventilation system failures. The proposed battery system is designed to contain a potential fire within a single battery module, but limited pollutants could be emitted to the atmosphere during this type of event.

Large-format lithium iron phosphate (LFP) batteries are generally more thermally stable than other chemistries. Toxic vapors and emissions from the proposed battery and other modern lithium-ion energy storage systems only occur if the system is damaged or undergoes thermal runaway. Under fire or failure conditions, toxic and flammable vapors have the potential to be released.

The primary emissions from a BESS thermal runaway event would be flammable gases, which burn or dissipate within the vicinity of the battery unit. Most of the battery structure is non-combustible. The primary emissions potentially released would be carbon dioxide (CO_2), carbon monoxide (CO), methane (CH4) and other compounds in lesser amounts as discussed below.

Potential Emissions from LFP Batteries

a) Volatile Organic Compounds (VOCs)

- Methane, ethane, ethylene, propylene
- Hydrocarbons and light aldehydes (formaldehyde, acetaldehyde)

b) Acidic and Irritant Gases

- Hydrogen fluoride (HF)
- Phosphoryl fluoride (POF_3)
- Phosphoric acid derivatives

c) Other Byproducts

- Hydrogen (H_2)
- Carbon dioxide (CO_2)
- Particulate matter and soot

The proposed LFP chemistry reduces fire severity compared to other lithium-ion chemistries, and redundant safety measures would be implemented to reduce the potential of a runaway thermal event. These measures would include gas detection, ventilation, and emergency response protocols.

A21. Please provide a schematic of the proposed battery container gas detection systems and a detailed description of these systems.

Response: The BESS container is equipped with two (2) combustible gas detectors, calibrated to hydrogen (H2) target gas. Explosion protection is provided

by an explosion prevention exhaust system that is activated upon 10% LFL combustible gas detection. Site fire alarm control panel(s) (FACP) will be installed at the first responder station at the BESS site for the monitoring and control of the fire alarm devices for the BESS. The FACP will be capable of announcing smoke, gas, and heat alarms along with the activation of the explosion control system.

The gas detectors shown on Figure 1 are located below the roof of the battery container to monitor the concentration of hydrogen and trigger safety measures. Safety measures could include activating ventilation, sounding alarms, and shutting down the BESS to prevent a fire or thermal runaway event. Figure 2 shows a view of the gas detectors from the front of the battery container.

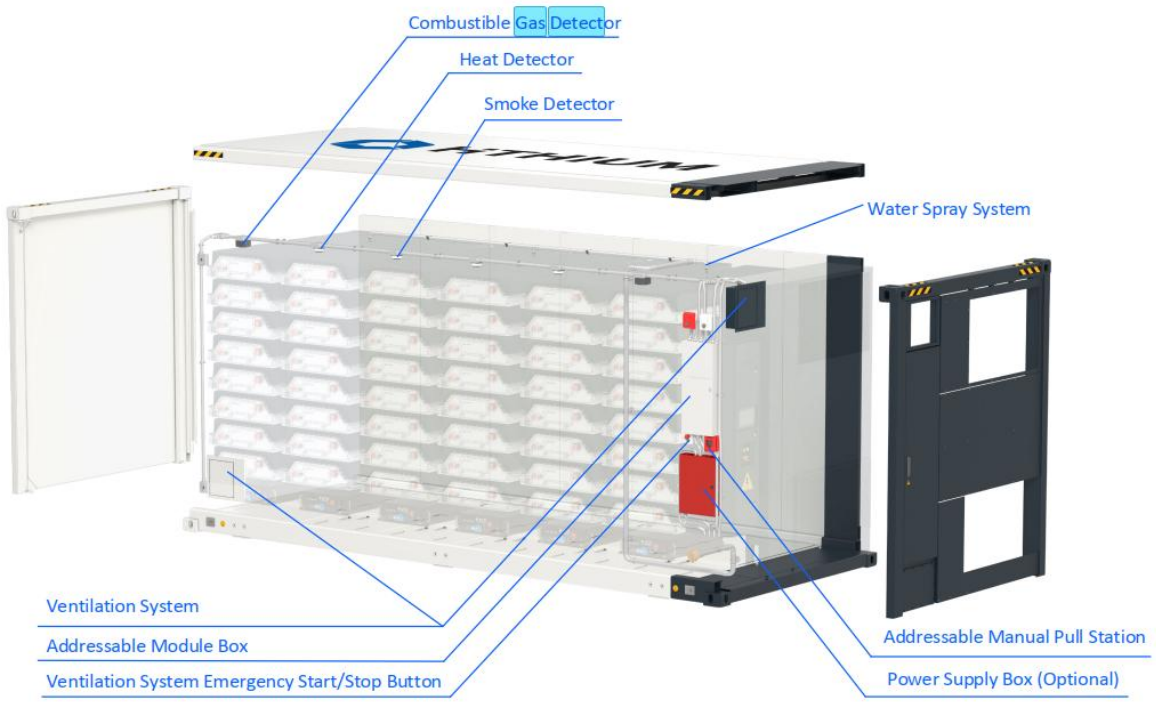

Figure 1. Hithium BESS fire protection system including gas detectors

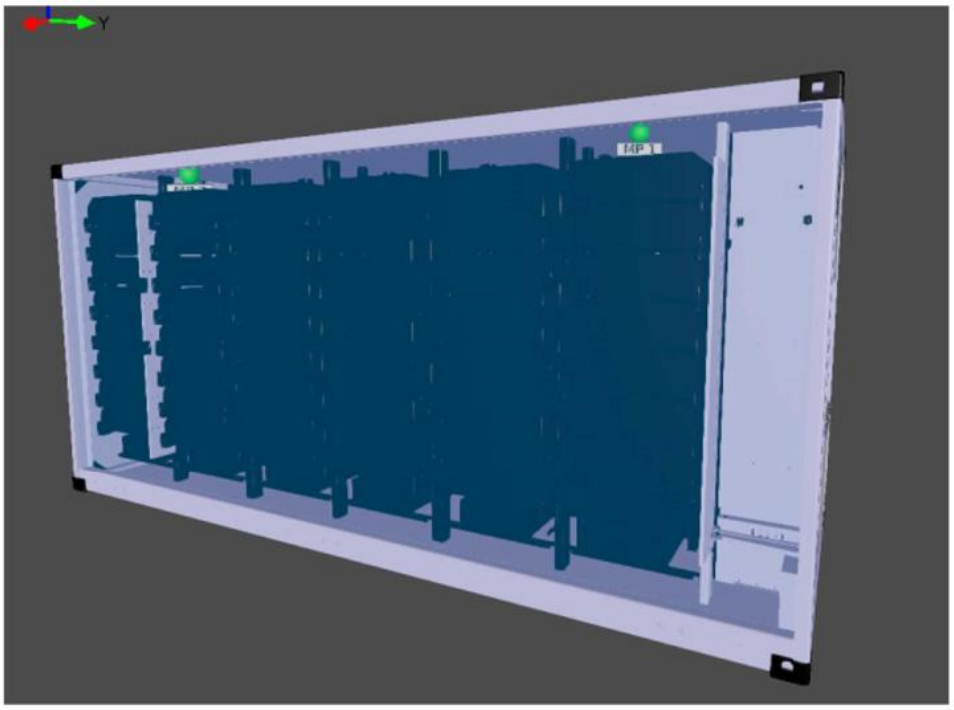

Figure 2. Location of gas detectors, front view.

A22. Blank Request

A23. Please provide a schematic of the proposed battery container explosion control systems and a detailed description of these systems.

Response: The BESS container is equipped with a combustible gas concentration reduction system (explosion control system) designed to maintain the flammable gas concentration below 25% LEL, thereby minimizing the deflagration potential. It consists of gas detection, an explosion prevention 820 cfm exhaust fan (outlet), and a make-up air louver. The explosion prevention exhaust system is activated upon 10% LFL H2 gas detection. The exhaust system is designed in accordance with NFPA 69.

In addition, the BESS is equipped with fire detection and notification systems. These systems can detect and notify local site personnel of a thermal event so that they can evacuate to a safe location. Additional mitigation measures include emergency response procedures and training that will advise site personnel and first responders to stand at a safe distance, upwind from a distressed BESS container.

A24. Please provide a description of how the proposed battery container explosion control systems will comply with the applicable National Fire Protection Association (NFPA) standards (e.g. NFPA 68, 69, 855, etc.).

Response: The proposed BESS is designed with explosion control systems that align with the applicable requirements of the National Fire Protection Association (NFPA) standards to ensure personnel safety, property protection, and regulatory compliance. The proposed BESS explosion control system complies with each of the applicable NFPA standards as summarized below.

1. NFPA 855 – Standard for the Installation of Stationary Energy Storage Systems

- Hithium and other manufacturers of modern LFP battery storage containers integrate explosion control systems consistent with the fire protection and explosion mitigation requirements outlined in NFPA 855 (2023 edition).
- The systems address hazards associated with thermal runaway, gas generation, and potential deflagration events through:
    - Continuous gas monitoring and detection.
    - Emergency ventilation systems to limit flammable vapor accumulation.
    - Explosion relief panels and suppression systems designed to prevent structural failure.
- Compliance with NFPA 855 ensures that explosion control systems are integrated as part of the overall fire protection strategy, including coordination with fire alarm, suppression, and emergency response plans.

3. NFPA 69 – Standard on Explosion Prevention Systems

- Hithium and other manufacturers of modern LFP battery storage containers incorporate prevention and control measures aligned with NFPA 69, including:
    - Continuous flammable gas detection with automatic activation of ventilation and suppression systems.
    - Interlocks to shut down charging/discharging operations upon detection of hazardous conditions.

4. System-Level Design Integration

- Gas Detection & Ventilation: Multi-point gas sensors connected to the Battery Management System (BMS) trigger high-capacity mechanical ventilation in accordance with NFPA 69 and UL 9540A test results.
- Emergency Controls: Automatic disconnects, BMS-controlled alarms, and smoke, heat as wells as gas sensor integration with

site-level fire alarm systems ensure coordinated emergency response per NFPA 855.

The proposed LFP battery container explosion control systems comply with NFPA 855 by integrating fire and explosion safety into the BESS design. As summarized above, system interlocks would comply with NFPA 69. The signage, horn strobe warnings and integrated system controls would substantially mitigate deflagration hazards, protect first responders, and meet the regulatory safety standards.

BATTERY ENERGY STORAGE SYSTEM (BESS) TECHNOLOGY

DATA REQUESTS

A25. Please provide the BESS manufacturer's specifications, ratings, and listings of the specific containerized BESS technology being proposed.

Response: The Project intends to use an LFP battery cell and is currently considering the Hithium Infinity Block Generation 2 BESS, a pre-assembled BESS container with an energy capacity of 5,016 kWh per unit/container. While the Project will consider other suppliers' products, the Project is committed to LFP technology. Any product used will be a liquid-cooled, containerized system designed for industrial, utility, and grid-scale applications. The representative specifications summarized below are based on a specific product model, the Hithium "ESS Container 5,016 MWh (6x2P416S-EU)," which uses prismatic lithium iron phosphate (LFP) cells.

1. Specifications:

- Nominal energy: 5,016 kWh.
- Nominal voltage: 1,331.2 V.
- Operating voltage range: 1,040 V to 1,500 V.
- Battery type: Prismatic LFP cells.
- Configuration: 6*2P416S, meaning 6 strings, each with 2 parallel cells and 416 series-connected cells.
- Cooling method: Liquid
- Nominal charge/discharge rate: 0.5P/0.5P.
- Round trip efficiency: ≥ 94%.
- Energy density:
    - Gravimetric: ≥ 125 Wh/kg.
    - Volumetric: ≥ 117 Wh/L.
- Dimensions (L x W x H): 6,058 x 2,438 x 2,896 mm.

- Maximum weight: 40,000 kg.
- Ingress protection: IP55.
- Operating temperature range: -30°C to 55°C.
- Recommended storage temperature: -20°C to 35°C.
- Operating altitude: ≤ 4,000 m (derating may be required for altitudes above 2,000 m).
- Communication: Ethernet.

2. Ratings and listings

The proposed Hithium system meets the following industry ratings and certifications:

- BNEF Tier 1 BESS Manufacturer: Hithium is ranked as a Tier 1 BESS manufacturer by BloombergNEF (BNEF), a respected third-party research organization in the global energy market.
- Global utility-scale shipment ranking: Hithium was ranked second globally for utility-scale energy storage shipments in the first half of 2025.
- Bankability rating: The company has received an "A" grade in PV Module and Energy Storage Bankability ratings, which addresses the reliability and investment value of its products.
- International certifications: The 5016kWh BESS and its components comply with various international safety and performance standards, including:
    - Battery and system safety: IEC 62619, UL 1973, UL 9540A, and NFPA 855.
    - Transportation: UN 38.3.
    - Environmental compliance: RoHS, REACH, and EU Battery Regulation 2023/1542.

Management systems: Hithium is certified for ISO 9001 (Quality), ISO 14001 (Environmental), and ISO 45001 (Occupational Health and Safety).

A26. Please provide the Safety Data Sheet for hazardous materials contained in the BESS technology being proposed, including related to the fire suppression system and air-cooled or liquid-coolant air conditioning system.

Response: The Safety Data Sheet is included as Attachment DR-A26.

A27. Please provide the UL 9540A test report for the BESS manufacturer/model being proposed.

Response: The UL 9540A test report has been submitted under an Application for Confidential Designation.

A28. Please provide a description of how the hazard mitigation analysis for the proposed BESS technology will comply with the California Fire Code section 1207.1.4 and the applicable NFPA standards (e.g. NFPA 855).

Response: The Hazard Mitigation Analysis (HMA) for the BESS technology will be developed in accordance with California Fire Code (CFC) Section 1207.1.4 and the applicable requirements of NFPA 855 (Standard for the Installation of Stationary Energy Storage Systems), ensuring that potential fire, explosion, and failure hazards associated with the system are identified, evaluated, and mitigated through engineering and operational controls.

Compliance with CFC §1207.1.4 Requirements

CFC §1207.1.4 requires a hazard mitigation analysis to demonstrate that risks associated with the installation and operation of a BESS are adequately addressed. The HMA for the proposed Project will address:

- Failure Modes and Effects Analysis (FMEA)
- Deflagration and Fire Risk Assessment
- Explosion and Fire Spread Control
- Mitigation Measures
- Impact on Occupants and Responders

Compliance with NFPA 855

NFPA 855 provides installation and hazard control requirements for stationary BESS. The HMA for the proposed Project will demonstrate compliance in the following areas:

- System Sizing & Location (NFPA 855 §4.1 & CFC 1207.2)
- Thermal Runaway Propagation Testing (UL 9540A)
- Fire Detection & Suppression (NFPA 855 §4.4.7)
- Gas Ventilation (NFPA 855 §9.3.7 & NFPA 69)
- Explosion Control (NFPA 855 §9.3.8)
- Emergency Planning & Fire Department Interface (NFPA 855 §4.10):

BESS LOCATION AND INSTALLATION

DATA REQUESTS

A29. Please provide a description of how the proposed BESS project will comply with the 2023 edition of the NFPA 855 Standard for the Installation of Stationary Energy Storage Systems.

Response: The Tanager BESS project will be designed and installed in accordance with the 2023 edition of NFPA 855: Standard for the Installation of Stationary Energy Storage Systems, which governs the safe installation of stationary energy storage systems (ESS). Compliance to NFPA 855 is demonstrated across the following critical areas:

1. System Location and Siting (NFPA 855, Chapters 4–7)
    - Indoor and Outdoor Installations: the BESS units will be deployed in dedicated outdoor enclosures (containers) designed with fire separation, ventilation, and clearance as required by NFPA 855.
    - Setbacks and Separation Distances: The installation will follow Table 4.4 of NFPA 855 for minimum separation distances from buildings, property lines, and exposures, unless a fire propagation test per UL 9540A supports reduced clearances.
    - Flood and Seismic Considerations: The equipment will be installed above known flood elevations and anchored per local seismic design categories.
2. Fire Protection and Safety Systems (NFPA 855, Chapter 9)
    - Fire Detection: Smoke and heat detection systems are integrated into BESS enclosures, tied to the facility fire alarm system.
    - Deflagration Venting: Where required, enclosures incorporate explosion relief panels or equivalent measures per NFPA 69.
    - Thermal Management: Active HVAC and battery management systems (BMS) prevent overheating and reduce risk of thermal runaway propagation.
3. Battery Technology Compliance
    - UL 9540 Certification: the proposed BESS units are UL 9540-certified (Energy Storage System and Equipment).
    - UL 9540A Testing: Cell, module, and system-level UL 9540A thermal runaway propagation testing has been conducted to demonstrate compliance with NFPA 855 fire spread and spacing requirements.

- UL 1973 (Batteries) and UL 1741 (Inverters): Components are certified to applicable standards for safety and interoperability.

4. Maximum Allowable Quantities (NFPA 855, Chapter 4)

- The system design respects maximum allowable quantities per fire area. For lithium-ion systems, thresholds in Table 4.4.2 are followed. Where capacities exceed thresholds, fire-rated separations, spacing, and additional fire suppression are provided.

5. Operations, Maintenance, and Emergency Planning (NFPA 855, Chapter 10)

- Emergency Response Plan (ERP): The Project will provide a site-specific ERP covering emergency shutdown, fire department coordination, gas detection, and ventilation procedures.
- Signage: Hazard identification signage per NFPA 1, NFPA 70, and NFPA 855 will be installed (e.g., lithium-ion hazard, emergency contacts, shutdown procedure).
- Training: Site personnel and first responders will be trained on system hazards, shutdown procedures, and fire response strategies.
- Remote Monitoring: The BMS provides 24/7 monitoring with automated fault detection, alarm notification, and emergency shutdown capability.

6. Electrical Safety (NFPA 70 / NEC Integration)

- Overcurrent Protection & Disconnects: Systems include listed disconnecting means, overcurrent protection, and isolation per NFPA 70 (NEC Article 706 & 480).
- Grounding and Bonding: The installation complies with NEC grounding and bonding requirements for energy storage systems.
- Arc Flash Protection: Appropriate labeling and PPE requirements per NFPA 70E will be applied.

7. Commissioning and Decommissioning

- Commissioning: BESS installations will undergo commissioning per NFPA 855 and manufacturer protocols, verifying safety systems, alarms, and fire protection integration.
- Decommissioning Plan: Procedures for safe removal, recycling, or disposal of battery modules will be included, consistent with NFPA 855 §10.3.

The proposed Tanager BESS project will comply with NFPA 855 (2023) by using certified equipment (UL 9540/9540A), appropriate siting, fire detection, emergency planning, and adherence to electrical safety codes. This ensures safe, code-compliant deployment and operation in accordance with the latest fire protection standards for stationary energy storage systems.

A30. Please provide correspondence with the City of San Jose Fire Department detailing the location and installation requirements for the BESS project (e.g. access roads, setbacks, etc.).

Response: The Project team has engaged in multiple video and phone conversations with the San Jose Fire Department ("SJFD") and will continue to engage with them throughout the permitting process to ensure SJFD alignment with Project goals. The Project team met with James Dobson, Jagdev Mavi, and Paul Thomas of the City of San Jose Fire Department on May 2, 2025 and September 24, 2025 to discuss the implementation of the CFC and consistency of the Project design with applicable fire code requirements. Written correspondence from the meetings is not available.

The SJFD utilizes the CFC, Appendix D and they are currently in the process of updating policies. The Project team communicated to the SJFD that the proposed Project would be designed in accordance with access requirements, clearances and setbacks specified in CFC, Appendix D, and the Project will be modified as necessary to comply with the updated policies. The Project design would be consistent with the fully implemented 2019 Fire Codes.

A31. Please provide plans of the BESS project that specify the minimum clearances between the BESS containers' exposure hazards including but not limited to buildings, lot lines, and fire barriers if used.

Response: The Tanager BESS project layout is developed based on the NFPA 855 and the state of CFC clearance requirements for an outdoor BESS installation by keeping a minimum of 10 feet clearance around the outermost BESS containers from buildings, lot lines, walkways and any other potential combustible object. Please refer to the BESS layout/plan in the Petition for Modification for details on proposed container spacing.

FIRE DETECTION AND FIRE SUPPRESSION SYSTEMS FOR BESS CONTAINERS

DATA REQUESTS

A32. Please provide a schematic of the proposed battery container fire suppression systems and a detailed description of these systems.

Response: The proposed BESS containers are non-occupiable enclosures, installed outdoors and do not require fire-extinguishing systems per CFC §1207.5.5. The

BESS integrates a fire protection (or prevention) system composed of heat detector, smoke detector, horn/strobe, addressable manual pull station, power supply box (optional), addressable module box, combustible gas detector, and ventilation system, as shown below. In addition, it includes safety features such as explosion control, battery management system (BMS), automatic fire detection and alarm, and electrical fault protection devices.

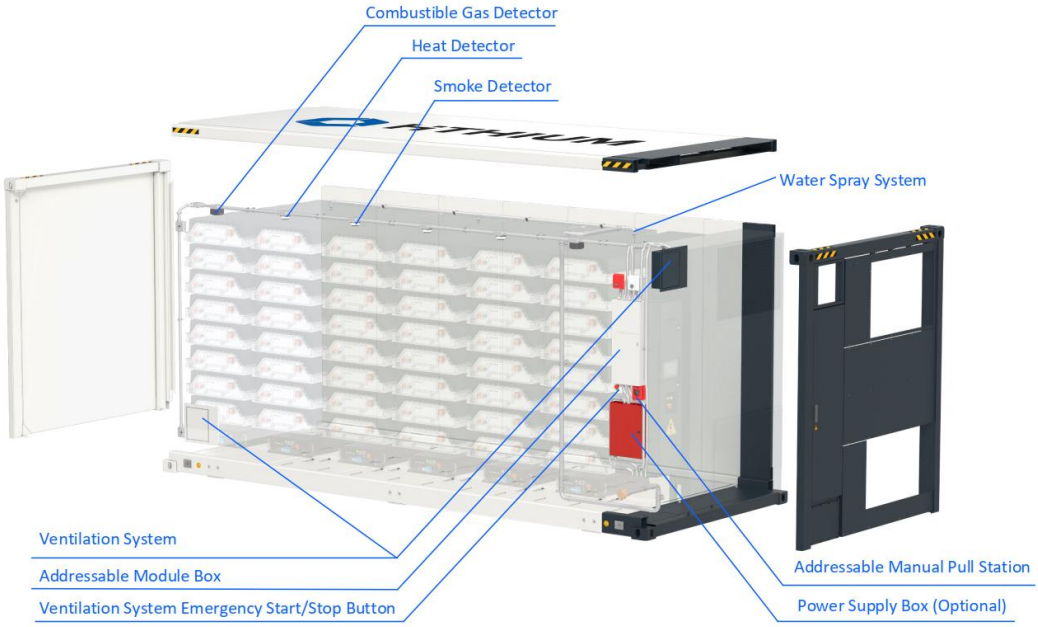

Figure 3. Hithium BESS Fire Protection System

WATER-BASED FIRE PROTECTION SYSTEMS FOR BESS PROJECT

DATA REQUESTS

A33. *Please provide correspondence with the City of San Jose Fire Department detailing the fire protection system requirements for the BESS project.*

Response: The Project team met with James Dobson, Jagdev Mavi, and Paul Thomas of the City of San Jose Fire Department regarding the Project and relevant fire protection system requirements on May 2, 2025 and September 24, 2025. Written correspondence from the meetings is not available. Further discussions with the SJFD will continue through project development. See also response to A30 above.

A34. *Blank Request*

A35. *Please provide a description of the amount and hydraulic performance of the*

additional fire hydrant(s).

Response: The design of site fire hydrant systems will comply with applicable NFPA and CFC guidelines. The Project team is completing an analysis of the existing hydrant system at the LECEF to determine if the system is sufficient to incorporate the Tanager project. The final design will be developed in coordination with the SJFD.

A36. Please provide the worst-case fire water flow requirements in GPM (gallons per minute) during emergency conditions.

Response: The design of site hydrant systems will comply with applicable NFPA and CFC guidelines. The Project team is completing an analysis of the existing hydrant system at the LECEF to determine if the system is sufficient to incorporate the Tanager BESS. The final design will be developed in coordination with the SJFD.

A37. Please provide a schematic of the water-based fire protection system for the site of the BESS project and a detailed description of these systems, such as locations of fire water pipeline, fire water storage tanks, fire pumps, fire hydrants, etc.

Response: The design of site fire hydrant systems will comply with applicable NFPA and CFC guidelines. The Project team is completing an analysis of the existing hydrant system at the LECEF to determine if the system is sufficient to incorporate the Tanager BESS. The final design will be developed in coordination with the SJFD.

EMERGENCY RESPONSE AND EMERGENCY ACTION PLAN

DATA REQUESTS

A38. Please provide a draft outline of the information that would be included in the emergency response and action plan for the proposed BESS project during the construction and operation phases.

Response: The Project team will prepare a detailed construction and operations emergency response plan (ERP) that will be developed in coordination with the SJFD prior to the commencement of construction. A draft outline of the Construction Emergency Response Plan is provided below.

1. **General Information**
2. **Site Overview**
3. **Mitigation and Preparedness**
4. **Notifications and Response**

Operation: LECEF employs a site-specific ERP which includes emergency response policies and procedures as well as emergency notifications, evacuation instructions and annexes for specific incident response procedures and checklists such as medical, fire and hazardous material spills. The Tanager BESS ERP will be included with the LECEF ERP once in operation.

A39. Please specify the local emergency management agencies, unified program agencies, and local first response agencies that the applicant will coordinate with in developing the emergency response and emergency action plan.

Response: LECEF has an existing ERP which includes emergency response policies, notifications and response. LECEF also coordinates routinely with the City of San Jose Fire Department. The LECEF ERP will be updated to include any new hazards associated with the Tanager BESS. The project team has met with the City of San Jose Fire Department and will continue to coordinate regarding updates to the site ERP.

FIRE PREVENTION PLAN

DATA REQUESTS

A40. Please provide a draft outline of the information that would be included in the Fire Prevention Plan for the proposed BESS project for the construction and operation phases.

Response: The Project team will prepare a detailed construction and operations emergency response plan (ERP) as outlined in the response to A38 above. The emergency response plan will be developed in coordination with the SJFD prior to the commencement of construction. The Project ERP will be based on the Hazard Mitigation Analysis (HMA) prepared for the BESS equipment that will be installed at the Project site. The ERP will include and exceed all recommendations included in SB 38, which requires the preparation of ERP's for BESS projects.

Fire prevention measures would address:

1. Identification of fire hazards
2. Emergency response and coordination
3. Measures to mitigate risks
4. Responsibilities

A41. Please clarify whether the proposed BESS project will be amended to the existing Los Esteros Critical Energy Facility Construction and Operation Fire Protection and Prevention Plan.

Response: A new Fire Protection and Prevention Plan will be created to jointly

cover both the LECEF and Tanager BESS facility prior to operation.

LOS ESTEROS CRITICAL ENERGY FACILITY (03-AFC-02C)

Petition for Modification- Tanager BESS Project

DATA RESPONSE SET 1A

ATTACHMENT DR-A16

Native American Heritage Commission
Native American Contact List
Santa Clara County
4/8/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Santa Clara	Amah Mutsun Tribal Band	N	Ed Ketchum, Vice-Chairperson		(530) 578-3864		aerieways@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Monte	7/20/2023
	Amah Mutsun Tribal Band	N	Valentin Lopez, Chairperson	P.O. Box 5272 Galt, CA, 95632	(916) 743-5833		vjltestingcenter@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Monte rey,San Benito,San Francisco,San	7/20/2023
	Amah MutsunTribal Band of Mission San Juan Bautista	N	Irene Zwierlein, Chairperson	3030 Soda Bay Road Lakeport, CA, 95453	(650) 851-7489	(650) 332-1526	amahmutsuntribal@gmail.com	Costanoan	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	
	Confederated Villages of Lisjan Nation	N	Deja Gould, Language Program Manager	10926 Edes Ave Oakland, CA, 94603	(510) 575-8408		cvltribe@gmail.com	Bay Miwok Ohlone Delta Yokut	Alameda,Contra Costa,Sacramento,San Joaquin,Santa Clara,Solano,Stanislaus	3/22/2023
	Confederated Villages of Lisjan Nation	N	Cheyenne Gould, Tribal Cultural Resource Manager	10926 Edes Ave Oakland, CA, 94603	(510) 575-8408		cvltribe@gmail.com	Bay Miwok Ohlone Delta Yokut	Alameda,Contra Costa,Sacramento,San Joaquin,Santa Clara,Solano,Stanislaus	3/22/2023
	Confederated Villages of Lisjan Nation	N	Corrina Gould, Chairperson	10926 Edes Avenue Oakland, CA, 94603	(510) 575-8408		cvltribe@gmail.com	Bay Miwok Ohlone Delta Yokut	Alameda,Contra Costa,Sacramento,San Joaquin,Santa Clara,Solano,Stanislaus	3/22/2023
	Costanoan Ohlone Rumsen-Mutsen Tribe	N	Patrick Orozco, Chairman	644 Peartree Drive Watsonville, CA, 95076	(831) 728-8471		yanapvoic97@gmail.com	Ohlone	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	4/4/2024
	Costanoan Rumsen Carmel Tribe	N	Carla Munoz, Tribal Council	604 W Fernleaf Ave Pomona, CA, 91766	(415) 690-3110		carlamarieohlone@gmail.com	Costanoan	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	8/18/2023
	Costanoan Rumsen Carmel Tribe	N	Desiree Munoz, Tribal Liaison		(909) 491-8254		ohlonesisters@gmail.com	Costanoan	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa	8/18/2023
	Indian Canyon Mutsun Band of Costanoan	N	Kanyon Sayers-Roods, MLD Contact	1615 Pearson Court San Jose, CA, 95122	(408) 673-0626		kanyon@kanyonkonsulting.com	Costanoan	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	3/15/2024
	Indian Canyon Mutsun Band of Costanoan	N	Ann Marie Sayers, Chairperson	P.O. Box 28 Hollister, CA, 95024	(831) 637-4238		ams@indiancanyons.org	Costanoan	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	3/15/2024
	Muwekma Ohlone Tribe of the SF Bay Area	N	Richard Massiatt, Councilmember/MLD Tribal Rep.	1169 S. Main Street, Ste. 336 Manteca, CA, 95377	(209) 321-0372		rmassiatt@muwekma.org	Costanoan	Alameda,Contra Costa,Marin,Merced,Napa,Sacramento,San Francisco,San Joaquin,San Mateo,Santa	3/28/2024
	Muwekma Ohlone Tribe of the SF Bay Area	N	Charlene Nijmeh, Chairperson	1169 S. Main Street, Ste. 336 Manteca, CA, 95377	(408) 464-2892		cnijmeh@muwekma.org	Costanoan	Alameda,Contra Costa,Marin,Merced,Napa,Sacramento,San Francisco,San Joaquin,San Mateo,Santa	3/28/2024
	Northern Valley Yokut / Ohlone Tribe	N	Timothy Perez, Tribal Compliance Officer	P.O. Box 717 Linden, CA, 95236	(209) 662-2788		huskanam@gmail.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Ohlone/Costanoan-Esselen Nation	N	Louise Miranda-Ramirez, Chairperson	P.O. Box 1301 Monterey, CA, 93942	(408) 629-5189		ramirez.louise@yahoo.com	Costanoan Esselen	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	6/12/2023
	Ohlone/Costanoan-Esselen Nation	N	Christanne Najera, Vice Chairperson	519 Viejo Gabriel Soledad, CA, 93960	(831) 235-4590		chris.johntmenold@gmail.com	Costanoan Esselen	Alameda,Contra Costa,Merced,Monterey,San Benito,San Francisco,San Mateo,Santa Clara,Santa Cruz,Stanislaus	6/12/2023
	Tamien Nation	N	Lillian Camarena, Secretary	336 Percy Street Madera, CA, 93638	(559) 363-5914		Lcamarena@tamien.org	Costanoan	Alameda,San Mateo,Santa Clara,Stanislaus	4/11/2023
	Tamien Nation	N	Johnathan Wasaka Costillas, THPO	10721 Pingree Road Clearlake Oaks, CA, 94523	(925) 336-5359		thpo@tamien.org	Costanoan	Alameda,San Mateo,Santa Clara,Stanislaus	4/11/2023
	Tamien Nation	N	Quirina Luna Geary, Chairperson	PO Box 8053 San Jose, CA, 95155	(707) 295-4011		qgeary@tamien.org	Costanoan	Alameda,San Mateo,Santa Clara,Stanislaus	4/11/2023
	The Ohlone Indian Tribe	N	Andrew Galvan, Chairperson	P.O. Box 3388 Fremont, CA, 94539	Phone: (510) 882-0527	(510) 687-9393	chochenyo@AOL.com	Bay Miwok Ohlone Patwin Plains Miwok	Alameda,Contra Costa,San Francisco,San Mateo,Santa Clara	7/24/2023
	The Ohlone Indian Tribe	N	Vincent Medina, Cultural Leader	17365 Via Del Rey San Lorenzo, CA, 94580	(510) 610-7587		vincent.d.medina@gmail.com	Bay Miwok Ohlone Patwin Plains Miwok	Alameda,Contra Costa,San Francisco,San Mateo,Santa Clara	7/24/2023
	The Ohlone Indian Tribe	N	Desiree Vigil, THPO	259 Winwood Avenue Pacifica, CA, 94044	(650) 290-0245		dirwin0368@yahoo.com	Bay Miwok Ohlone Patwin Plains Miwok	Alameda,Contra Costa,San Francisco,San Mateo,Santa Clara	11/30/2023
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Calpine Tanager BESS Project, Santa Clara County.

Record: PROJ-2024-001918
Report Type: List of Tribes
Counties: Santa Clara
NAHC Group: All

LOS ESTEROS CRITICAL ENERGY FACILITY (03-AFC-02C)

Petition for Modification- Tanager BESS Project

DATA RESPONSE SET 1A

ATTACHMENT DR-A26

中国认可
国际互认
检验
INSPECTION
CNAS IB0551

Report No.:
报告编号：CCB20240703MSDS01

MATERIAL SAFETY DATA SHEET

材料安全数据表

Product 产品	Battery Container 电池储能预制舱
Type/Model 型号	LX501501
Issue Date 签发日期	2024-08-07
Validity 有效期	2024-08-07 ～ 2024-12-31
Compiler 编写	Guangwei Li
Reviewer 审核	
Approver 批准	

广州邦禾检测技术有限公司

Guangzhou MCM Certification & Testing Co., Ltd.

Material Safety Data Sheet
材料安全数据表

SECTION 1 - CHEMICAL AND COMPANY IDENTIFICATION
第1节—化学品和公司标识

Product **产品**	Battery Container 电池储能预制舱
Type/Model: **型号**	LX501501
Parameter **参数**	1331.2V, 3768Ah, 5016kWh
Usage **用途**	Hybrid energy storage systems for distributed energy generation, such as wind, solar, and hydropower 风能、太阳能、水能等分布式能源发电的混合储能系统
Company **公司**	Xiamen Hithium Energy Storage Technology Co., Ltd. 厦门海辰储能科技股份有限公司
Address **地址**	No.1 Benyuan Road, Tongxiang High-Tech Zone, Xiamen, Fujian, P.R. China 厦门火炬高新区同翔高新城本源路 1 号
Fax 传真	/
Zip code 邮编	361100
E-mail 电子邮箱	xiaoy01@hithium.cn
Emergency Telephone 紧急联系电话 0592-5513735	
Manufacturer **制造单位**	Xiamen Hithium Energy Storage Technology Co., Ltd. 厦门海辰储能科技股份有限公司
Address **制造单位地址**	No.1 Benyuan Road, Tongxiang High-Tech Zone, Xiamen, Fujian, P.R. China 厦门火炬高新区同翔高新城本源路 1 号
Factory **生产单位**	Xiamen Hithium Energy Storage Technology Co., Ltd. 厦门海辰储能科技股份有限公司
Address **生产单位地址**	No.1 Benyuan Road, Tongxiang High-Tech Zone, Xiamen, Fujian, P.R. China 厦门火炬高新区同翔高新城本源路 1 号

SECTION 2 - HAZARDS IDENTIFICATION
第2节—危害识别

Classification 分类：

This chemical is not considered hazardous by GHS. This product is an article which is a sealed battery and as such does not require an SDS per GHS. The hazards indicated are for a ruptured battery.

该化学品不被法规(EC)No.1272/2008(CLP)认为是危险的。本产品为密封电池，按GHS法规不需要SDS。以下提到的危险性是电池破裂造成的。

Acute toxicity – Oral 急性毒性-口服	Category 4 第4类
Acute toxicity - Dermal 急性毒性-皮肤	Category 4 第4类
Skin corrosion/irritation 皮肤腐蚀/刺激	Category 1B 第1B类
Serious eye damage/eye irritation 严重眼睛损失/眼睛刺激	Category 2 第2类
Skin sensitization 皮肤致敏	Category 1 第1类
Carcinogenicity 致癌性	Category 2 第2类

Specific target organ toxicity (repeated exposure) 特异性靶器官毒性(重复暴露)	Category 1 第1类

-

Label elements 标签要素：

Signal Word信号词:

Danger 危险

Hazard Statements 风险声明

H302	Harmful if swallowed. 吞食有害
H312	Harmful in contact with skin. 与皮肤接触有害
H332	Harmful if inhaled. 吸入有害
H318	Causes serious eye damage. 对眼睛造成严重损害
H317	May cause an allergic skin reaction. 可能导致皮肤过敏反应
H350	May cause cancer. 可能致癌
H371	May cause damage to organs. 可能对器官造成损害
H335	May cause respiratory irritation. 可能引起呼吸道刺激

Symbol标志

GHS08 GHS05 GHS07

This product is an article which contains a chemical substance. Safety information is given for exposure to the article as solid. Intended use of the product should not result in exposure to the chemical substance, this is a battery. In case of rupture: the above hazards exist.

这个产品是一种含有化学物质的物品。安全信息是为了可能发生的固体物质暴露而提供，本产品的预期用途不应导致化学物质暴露。万一破裂，上述危害存在。

Precautionary Statements – Prevention **预防说明—预防**	
P201	Obtain special instructions before use. 在使用前获得特殊说明
P202	Do not handle until all safety precautions have been read and understood. 阅读和理解安全注意事项后再操作
P281	Use personal protective equipment as required. 按要求使用个人防护装备
P264	Wash face, hands and any exposed skin thoroughly after handling. 处理后彻底清洗脸、手和任何暴露的皮肤
P272	Contaminated work clothing should not be allowed out of the workplace. 不应让受污染的工作服离开工作场
P210	Keep away from heat/sparks/open flames/hot surfaces –no smoking. 远离热源/火花/明火/热表面——禁止吸烟
P270	Do not eat, drink or smoke when using this product. 使用本品时请勿吃、喝、吸烟

Precautionary Statements – Response **预防声明—响应**	
P301+ P330+ P308	If exposed or connected: Get medical advice/attention. Specific treatment (see supplemental first aid/instruction on this label). 若不慎暴露，应立即就行就医。应安排特殊治疗(见标签上的补充急救/说明) Skin contact: If on skin, wash with plenty of soap and water. Take off contaminated clothing and washing, if skin irritation or rash occurs: get medical advice/attention if feel unwell. 皮肤接触：若接触皮肤,用大量的肥皂水清洗。如果出现皮肤刺激或皮疹，应立即脱下受污染的衣物并进行清洗，:如果感觉不适，请立即就医。 Eye contact: If in eyes， Rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do, Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. 眼睛接触：若不慎入眼，应小心用水冲洗一段时间，取下隐形眼镜，如果方便处理，应继续进行冲洗；如感觉不适，应立即送医。 Inhalation: If inhalation，if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician if you feel unwell. 吸入：如果吸入，且感觉呼吸困难，将患者转移到空气新鲜的地方，保持一个适合呼吸的姿势休息；如果出现呼吸道症状或如果感觉不适，应立即送医。 Ingestion: If swallowed: rinse mouth immediately, do not induce vomiting and call a POISON CENTER or doctor/physician if you feel unwell. 食入：如不慎吞下，应立即漱口，不要催吐。如果感觉不适，呼叫解毒中心或医生/内科医生。
Precautionary Statements – Storage **预防声明—存储**	
P405	Store locked up 加锁存储
Precautionary Statements – Disposal **预防声明—处置**	
P501	Dispose of contents/container to an approved waste disposal plant. 内容物/容器处理到经批准的废物处理工厂

Hazards not otherwise classified (HNOC) 未分类的危险

Not applicable 不适用

Other information 其他信息

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

对水生生物有害，可能对水生环境造成长期不利影响。

Interactions with other chemicals与其他化学物质的相互作用

Use of alcoholic beverages may enhance toxic effect.

使用酒精饮料可能会增强毒性作用

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENT
第3节—成分信息

Remark: The subject of inspection is a large energy storage system, which contains lithium battery energy storage system, fire-extinguishing systems, temperature control system(s) such as air-conditioning system), etc.
This MSDS only describes its lithium battery energy storage system, and other systems or the dangerous goods that come with the system will not be described.
备注：受检对象是大型储能系统，其内含有锂电池储能系统、消防系统、温度调节系统（例如空调系统）等。
本MSDS仅对其锂电池储能系统中的电池部件作阐述，其余部件或系统自带的危险品将不作说明。

Ingredient **成分**	**Molecular formula** **分子式**	**CAS No.** **CAS 号**	**Weigh** **含量**
Graphite /石墨	$C_{24}X_{12}$	7782-42-5	10~25%
Lithium Iron Phosphate /磷酸铁锂	$LiFePO_4$	15365-14-7	35~50%
Lithium Hexafluorophosphate /六氟磷酸锂	$LiPF_6$	21324-40-3	0~5%
Graphite /Acetylene Black 石墨/乙炔黑	C	1333-86-4	0~5%
4-Fluoro-1,3-Dioxolan-2-One /氟代碳酸乙烯酯	$C_3H_3FO_3$	114435-02-8	0~5%
Ethyl Methyl Carbonate /碳酸甲乙酯	$C_4H_8O_3$	623-53-0	0-20%
Ethylene Carbonate /碳酸乙烯酯	$C_3H_4O_3$	96-49-1	0-20%
Dimethyl Carbonate /碳酸二甲酯	$C_3H_6O_3$	616-38-6	0-20%

SECTION 4 - FIRST AID MEASURES
第4节—急救措施

Eye Exposure 眼睛接触:
In case of contact with eyes, flush with copious of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.
如果与眼睛接触，用大量的水冲洗至少15分钟。用手指分开眼睑，确保充分的冲洗。寻求医生。

Skin Exposure 皮肤接触:
If the internal battery materials of an opened battery cell come into contact with skin, immediately flush with plenty of water or soap.
如果打开的电池的内部电池材料接触到皮肤，立即用大量的水或肥皂冲洗。

Inhalation Exposure 吸入:
In case of inhaling gas volatilized from inside of the battery, seek immediate medical attention.
如果吸入了电池内部挥发的气体，请立即就医。

Ingestion Exposure 吞咽:
If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.
如果吞咽，请就医。除非医务人员指示，否则不要催吐。

SECTION 5 - FIRE FIGHTING MEASURES
第5节—消防措施

Danger characteristic 危险特性:

Exposure to excessive heat can cause venting of the liquid electrolyte.
暴露在过热的环境中会导致电池内液体电解质的释放。
Battery may burst and release hazardous decomposition products when exposed to a fire situation.
当暴露在火灾环境中时，电池可能会爆裂并释放出危险的分解产物。

Hazardous combustion products 有害危险产物:

Corrosive and toxic gas may be emitted during fire.
着火期间可能会排放腐蚀性和有毒气体。

Fire-Fighting method 灭火措施:

Evacuate people and call the fire immediately.
立即疏散人群并报火警。
The firefighters must equip with filtermask (full mask) or isolated breathing apparatus.
消防人员必须配备过滤器面罩或隔离式呼吸器。
The firefightesr must wear the clothes which can defense the fire in the upwind direction.
消防人员必须穿能在逆风方向防火的衣服。
Spray water on the containers in the fireplace to keep them cool until finish extinguishment.
用大量的水灭火，直至降温，并防止复燃或爆炸。

Fire-Fighting media 灭火介质:

Plenty of water.
大量的水。

SECTION 6 - ACCIDENTAL RELEASE MEASURES
第6节—意外泄漏措施

Emergency treatment 紧急处理:

If the battery material is released, remove personnel from area until the batteries cool down and fumes dissipate.
如果电池材料被释放，请将人员从该区域撤离，直到电池冷却和烟雾消散。
Provide maximum ventilation to clear out hazardous gases and avoid skin and eye contact or inhalation of vapors.
提供最大的通风以清除有害气体和避免皮肤和眼睛接触或吸入蒸汽。
Remove spilled liquid with absorbent and incinerate waste.
用吸收剂除去溢出的液体并焚烧废物。

SECTION 7 - HANDLING AND STORAGE
第7节—处理和储存

Handling 处理:

This battery system is a high voltage and high risk device, and all processing operations need to be completed by multiple professionals in accordance with the corresponding operation specifications.
本电池系统为高压高危险系数的装置，所有处理操作都需要由多个专业人员按照相应的操作规范共同协作完成。

Storage 储存:

1. The battery system should be placed in an open environment with good ventilation and sprinklers, and there should be sufficient clearance between the battery system and the battery system. The storage area of the battery system should be far away from residential areas.
   电池系统应放置在通风良好、有洒水装置的开阔环境中，电池系统和电池系统之间应有足够的间隙。电池系统存放区域应远离居民区。
2. Place the battery system in a cool, dry and well-ventilated place (temperature: -20~45°C). Avoid prolonged exposure to direct sunlight. Keep away from fire and heat sources. Start the air conditioning system when necessary to ensure that the temperature and humidity in the system are within the appropriate range.

将电池系统置于阴凉、干燥、通风良好的地方（温度-20~45℃）。不要长时间暴露在阳光直射下。远离火源和热源。必要时启动空调系统以保障系统内温湿度维持在相应范围内。

3. Equipped with appropriate type and quantity of fire extinguishing equipment. Placement sites should be equipped with appropriate masking materials for leakage treatment.
配备相应种类和数量的灭火器材。安置场所应配备适当的掩蔽材料，以便进行泄漏处理。

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION
第8节—暴露控制与个人防护措施

Engineering Control 工程控制:
Keep away from heat and open flame. Start the air conditioning system to keep the temperature and humidity stable.
远离热源和明火。启动空调系统，维持温湿度稳定

Respiratory Protection 呼吸保护:
Not necessary under conditions of normal use. Wear self-contained breathing filtermask if the density exceed in the air. Wear breathing apparatus under the condition of emergency rescue or evacuation.
在正常使用条件下不需要。如果环境内气体密度超过空气中的密度，请佩戴自给式呼吸过滤器。在紧急救援或疏散的情况下，佩戴呼吸器。

Eyes Protection 眼睛保护:
Not necessary under conditions of normal use. Wear protective glasses if handling a leaking or ruptured battery.
在正常使用条件下不需要。如果处理泄漏或破裂的电池，请戴上防护眼镜。

Skin and Body Protection 皮肤和身体保护:
Not necessary under conditions of normal use. Wear fireproofing, gas defense clothes in case of handling a leaking or ruptured battery.
在正常使用条件下不需要。在处理泄漏或破裂的电池时，穿上防火防毒服。

Hands Protection 手部保护:
Not necessary under conditions of normal use. Wear chemical resistant rubber glove.
在正常使用条件下不需要。耐磨耐化学腐蚀橡胶手套。

Other Protections 其他保护:
No smoking, dining and drinking water in the workplace. Keep good habit of hygiene.
工作场所禁止吸烟、就餐和饮水。保持良好的卫生习惯。

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES
第9节—理化性质

Appearance 外观:	Grey case 灰白色壳体
Physical state 状态:	Solid 固体
Form 形状:	Prismatic 棱柱形
Odor 气味:	Odorless 无味
Solubility 溶解度:	Insoluble in water 不溶于水

SECTION 10 - STABILITY AND REACTIVITY
第10节—稳定性与反应性

Stability 稳定性:
Stable under normal temperature and pressure.
常温常压下稳定。

Distribution of Ban 禁配物:
Explosives, inflammables, strong oxidants and corrosives.
爆炸品、易燃物、强氧化剂和腐蚀剂。

Conditions to Avoid 应避免的条件:
Fire source, heating source, disassemble, external short circuit, crushes, deformation, high temperature above 100°C, direct sunlight and high humidity, immerse in water or overcharge.
火源、热源、拆卸、外部短路、压碎、变形、100°C 以上高温、阳光直射、高湿度、浸水或过充。

Hazardous Polymerization 危险聚合:
Will not occur.
不会发生。

Hazardous Decomposition Products 有害分解产物:
Metal oxides, carboxyl compound such as CO, CO_2, etc.
金属氧化物，碳化合物例如一氧化碳、二氧化碳，等等。

SECTION 11 - TOXICOLOGICAL INFORMATION
第11节—毒理学信息

Acute Toxicity 急性毒性:
No information is available.
没有可用的信息。

Sub-acute and Chronic Toxicity 亚急性和慢性毒性:
No information is available.
没有可用的信息。

Irritation Data 刺激性数据:
The internal battery materials may cause irritation to eyes and skin.
电池内部材料可能会对眼睛和皮肤造成刺激。

Sensitization 致敏作用:
The liquid in the battery may cause sensitization to some person.
电池中的液体可能会对某些人造成敏化。

Mutagenicity 致突变性:
No information is available.
没有可用的信息。

Carcinogenicity 致癌性:
No information is available.
没有可用的信息。

Others 其他:
Since the materials in this battery are sealed in the can, the potential for exposure to the components of the battery is negligible, when the battery is used as directed. However technical or electrical abuse of the battery may result in the release of battery contents.
由于该电池中的材料密封在罐体中，当按照指示使用电池时，接触电池组件的可能性可以忽略不计。但是，电池的技术或电气滥用可能会导致蓄电池内容物的释放。

SECTION 12 - ECOLOGICAL INFORMATION
第12节—生态信息

Eco-toxicity 生态毒性:
No information is available.
没有可用的信息。

Biodegradable 生物降解性:
No information is available.
没有可用的信息。

Mobility in soil 土壤流动性:
No information is available.
没有可用的信息。

Bioconcentration or biological accumulation 生物浓缩或生物积累:
No information is available.
没有可用的信息。

Other harmful effects 其他有害影响:
Don't abandon the battery into environment, may cause water or soil pollution.
不要将电池扔进环境中，可能造成水或土壤污染。

SECTION 13 - DISPOSAL CONSIDERATIONS
第13节—处置注意事项

Appropriate Method of Substance 物质处理方法:
The battery should be completely discharged prior to disposal in order to prevent short circuit.
为了防止短路，在处理前应将蓄电池完全放电。
The battery contains recyclable materials, and it is suggested recycle.
电池含有可回收材料，建议回收利用。
Refer to National or Local regulations before handling.
操作前请参阅国家或地方法规。
Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in National or Local regulations of hazardous waste treatment and hazardous waste transportation.
电池的处理应由获得国家或地方法规的许可的具有危险废物处理和危险废物运输的专业处理公司进行。

SECTION 14 - TRANSPORT INFORMATION
第14节—运输信息

The battery has passed the test items of UN Manual of Test and Criteria Section 38.3, and Report No.: CCB20240703U01.
该储能系统符合联合国《试验和标准手册》第38.3节的测试要求，报告编号：CCB20240703U01。

ESS transportation requirements 储能系统运输要求:

1. The batteries shall be securely attached to the interior structure of the cargo transport unit (e.g. by means of placement in racks, cabinets, etc.) in such a manner as to prevent short circuits, accidental operation, and significant movement relative to the cargo transport unit under the shocks, loadings and vibrations normally incident to transport.
电池组应牢靠地固定于货物运输单元的内部结构物（例如设置在托架上或舱室内等），须能在运输过程中正常发生的冲击、装卸和振动条件下防止短路、意外启动，以及相对于货物运输单元的较大位移。

2. Dangerous goods necessary for the safe and proper operation of cargo transport unit (e.g. fire-extinguishing systems and air-conditioning systems), shall be properly secured to or installed in the cargo transport unit and are not otherwise subject to this Code.
货物运输单元安全和正常运行所必要的危险品（例如消防系统和空调系统），应牢靠固定或安装在货物运输单元内，不再另受本规章限制。

3.	Dangerous goods not necessary for the safe and proper operation of cargo transport unit shall not be transported within the cargo transport unit. 非货物运输单元安全和正常运行所必要的危险品，不得装在货物运输单元内运输。

No. 序号	**UN numbers & P.S.N.**, if applicable **联合国编号及运输专用名**，如适用		
(01)	UN 3536, LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT UN 3536，安装在货运装置上的锂电池		
No. 序号	**Hazard Class 危险等级**	**Packing Group 包装组**	**Packaging requirement 包装要求**
☒	**Maritime transportation, according to IMO IMDG Code (Amend 41-2022) 海运，依据IMO IMDG Code (Amend 41-2022)**		
(01)	Class 9 第九类危险货物	NIL 无要求	Special provision 389; EmS No.: F-A, S-I 特殊条款389；应急处理代码：F-A, S-I
☒	**Road transportation, according to ADR-2023 公路运输，依据ADR-2023**		
(01)	Class 9 第九类危险货物	NIL 无要求	Special provision 389 特殊条款389
☒	**Railway transportation, according to RID-2023 铁路运输，依据RID-2023**		
(01)	Class 9 第九类危险货物	NIL 无要求	Special provision 389 特殊条款389
Remark 备注	/		

SECTION 15 - REGULATORY INFORMATION
第15节—监管信息

Dangerous Goods Regulation (DGR)
Recommendations on the Transport of Dangerous Goods Model Regulations
International Maritime Dangerous Goods (IMDG)
Occupational Safety and Health Act (OSHA)
Toxic Substances Control Act (TSCA)
Code of Federal Regulations (CFR)
Technical Instructions for the Safe Transport of Dangerous Goods
California Proposition 65
Superfund Amendments and Reauthorization Act Title III (302/311/312/313) (SARA)
Globally Harmonized System of Classification and Labeling of Chemicals(GHS)
In accordance with all Federal, State and local laws. 符合所有联邦、州和地方法律。

SECTION 16 - ADDITIONAL INFORMATION
第16节—附加信息

According standard 标准依据:

GB/T 16483-2008 Safety data sheet for chemical products Content and order of sections
ISO 11014:2009(E) Safety data sheet for chemical products – Content and order of sections

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Other Information 其他信息:

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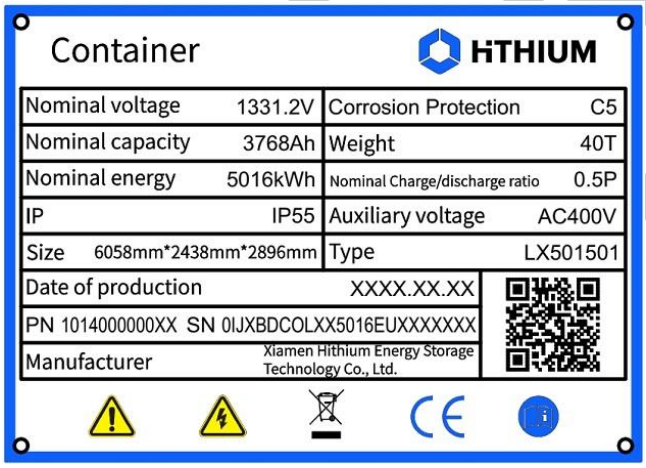
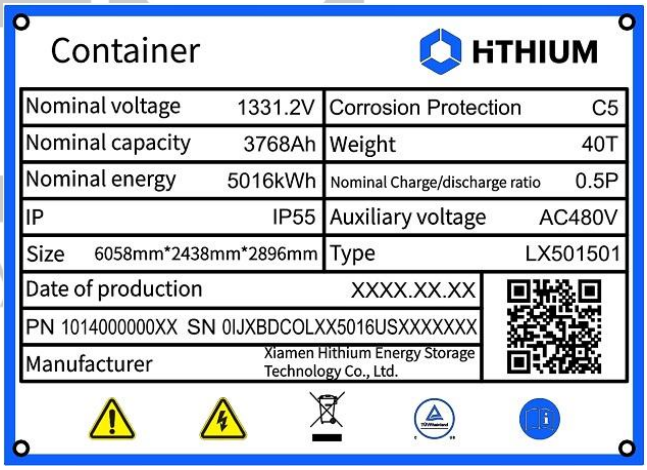
Sample Reference Photo
样品照片

Model: LX501501, 1331.2V, 3768Ah, 5016kWh



EU version 欧版



US version 美版

--End of the report--