Rains County Court of Commissioners
Energy Storage System (ESS) Guide

Based on the
2024 Editon of the International Fire Code and
NFPA 855:2026

GUIDANCE DOCUMENT ONLY:
PLEASE REFER TO THE INTERNATIONAL FIRE CODE (IFC) AND NFPA 855:2026 FOR ALL REQUIREMENTS

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HOW TO USE THIS GUIDANCE DOCUMENT

Notes to the Applicant: *The applicability of 2024 IFC Section 1207, NFPA 855:2026, and other referenced Standards and Sections are provided in general terms in this document.*

The Rains County Court of Commissioners, performing as the as the Fired Code Official (Authority Having Jurisdiction (AHJ)) is the sole interpretative authority of permit quality, completeness, and technical rigor. Applicants should anticipate Requests for Information (RFIs) to address AHJ comments and questions. Applicants should anticipate AHJ field inspections, compliance verification assessments, and witness testing of each ESS as throughout the project lifecycle.

At no time shall Applicants store, install, or otherwise any Energy Storage Systems within Rains County without AHJ approval.

Any anticipated deferred submittals shall be accompanied by written justification, commitment dates for completion, and compensatory measures if dates are not satisfied. All proposed deviations from the IFC and NFPA 855:2026 shall be submitted to the AHJ for approval prior to implementation and shall be documented on the Rains County Texas Alternate Materials and Methods Request (AMMR) form.

The guidance provided herein must not be considered all-encompassing, nor should it be considered a design specification. This document establishes the minimum required information for permit submission.

The information provided herein is intended to assist the project design team with a common understanding of the applicable normative requirements and overall summary of documentation required, and items that may be required based on the ESS selection. Some items that are commonly omitted or misinterpreted are also provided herein for clarity.

Where the IFC and NFPA 855:2026 language requires additional information or interpretation from Rains County, this information is provided as "Notes to the Applicant" in the respective sections. This information is provided to assist the design team in understanding how Rains County applies the IFC and NFPA 855:2026 requirements for the safe design, construction, and operation of Approved Battery Energy Storage System installations.

Rains County currently adopts the 2026 Edition of NFPA 855 by reference as required by Chapter 12 of the 2024 Edition of the IFC.

However, the 2026 Edition of NFPA 855 contains additional information and requirements based on loss history and the evolution of Battery Energy Storage Systems. Recent international ESS Lessons Learned will be used throughout the permit review and approval lifecycle. For example, all ESS's relying on a NFPA 69 combustible concentration reduction system shall be tested ensuring volumetric flow and shall be witnessed by Rains County Fire Department representatives as required per 2024 IFC 104.2.2.4. This additional information and prescriptive requirements are critical to protecting the public from the hazards of fire and panic as noted in IFC Section 101.3 "Purpose."

As such, compliance with the 2026 Edition of NFPA 855 shall enforced as permitted by IFC Section 102.8 "Subjects Not Regulated By this Code," and IFC Section "102.9 Matters Not Provided For."

The 2023 Edition of NFPA 855 provides an elevated level of information and guidance for the installation of BESS systems that meets the Standard of Care necessary to protect the public in Rains County from the hazards of fire and panic.

As indicated, Applicants shall anticipate unscheduled and unannounced routine AHJ (or their representatives) field inspections to verify compliance with the normative requirements. This will include field inspections to verify compliance with UL9540, 2024 IFC, NFPA Standard 1,68, 69, 70, 70E, 72, 101, and 855:2026 prior to authorization for energized (hot) commissioning.

This Guidance Document establishes regulations affecting or relating to Energy Storage structures, processes, premises and safeguards regarding all of the following:

1. The hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices.

2. Conditions hazardous to life, property or public welfare in the occupancy of structures or premises.

3. Fire hazards in the structure or on the premises from occupancy or operation.

4. Matters related to the construction, extension, repair, alteration or removal of fire protection systems.

5. Conditions affecting the safety of fire fighters and emergency responders during emergency operations.

Purpose. The purpose of this Guidance Document is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations

Applicability

Construction and design provisions. The construction and design provisions of this Guidance Document shall apply to:

- All structures, systems, and components (SSCs), facilities, and conditions associated within the scope of the permit application.

- Existing SSCs, facilities, and conditions that, in the opinion of the Fire Code Official, constitute a distinct hazard to life or property.

Referenced codes and standards. The Codes and Standards referenced in this Guide shall be those that are listed in the 2024 International Fire Code (IFC) and NFPA 855:2026, and such Codes and Standards shall be considered to be part of the requirements of this Guide to the prescribed extent of each such reference and as further regulated.

In the absence of specific Codes and Standards, the applicants shall use recognized and generally accepted good engineering practice [ref: 29 CFR 1910.119]. Any deviation from any normative requirement shall be accompanied by an Alternate Materials and Methods Request (AMMR) delineating equivalence prior to implementation [ref: 2024 IFC §104.2.3].

Equivalence determinations shall comply with 2024 IFC §104.2.3.4 and be accompanied with supporting objective evidence or analyses. The Fire Code Official/AHJ may request additional information beyond that defined in 2024 IFC §104.2.3.4 as part of the review process.

Conflicts.
Where conflicts occur between provisions of this Guide and referenced codes and standards, the provisions of this Guide shall apply and as interpreted by the Fire Code Official/AHJ.

Provisions in referenced codes and standards.
Where the extent of the reference to a referenced Code or Standard includes subject matter that is within the scope of this Guide, the provisions of this Guide, as applicable, shall take precedence over the provisions in the referenced code or standard.

Subjects not regulated by this code.
Where applicable standards or requirements are not set forth in this Guide, or are contained within other laws, codes, regulations, ordinances or bylaws adopted by the jurisdiction, compliance with applicable standards of the National Fire Protection Association or other nationally recognized fire safety standards, as approved, shall be deemed as prima facie evidence of compliance with the intent of this code. Nothing herein shall derogate from the authority of the Fire Code Official to determine compliance with codes or standards for those activities or installations within the fire code official's jurisdiction or responsibility.

Matters not provided for - Requirements that are essential for the public safety of an existing or proposed activity, building or structure, or for the safety of the occupants thereof, that are not specifically provided for by this Guide, shall be determined by the Fire Code Official/AHJ.

Conflicting provisions.
Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

DUTIES AND POWERS OF THE FIRE CODE OFFICIAL
The Fire Code Official/AHJ is authorized to enforce the provisions of this Guide as well as the explicit normative requirements of the 2024 International Fire Code and NFPA 855:2026.

Implicit requirements of the 2024 International Fire Code and NFPA 855:2026 shall also be verified and validated.

The Fire Code Official shall have the authority to render interpretations of this Guide and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of this Guide. Such policies, procedures, rules and regulations shall not have the effect of waiving requirements specifically provided for in this Guide.

Approved Alternate Materials, Methods and Equipment. Applicant
Materials, equipment and devices approved by the Fire Code Official/AHJ shall be constructed and installed in accordance with such approval.

In the unlikely event any proposed ESS may warrant consideration by the Rains County Fire Code Official/AHJ for alternate materials or methods, an Alternate Materials and Methods Request shall be filed with Rains County ***prior*** to implementation per the requirements of IFC §104.2.3.

Material and equipment reuse. Materials, equipment and devices shall not be reused or reinstalled unless such elements have been reconditioned, tested and placed in good and proper working condition and approved.

Technical assistance. To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to inspection by the fire code official, the fire code official is authorized to require the owner or owner's authorized agent to provide, without charge to the jurisdiction, to provide a technical opinion and report [ref: 2024 IFC §104.2.2].

Explosion Control. Auxiliary, Alternate or Emergency/Standby Power Systems used for explosion control or where required by Table 1207.6 or elsewhere in the 2024 IFC, explosion control complying with Section 911 shall be provided for rooms, areas, ESS cabinets or ESS walk-in units containing electrochemical ESS technologies. The duration of the availability of the Auxiliary, Alternate or Emergency/Standby Power Systems shall be based on the 2024 ICF §1207.6.3.1. Justification of any Auxiliary, Alternate or Emergency/Standby Power Systems shall be accompanied by independent assessment of grid reliability (with supporting data and validated assumptions) based on Planning and Risk Assessment Criteria (TPL-001-5 / Risk-Based) or approved equivalent analyses [ref: 2024 IFC §911, 1207.6].

Minimum Construction Permit Package Requirements

Only complete Permit Package Submittals shall be considered.

The minimum construction package contents shall facilitate a timely review of the entire technical contents allowing the Fire Code Official/AHJ to independently determine compliance with the requirements of the 2024 International Fire Code §1207 and the applicable section of NFPA 855:2026 and any requirement explicitly or implicitly codified by reference.

The minimum set of documents required to initiate the Permit Review shall include [ref; 2024 IFC §1207.1.5]:

- Issued for Construction (IFC) Drawings with applicable engineering discipline Texas Professional Engineering Seals shall include at a minimum:
  - Location and layout diagram of the room or area in which the ESS is to be installed.
  - Details on the hourly *fire-resistance ratings* of assemblies enclosing the ESS.
  - The quantities and types of ESS to be installed.
  - Manufacturer's specifications, ratings and listings of each ESS.
  - Description of energy (battery) management systems and their operation.
  - Location and content of any Federally or State required signage.
  - Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and deflagration venting systems, if provided.
  - Support arrangement associated within the installation, including any required seismic restraint.
  - A commissioning plan complying with Section 1207.2.1.
  - A decommissioning plan complying with Section 1207.2.3.
  - A fire safety and evacuation plan in accordance with Section 404.
- Hazard Mitigation Analysis conducted under the authority of and Sealed by a State of Texas Licensed Professional Engineer and its supporting documentation that includes:
  - BESS Assembly Drawings [ref: 2024 IFC §1207.1.5 and NFPA 855:2026 §4.2.1.3]
    - Delineating component installation and part numbers
    - Electrical DC and AC Single and Three Line Diagrams that will be used to verify compliance with UL9540, NFPA 70, 70E, and 72.
    - Single failure criteria shall also include Common Cause Failures (CCF), Common Mode Failures (CMF) and Cascading Interdependent Failures as part of the conservative failure conditions [ref: NFPA 855:2026 §4.4.2.2].
  - UL 9540:2023 (or current revision) Certification from an OSHA Approved Nationally Recognized Testing Laboratory [ref: IFC §1207.3.1 and NFPA 855:2026 §4.6.1]
  - UL 9540:2023 (or current revision) Certification Report from the OSHA Approved Nationally Recognized Testing Laboratory [ref: IFC §1207.3.1 and NFPA 855:2026 §4.6.1]
  - UL9540A:2023 (or current revision) Cell Level Test Report unedited and unmodified [ref: UL9540:2023 §7.1]
  - UL9540A:2023 (or current revision) Module Level Test Report unedited and unmodified [ref: UL9540:2023 §7.1]
  - UL9540A:2023 (or current revision) Unit Level Test Report unedited and unmodified [ref: UL9540:2023 §7.1]
  - BESS Level IEC 60812 Failure Mode and Effects Analysis -The FMEA shall address the applicable BESS Level Failure Conditions of IFC §1.4.1 and NFPA 855:2026 §4.4.2 including Common Cause Failures (CCF), Common Mode Failures (CMF) and Cascading Interdependent Failures [ref: UL9540:2023 §15, IFC §1207.1.6 and NFPA 855:2026 §4.4.2]
  - BESS Level NFPA 551 Fire Risk Assessment and Heat Flux Analysis that includes a design basis wind-driven event and calculates the probability of Enclosure-to-Enclosure fire propagation [ref: IFC §1207.1.6 and NFPA 855:2026 §4.4.2]

- Project Level NFPA 551 Fire Risk Assessment that shall analyze that presents the applicable external events that could result in a BESS Level Fire [ref: IFC §1207.1.6 and NFPA 855:2026 §4.4.2].
- Project Level IEC 60812 Failure Mode and Effects Analysis that shall evaluate the interdependent interconnected failure conditions that may result in fire, explosion, shock, or injury [ref: IFC §1207.1.6 and NFPA 855:2026 §4.4.2]
- NFPA 69:2024 – Explosion Prevention System Design Document whether Performance or Prescriptive Based shall at a minimum include:
  - Complete Explosion Prevention Analysis – analysis shall include sufficient detail of all engineering assumptions and input data to facilitate independent analysis regardless of Performance Based or Prescriptive Based design.
  - NFPA 69:2024 §6.3.1 Reliability Analysis that objectively demonstrates and calculates the reliability of the installed system that meets the requirements of IEC 61508/61511. Reliability analysis shall include sufficient input data, methodology used, and validated engineering assumptions to facilitate independent review. Analysis shall also identify and evaluate the probability and consequences of Abnormal Conditions [ref: IFC §1207.6, NFPA 855:2026 §4.2.1.3, NFPA 69:2024, §5,6,8,15]
  - NFPA 69:2024 §15.5.5.1 Safety Instrumentation System (SIS) design justification [ref: IFC §1207.6, NFPA 855:2026 §9, NFPA 69:2024, §5,6,8,15]
- NFPA 68:2023 – Deflagration Vent Sizing whether Performance or Prescriptive Based shall at a minimum include [NFPA 855:2026 §4.2.1.3, NFPA 68:2023]:
  - All input data and validated engineering assumptions to facilitate independent calculations
  - Inspection and Maintenance Plans
  - Details of Deflagration Vents and Vent Closures
  - Fireball calculations and restrictions
- Large Scale Fire Test (LSFT) per IFC §1207.1.5 shall include:
  - Test Report from the AHJ Approved Laboratory
  - Independent Report from a Texas Professional Fire Protection Engineer
  - Formal Report from the Project Professional Fire Protection Engineer [ref: IFC §104.8.2, §1207.1.5]
  - All empirical and video data collected during the LSFT.
- NFPA 70E:2024 Arc Flash Risk Assessments (both AC Auxiliary and DC) shall be provided for all systems above hazardous voltage systems [ref: 29 CFR 1910.133, NFPA 70E:2024]
- AMSE B31.3:2024 (as applicable) Independent Engineering Analysis objectively demonstrating compliance for any ESS with a pressurized process liquid cooling Thermal Management System per AMSE Standard B31.3 (or equivalent) [ref: UL9540:2023, §20, IFC §1207.1.6 and NFPA 855:2026 §4.4.2].
- BMS/ESMS/SCADA Design Details shall include at a minimum [ref; IFC §1207.1.6 and NFPA 855:2026 §4.4.2]:
  - System Architecture
  - BMS Fault Codes that specifically delineate what are automatically addressed by the BMS resulting in system shutdown and which require Operations Response [ref: IFC §1207.1.6 and NFPA 855:2026 §4.4.2].

        - ESMS/SCADA Modbus mapping and delineation of what are automatically addressed by the ESMS/SCADA resulting in system shutdown and which require Operations Response [ref: IFC §1207.1.6 and NFPA 855:2026 §4.4.2].
        - Cyber Security Protocols for any ERCOT or NERC Requirements [ref: Dependent on Contract Requirements]
    - Emergency Responders Plan [ref: NFPA 855:2026 §4.3]
    - NFPA 72:2025 Complaint Fire Alarm System and Sealed by a Texas License Fire Protection Professional Engineer shall include at a minimum:
        - Components (including Bill of Materials) for validation to applicable normative standards
        - FA Control Logic/Conduct of Operations delineation of how the system is controlled to respond to Fire, Smoke, Gas initiated alarms
        - FA Design shall include a Texas Fire Protection Engineer Seal
    - NFPA 22:2023 Fire Water Tank Compliant Design
        - Shall include water level remote monitoring
- Standard Operation Procedures (SOPs)
    - The SOPs shall provide descriptive Operations actions to address all applicable Fault Codes from the BMS/ESMS/SCADA systems [ref: NFPA 855:2026 §4.3.2.1]
- Emergency Operations Plans/Procedures
    - The EOPs shall provide descriptive Operations actions to address all applicable Emergency Fault Codes from the BMS/ESMS/SCADA systems.
    - The EOPs shall specifically identify the automatic shutdown response from Operations Personnel to mitigate the scenarios documented in the HMA [ref: NFPA 855:2026 §4.3.2.1]
- Commissioning Plan [ref: NFPA 855:2026 §4.2.4, 6.1.3]
- Decommissioning Plan [ref: NFPA 855:2026 §6.1.3.2]
- Emergency Decommissioning Plan [ref: Supplemental NFPA 855:2026 §6.1.3.2]
- Operations and Maintenance Manuals for the Project [ref: NFPA 855:2026 §4.2.3 and 7]
- Toxicological Dispersion Analysis [ref: Supplemental 30 TAC Chapter 116]
    - Dispersion Analysis shall be based on bounding worst case environmental conditions (wind velocities and direction, humidity, elevation, atmospheric stability, topography and terrain, adjacencies and land use, and temperature). Sensitivity study input data shall be included in the appendices.
- Any other documentation required by the Fire Code Official that may include:
    - IEC 60529 – Certification Report shall be provided to the Fire Code Official for review and approval. All ESS's shall have an IP Rating of 55 or better.

REQUIRED COMPLIANCE WITH NFPA 855:2026 AND IFC

Notes to the Applicant: *Beginning with the 2024 Editon of the IFC, direct compliance with NFPA 855:2026 is prescribed in Section 1201.1 as extracted and shown below.* ***Compliance with both NFPA 855:2026 and the totality of 2024 IFC Section Chapter 12 are compulsory.*** *Any requested Hazard Mitigation Analysis supporting documentation shall be provided to the AHJ upon request [ref: NFPA 855:2026 §4.2.1.3].*

2024 IFC SECTION 1201 - GENERAL

IFC SECTION 1201.1 Scope. The provisions of this chapter shall apply to the installation, operation, maintenance, repair, retrofitting, testing, commissioning and decommissioning of energy systems used for generating or storing energy, including but not limited to energy storage systems under the exclusive control of an electric utility or lawfully designated agency. It shall not apply to equipment associated with the generation, control, transformation, transmission, or distribution of energy installations that is under the exclusive control of an electric utility or lawfully designated agency. Energy storage systems regulated by Section 1207 shall comply with this chapter, as appropriate, and NFPA 855:2026.

SCOPE, APPLICABILITY, AND REQUIRED PERMITS

Notes to the Applicant: *The differing scope and permits noted below are required only where the various systems are to be installed. Please note that many ESS Enclosure and associated systems come with pre-installed detection, alarm, and suppression systems. These pre-installed systems are subject to the applicable permits and plan review.*

IFC SECTION 1207 PERMITS - ESS

IFC SECTION 1207.1 General.
The provisions in this section are applicable to stationary and mobile electrical energy storage systems (ESS).

> **Exception:** ESS in Group R-3 and R-4 occupancies shall only be required to comply with Section 1207.11 except where Section 1207.11.4 requires compliance with Sections 1207.1 through 1207.9.

IFC SECTION 1207.1.1 Utilities and industrial applications
This section shall not apply to capacitors and capacitor equipment for electric utilities and industrial facilities used in applications such as flexible AC transmission (FACTS) devices, filter capacitor banks, power factor correction, and standalone capacitor banks for voltage correction and stabilization.

IFC SECTION 1207.1.2 Mobile ESS
Mobile ESS deployed at an electric utility substation or generation facility for 90 days or less shall not add to the threshold values in Table 1207.1.3 for the stationary ESS installation if both of the following conditions apply.

1. The mobile ESS complies with Section 1207.10
2. The mobile ESS is being used only during periods in which the facility's stationary ESS is being tested, repaired, retrofitted, or replaced.

IFC SECTION 1207.1.3 Scope
ESS having capacities exceeding the values shown in Table 1207.1.3 shall comply with this section.

Technology	Energy Capacity[a] (kWh)
Capacitor ESS	3
Flow batteries[b]	20

Lead-acid batteries, all types	70[c]
Lithium-ion batteries	20
Nickel-cadmium (NI-Cd), nickel metal hydride (Ni-MH) and nickel zinc (Ni-Zn) batteries	70
Nonelectrochemical ESS[d]	70
Other battery technologies	10
Other electrochemical ESS technologies	3
Sodium nickel chloride batteries	70
Zinc manganese dioxide batteries (ZN-MnO_2)	10

IFC SECTION 1207.1.4 Permits.
Permits shall be obtained for ESS as follows:

1. Construction permits shall be obtained for stationary ESS installations and for mobile ESS charging and storage installations covered by Section 1207.10.1. Permits shall be obtained in accordance with Section 105.6.6.
2. Operational Permits shall be obtained for stationary ESS installations and for mobile ESS deployment operations covered by Section 1207.10.3. Permits shall be obtained in accordance with 105.5.14.

IFC SECTION 105.6.6 Energy storage systems.
A construction permit is required to install energy storage systems regulated by Section 1207.

IFC SECTION 901 PERMITS – FIRE PROTECTION SYSTEMS

IFC SECTION 901.3 Permits.
Permits shall be required as set forth in Sections 105.5 and 105.6.

IFC SECTION 105.6.1 Automatic fire-extinguishing systems.
A construction permit is required for installation of or modification to an automatic fire-extinguishing system.

Notes to the Applicant: The Codes are moving away from the installation of non-water-based fire extinguishing systems inside of ESS containers utilizing lithium-ion batteries. Please consult with the Rains County Fire Code Official's Office prior to the specification and installation of fire protection systems that are not water-based (e.g., not a fire sprinkler system).

IFC SECTION 105.6.2 Automatic sprinkler systems
A construction permit is required for installation of or modification to an automatic sprinkler system.

IFC SECTION 105.6.7 Fire alarm and detection systems and related equipment
A construction permit is required for installation of or modification to fire alarm and detection systems and related equipment.

IFC SECTION 105.6.19 Private fire hydrants

A construction permit is required for the installation or modification of private fire hydrants.

IFC SECTION 105.6.11 Gas detection systems
A construction permit is required for the installation of or modification to gas detection systems.

ENERGY STORAGE SYSTEM PROJECT SUBMITTAL INFORMATION

IFC SECTION 1207.1.5 Construction documents & NFPA 855:2026 SECTION 4.2.1.1

Notes to the Applicant: *The following information is prescriptive from both the IFC and NFPA 855:2026, which shall be provided with the permit application. We have provided Notes to the Applicant alongside some of the prescriptive requirements. These Notes are provided as guidance to demonstrate the expected level of information in a complete permit application package. Please note that the guidance provided does not consider all possible equipment or installations.*

1. Location and layout diagram of the room or area in which the ESS is to be installed.
    a. ***Notes to the Applicant***: *For outdoor installations, include a layout diagram of all containers and the separation distances between containers and all other exposures, including power conversion equipment, control equipment, transformers, fences, walls, and all other adjacent equipment and exposures.*

2. Details on the hourly fire-resistance ratings of assemblies enclosing the ESS.
    a. ***Notes to the Applicant:*** *If an ESS container has any fire resistance ratings, whether they are exterior walls or interior partitions, provide construction details on the barriers to demonstrate the required rating.*

3. The quantities and types of ESS to be installed.
    a. ***Notes to the Applicant:*** *Include the kWh rating of each container or unit in the installation as well as the overall capacity of the full installation if multi-container/unit.*

4. Manufacturer's specifications, ratings and listings of each ESS.
    a. ***Notes to the Applicant***: *Provide UL 1973 and UL 9540 Certifications and Certification Reports for all ESS. Only utilize an OSHA Nationally Recognized Testing Laboratory (NRTL) that is approved to provide UL 9540 Listing and UL 1973 Listing. Not all NRTLs are approved by OSHA to provide UL 9540 or UL 1973 listing.*

5. Description of energy (battery) management systems and their operation.

6. Location and content of required signage.
    a. ***Notes to the Applicant:*** *A sheet must be provided showing all signs required by NFPA 855:2026, IFC, and NFPA 70,* ***and the location of each sign****. A sheet only showing the signs is not sufficient. Include the locations of signage.*

7. Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and deflagration venting systems, if provided.
    a. ***Notes to the Applicant:*** *Full permit application submittals with shop drawings are required for all systems (please see the Required Permits Section for more information).*
    b. *For example, fire alarm system drawings in accordance with NFPA 72 shall be provided for detection and alarm systems. Where a fire sprinkler system is provided, sprinkler system drawings in compliance with NFPA 13 shall be provided. Provide details on gas detection systems including components, wiring, and controllers. Provide details on any combustible concentration reduction systems and deflagration venting systems to validate compliance with NFPA 68 and NFPA 69.*

8. Support arrangement associated with the installation, including any required seismic restraint.

9. A commissioning plan complying with 1207.2.1.

10. A decommissioning plan complying with 1207.2.3.

11. A fire safety and evacuation plan in accordance with Section 404.

Additional Guidance for Fire Department Access and Water Supplies

Notes to Applicant: The additional guidance below is to ensure that each site has the required fire department access roads and a sufficient water supply to provide exposure protection and offensive firefighting capabilities where required.

1. Location, width, and road surface type of fire apparatus access roads, and any associated access gates (see IFC Chapter 5 for more details).

2. Details on fire protection water supplies, including tanks, hydrants, piping layouts, etc. (see IFC Chapter 5 for more details). For fire protection water storage tanks, provide designs in accordance with NFPA 22.
    a. As allowed by Appendix B of the IFC, rural areas without water supply systems must comply with NFPA 1142. A minimum 30,000 gallon fire protection water supply tank is typically required for remote ESS installations, or where an industrial water supply is not available. This water supply is based on a single 250-gpm hose stream flowing for a minimum of 2 hours.
    b. Water Storage tank installation must consider location relative to firefighting efforts, ease of access during an emergency, and proximity to roadways.
    c. Many locations may require a remote connection for the fire department to access the fire protection water supply storage tank, where the tank is installed behind fencing or other security barriers.

Specific Requirements from NFPA 855:2026 SECTION 4.2.1.

The following test data, evaluation information, and calculations shall be provided in addition to the plans and specifications in Section 4.2.1.1, and as required elsewhere in NFPA 855:2026.

Notes to Applicant: The explosion modeling and testing information noted below is required to establish the safe design of the system(s) selected for each ESS installation. This is additional language that is not currently within IFC Section 1207. An HMA will be required for review, independent of overall size and kWh rating of the system.

1. Fire and explosion testing data in accordance with Section 9.1.5
    a. ***Notes to Applicant:*** Provide all UL 9540A test reports, including cell, module, unit, and installation. Provide large scale fire testing data if performed.

2. Hazard mitigation analysis (HMA) in accordance with Section 4.4
    a. ***Notes to Applicant***: An HMA will be required for all instances. Whereas both NFPA 855:2026 and IFC Section 1207 currently only require an HMA for ESS installations greater than 600 kWh, IFC Section 104.8.2 allows for this requirement as a Technical Assistance Report. The Technical Assistance Report shall be provided at no cost to Rains County. HMAs are required to be prepared by a licensed Professional Engineer with specific expertise in ESS facilities. All Professional Engineers and HMA authors must be approved by Rains County Fire Code Official.

3. Calculations or modeling data to determine compliance with NFPA 68 and NFPA 69 in accordance with NFPA 855:2026 Section 4.12 and IFC Section 911.
    a. ***Notes to Applicant:*** For NFPA 68 Systems, provide all explosion modeling reports and all design parameters necessary to validate the NFPA 68 system. For NFPA 69 systems, provide all calculations and modeling reports needed to validate the NFPA 69 design. Provide full scale testing reports if available validating NFPA 68 and NFPA 69 designs.
    b. The Fire Code Official may require the native files associated with any Performance Based Analysis for independent modeling verification.

4. Other test data, evaluation information, or calculations as required elsewhere in this standard.

NFPA 855:2026 SECTION 4.2.1.4
If modeling data is provided, validation of the modeling results shall also be included.

HAZARD MITIGATION ANALYSIS (HMA)

Notes to the Applicant An *HMA shall be provided for all ESS installations, independent of the size of the system or technology selected. The provisions of IFC Section 104.8.2 allow for this requirement at any time, when required by the Fire Code Official.*

The information below is directly from NFPA 855:2026, which is prescriptive and provided here for consistency. Note that the sections from NFPA 855:2026 provided below are only for guidance and explanation of specific items that will be reviewed for compliance. Compliance with the totality of IFC Section 1207 and NFPA 855:2026 is compulsory.

NFPA 855:2026 SECTION 4.4.1.2
The hazard mitigation analysis shall evaluate the consequences of the following failure modes and others deemed necessary by the AHJ.

1. A thermal runaway or mechanical failure condition in a single electrochemical ESS unit.
2. A mechanical failure of a nonelectrochemical ESS unit.
3. Failure of any energy storage management system or protection system within the ESS equipment that is not covered by the full product listing failure modes and effects analysis (FMEA)
4. Failure of a required protection system external to the ESS including but not limited to ventilation (HVAC), exhaust ventilation, smoke detection, fire detection, fire suppression, or gas detection.

NFPA 855:2026 SECTION 4.4.2.2
Only single failure modes shall be considered for each mode given in 4.4.2.1. Safety Critical Systems shall not be interpreted as being constrained by the single failure criterion. All creditable failure modes of each Safety Critical Systems shall be evaluated.

NFPA 855:2026 SECTION 4.4.3
The AHJ shall be permitted to approve the hazardous mitigation analysis as documentation of the safety of the ESS installation if the consequences of the analysis demonstrate the following:

1. Fires will be contained within unoccupied ESS rooms or areas for the minimum duration of the fire-resistance rating specified in 9.6.4.
2. Fires involving the ESS will allow occupants or the general public to evacuate to a safe location.
3. Deflagration hazards will be addressed by an explosion control or other system.

NFPA 855:2026 SECTION 4.4.5
Construction, equipment and systems that are required for the ESS to comply with the hazardous mitigation analysis shall be installed, maintained and tested in accordance with NFPA 855:2026 and the manufacturer's instructions.

COMMISSIONING AND DECOMMISSIONING

Notes to Applicant: *Commissioning is one of the critical processes of an overall ESS installation. Many incidents and failures occur during system commissioning, which necessitates a prudent and safe approach to all commissioning activities.*

NFPA 855:2026 SECTION 6.1.3.1
The system installer or commissioning agent shall prepare a written commissioning plan that provides a description of the means and methods necessary to document and verify that the system and its associated controls and safety systems, as required by this standard, are in proper working condition.

NFPA 855:2026 SECTION 6.1.3.2
The commissioning plan shall include, but not be limited to, the information provided in this Section.

> ***Notes to Applicant:*** *Refer to NFPA 855:2026 6.1.3.2 and 2024 IFC 1207.2.1 for a full list of items required in the commissioning plan. These items are not included here for brevity.*

NFPA 855:2026 SECTION 6.1.4 Commissioning Test

NFPA 855:2026 SECTION 6.1.4.1
ESS shall be evaluated for their proper operation by the system installer in accordance with the manufacturer's instructions, the commissioning plan, and the requirements of this section after the installation is complete but prior to final approval.

NFPA 855:2026 SECTION 6.1.5 and 1207.2.1.2 Commissioning report.
The commissioning report shall be provided by the system installer or commissioning agent to the system owner and the AHJ prior to final inspection and approval.

> ***Notes to Applicant:*** *Refer to NFPA 855:2026 and 2024 IFC for details on the contents of the commissioning report.*

NFPA 855:2026 SECTION 8.1 Decommissioning
Prior to decommissioning, the owner of an ESS or their designated agent shall prepare a written decommissioning plan complying with Section 8.1.3 that provides the organization, documentation requirements, and methods and tools necessary to indicate how the safety systems as required by this standard and the ESS and its components will be decommissioned and the ESS removed from the site.

> ***Notes to Applicant:*** *Refer to NFPA 855:2026 for details on the contents of the decommissioning plan.*

GENERAL REQUIREMENTS

Notes to the Applicant: *The items below are provided for reference, highlighting specific code compliance requirements that may be overlooked during the design and development of an ESS installation. They are provided here for reference only, and do not constitute the totality of requirements of a complete permit application package.*

IFC SECTION 1207.4.5 Vehicle Impact Protection
Where ESS are subject to impact by a motor vehicle, including forklifts, vehicle impact protection shall be provided in accordance with Section 312.

IFC SECTION 1207.4.8 Signage
Approved signs shall 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, on rooftops or in open parking garages. Signs designed to meet both the requirements of this section and NFPA 70 shall be permitted. The signage shall include the following or equivalent:

1. "ENERGY STORAGE SYSTEM," "BATTERY STORAGE SYSTEM," "CAPACITOR 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 1207.1.8.1
6. Special hazards (such as 'explosion hazard') **NFPA 855:2026 4.7.4.2**

> ***Notes to the Applicant:*** *Required signage shall be shown on construction documents, inclusive of signage and a diagram of where each sign is to be placed. Please see the Signage Requirements section of this Guidance Document for more details.*

NFPA 855:2026 SECTION 4.7.4.3
A permanent plaque or directory denoting the location of the disconnecting means for all ESS on or in the premises shall be installed at each service equipment location and at the location (s) of the system disconnect (s) for all ESS capable of being interconnected.

NFPA 70 ARTICLE 706.15 Disconnecting Means (C) Notification and Marking
Each ESS disconnecting means shall plainly indicate whether it is in the open (off) or closed (on) position and be permanently marked as follows "ENERGY STORAGE SYSTEM DISCONNECT" . The disconnecting means shall be legibly marked in the field to indicate the following: 1) Nominal ESS Output Voltage 2) Average fault current derived from the ESS 3) An arc-flash label applied in accordance with acceptable industry practices 4) Date the calculation was performed.

> ***Notes to Applicant:*** *Where fire alarm notification appliances are provided, a permanent placard next to the appliance with red background and white letters stating "FIRE ALARM" is required. Where gas detection strobes are provided, a permanent*

placard next to the appliance with red background and white letters stating, "GAS DETECTION" and the type of gas detected (H2, CO, etc.) is required.

IFC SECTION 1207.4.9 Security of installation
Rooms, areas, and walk-in units where electrochemical ESS are located shall be secured against unauthorized entry and safeguarded in an approved manner. Security barriers, fences, landscaping, and other enclosures shall not inhibit the required air flow to or exhaust from the electrochemical ESS and its components.

NFPA 855:2026 SECTION 4.7.11 Access Roads
Fire department access roads shall be provided to outdoor ESS installations in accordance with Chapter 5 and Appendix D.

EQUIPMENT AND LISTINGS

Notes to the Applicant:
ALL SYSTEMS SHALL BE LISTED TO UL 9540 WITHOUT EXCEPTION.
Field Evaluations shall not be accepted for installations in Rains County. All ESS shall be factory listed by a Nationally Recognized Testing Laboratory (NRTL) that is approved by OSHA to provide UL9540 Listings.

NFPA 855:2026 SECTION 9.2.1 Listing

NFPA 855:2026 SECTION 9.2.1.1
ESS shall be listed in accordance with UL 9540, unless specifically exempted elsewhere in this standard. The UL9540 Certification and Certification Report shall be provided to the Fire Code Official.

IFC SECTION 1207.3.2 Equipment Listing
Chargers, inverters, and energy storage management systems shall be covered as part of the UL 9540 or shall be listed separately.

IFC SECTION 1207.3.3 Utility interactive systems
Inverters shall be listed and labeled in accordance with UL 1741. Only inverters listed and labeled for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads.

IFC SECTION 1207.3.4 Energy storage management system
Where required by the ESS listing, an approved energy storage management system that monitors and balances cell voltages, currents, and temperatures within the manufacturer's specifications shall be provided. The system shall disconnect electrical connections to the ESS or otherwise place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltage, or under voltage are detected.

IFC SECTION 1207.3.5 Enclosures
Enclosures of ESS shall be of noncombustible construction and shall have an IP Rating of 55 or better.

LARGE SCALE FIRE AND EXPLOSION TESTING

Notes to the Applicant: *Both IFC and NFPA 855:2026 require large scale fire and explosion testing under specific circumstances. There is currently no consensus standard on what a "large scale fire test" is, and what the testing parameters are, other than the progressive testing within UL9540A (e.g., Cell, Module, Unit, and Installation).*

To protect the public from the hazards of fire and panic in accordance with Section 103.1 of the IFC, Rains County will require compliance with the intent of IFC Section 1207.1.5 regarding the large scale fire test as noted in the Official Commentary to the International Fire Code as follows:

> This section provides the details required if testing of new and innovative approaches to ESS are used. This is based on large-scale fire and fault condition testing with specific criteria for success and failure. The UL 9540A Test Method was specifically developed to cover this testing. Since extinguishment of a fire involving a thermal runaway in an ESS is extremely difficult, *if not impossible, the code requirements are based on the concept of an ESS unit being completely consumed by fire without propagating to adjacent ESS*. A large-scale fire test is essential to documenting that unit-to-unit propagation will not occur as well as generating additional data for necessary risk assessments for varied installation locations and arrangements relative to exposures.
>
> *(Credit: Commentary to Section 1207.1.5 of the 2024 International Fire Code)*

Where the IFC or NFPA 855:2026 require large-scale fire testing, ESS shall be subjected to a flaming condition that consumes the entire ESS unit, to establish the parameters under which a fire will not propagate between the units.

All testing documentation must be presented to the Rains County Fire Code Official for review and approval, in accordance with both IFC Section 104.8.2 and NFPA 855:2026 Section 9.1.5.2.1.

IFC SECTION 1207.1.5 Large scale fire test.
Where required elsewhere in Section 1207, large-scale fire testing shall be conducted on a representative ESS in accordance with UL 9540A. The testing shall be conducted or witnessed and reported by an approved testing laboratory and show that a fire involving one ESS will not propagate to an adjacent ESS. The test report shall be provided to the fire code official for review and approval in accordance with Section 104.8.2.

NFPA 855:2026 SECTION 9.1.5.1.2
The testing shall be conducted or witnessed and reported by an approved testing laboratory to characterize the composition of gases generated and show that a fire involving one ESS unit will not propagate to an adjacent unit.

> ***Notes to the Applicant about IFC and NFPA 855:2026 Testing:*** *All ESS equipment shall be listed to the 2nd or 3rd Edition of UL 9540. The 1st Edition did not require a large-scale fire test. UL 9540 currently requires large scale fire testing to be performed in accordance with UL 9540A. NPFA 855:2026, Section 9.1.5.1, uses the term 'fire*

and explosion testing', also to be performed in accordance with UL 9540A. This data is required for the design of explosion control systems and is required to be submitted as part of the construction documents.

The Testing Laboratory must be APPROVED by the Rains County Fire Code Official. An OSHA Nationally Recognized Testing Laboratory (NRTL) is recommended.

NFPA 855:2026 SECTION 9.1.5.2.2
The test report shall be accompanied by a supplemental report prepared by a registered design professional with expertise in fire protection engineering that provides interpretation of the test data in relation to the installation requirements of the ESS.

Notes to the Applicant about Supplemental Reporting: *This information is permitted to be included as a part of the HMA. If not part of HMA, a separate report is required. The intent is to have an independent third party evaluate the testing report(s) for acceptability of the systems in each installation location.*

IFC SECTION 1207.5.1 Size and separation
Electrochemical ESS shall be segregated into groups not exceeding 50 kWh (180 megajoules). Each group shall be separated a minimum of 3 feet (914 mm) from other groups and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10.

Notes to the Applicant using Modular (Scalable) ESS Equipment: *Modular ESS, often called "cabinet ESS," are typically smaller ESS units installed together to create a larger ESS product. For example, several ESS of ~150 kWh may be installed together to create a 600 kWh ESS installation. Each cabinet is considered as separate ESS for determining size and separation requirements, rather than the aggregate unit as a standard of care required in Rains County.*

EXPLOSION CONTROL AND GAS DETECTION

Notes to the Applicant: *Explosion control systems are critical for the safety of the installation and of first responders. These systems must be properly designed, engineered, installed, commissioned, and maintained. All explosion control systems must be submitted with proper engineering design documentation and analyses.*

IFC SECTION 1207.6.3 Explosion Control
Where required by Table 1207.6 or elsewhere in this code, explosion control complying with Section 911 shall be provided for rooms, areas or walk-in units containing electrochemical ESS.

Notes to the Applicant Explosion Control Exceptions: *IFC Section 1207.6.3 allows for the omission of explosion control where flammable gases are not liberated during thermal runway. Please see IFC Section 1207.6.3 for more information.*

NFPA 855:2026 SECTION 9.7.6
ESS installed within a room, building, ESS cabinet, ESS walk-in unit, or otherwise non-occupiable enclosure shall be provided with one of the following:

1. Explosion prevention systems designed, installed, operated, maintained, and tested in accordance with NFPA 69.
2. Deflagration venting installed and maintained in accordance with NFPA 68.

Notes to the Applicant Explosion Control in NFPA 855:2026: *Section 9.6.5.6 of NFPA 855:2026 contains detailed prescriptive criteria that must be complied with for approval. Those criteria are not reiterated herein. Please refer to NFPA 855:2026 for the breadth of requirements.*

Outdoor installations are considered an "area," and all ESS installations must comply with this requirement, regardless of the installation classification (e.g., Indoor, Outdoor Near Exposures, Outdoor Remote, or Special Installations).

Either live testing or a computational fluid dynamics model shall be used, in conjunction with UL 9540A test data, to demonstrate compliance for an NFPA 69 system if one is selected. Where testing is selected, an OSHA Approved testing laboratory shall witness the testing and provide a report. Where fire modelling is used, the model shall be prepared by a licensed Fire Protection Engineer with direct experience in fluid dynamics modeling. UL 9540A test data shall be used to inform calculations to demonstrate compliance with NFPA 68. A report and design information shall be provided for review as part of the construction documents.

Notification Appliances: *A separate notification appliance with a different color from a fire alarm is required for gas detection. Utilize a blue lens for gas detection unless approved otherwise by the AHJ. A sign shall be provided next to the gas detection notification appliance indicating its purpose (IFC Section 916.8, NFPA 72 Section 10.10).*

Gas Detection Devices: *Gas detection selection shall be chosen based on the HMA, UL 9540A data, and any modeling performed for the explosion control system. Characteristics of gas sensors shall be considered in gas detector selection (response time, cross contamination, etc.). Detector selection should be discussed in the HMA. Gas detectors shall be designed for the gases being detected (2024 IFC 916.3). For the purposes of this guide, the gas detection equipment shall be considered to be used for process control (2022 NFPA 72 Section 17.10.2.3). Gas detectors are not required to be electrically classified (such ATEX certification or other certifications for Class I Division 2 areas, etc.) and are not required to be UL 2075 Listed. Please refer to 2024 IFC Section 916 and 2022 NFPA 72 Section 17.10 for additional information regarding gas detection.*

LOCATION AND ESS SITING REQUIREMENTS

Notes to the Applicant: *A location classification shall be specified on the construction documents as one of the following:*

1. *Indoor Installation – Dedicated Use*
2. *Indoor Installation – Non-dedicated Use*
3. *Outdoor Installation – Near Exposure*
4. *Outdoor Installation – Remote*
5. *Special Installation - Rooftop*

6. *Special Installation - Open Parking Garage*

All installations shall comply with the location specific requirements in NFPA 855:2026, Section 9.5, and the 2024 IFC Sections 1207.7-1207.9, based on the location classification.

For this document, extracts are included for the Outdoor – Remote classification due to the most common installation type expected within Rains County. The extracts below are provided to highlight the most commonly omitted information. Complete compliance with NFPA 855:2026 and IFC is required.

For a full list of requirements refer to NFPA 855:2026 and the IFC. *The requirements are the same in NFPA 855:2026 Section 9.5 and IFC Sections 1207.7, 1207.8, and 1207.9.*

NFPA 855:2026 SECTION 9.6.2 Outdoor Installations
Outdoor ESS installations shall comply with this section and as detailed in following Table

Compliance Required	Remote Location	Reference
Administrative	Yes	Chapters 1-3
General	Yes	Sections 4.1-4.7
Maximum Size	Yes	9.6.2.3
Clearance to Exposures	NA	9.6.2.7.1
Means of Egress Separation	NA	9.6.2.7.1.7
Walk-In Units	Yes	9.6.2.2
Vegetation Control	Yes	9.6.2.1
Enclosures	Yes	4.6.12
Size and Separation	No	9.5.1
Smoke and Fire Detection	Yes	9.7.1
Fire control and suppression	Yes	9.7.2
Water Supply	Yes	9.7.3
Signage	Yes	4.7.4
Explosion Control	Yes	9.7.6.7
Thermal Runaway Propagation Prevention	Yes	9.7.6.5

NFPA 855:2026 SECTION 9.6.2.1 Vegetation Control
Areas within 10 ft on each side of outdoor ESS shall be cleared of combustible vegetation and other combustible growth.

NFPA 855:2026 SECTION 9.6 Remote Locations
When agreeable with the ESS owner and approved by the AHJ, fire suppression systems and water supply shall not be required.

> ***Notes to the Applicant:*** *Fire suppression and control is not required on outdoor remote installations unless otherwise required by the Fire Code Official. Please see the Water Supply Section of this Guidance Document.*

NFPA 855:2026 SECTION 9.6.3.1.3.1 Clearance to Exposures
ESS located outdoors shall be separated by a minimum of 10 ft from the following exposures:

1) Lot lines
2) Public ways
3) Buildings
4) Stored Combustible materials
5) Hazardous Materials
6) High piled stock
7) Other exposures not associated with electrical grid infrastructure.

Notes to the Applicant: *The construction documents shall clearly show clearances to all exposures and adjacent equipment. Where clearances are less than 10 feet, demonstrated compliance with options provided in NFPA 855:2026 Section 9.5.2.6 and IFC Section 1207.8.3, including fire barriers, fire resistance ratings, and fire and explosion testing must be provided.*

FIRE ALARM

NFPA 855:2026 SECTION 9.7.1 Smoke and Fire Detection
Areas containing ESS systems located within buildings or structures shall be provided with a smoke detection or radiant energy sensing system in accordance with Section 4.8, unless modified by this chapter

NFPA 855:2026 SECTION 4.8.1 Smoke and Fire Detection
Where required elsewhere in this standard, areas containing ESS systems shall be provided with a smoke detection or radiant energy sensing system in accordance with NFPA 72, unless modified by the requirements in Chapters 9-13.

Notes to the Applicant *Full construction submittals are required for fire alarms systems to demonstrate compliance with NFPA 72. Shop drawings and product data are required. See NFPA 72 (2022 Edition), Chapter 7, for a full list of required documentation.*

NFPA 855:2026 SECTION 4.8.2 Annunciation
All required annunciation means shall be located as required by the Rains County Fire Code Official to facilitate an efficient response to the situation.

NFPA 855:2026 SECTION 4.8.2.2
Multiple panels shall be aggregated to a master annunciator panel at a location approved by the Rains County Fire Code Official. Smoke and fire detection systems protecting an ESS with lithium-ion batteries shall be required to provide a secondary power supply in accordance with NFPA 72 capable of 24 hours in standby and 2 hours in alarm.

Notes to the Applicant: *Calculations are required to demonstrate compliance as part of the fire alarm submittal.*

Alarm signals from detection systems shall be transmitted to a supervising station in accordance with NFPA 72.

IFC SECTION 1207.5.4
An approved automatic smoke detection system or radiant energy sensing fire detection system complying with Section 907.2 shall be installed in rooms, indoor areas, and walk-in units containing electrochemical ESS. An approved radiant energy sensing fire detection system shall be installed to protect open parking garages and rooftop installations. Alarm signals from detection systems shall be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or where approved to a constantly attended location.

Notes to the Applicant: *Please see to IFC Section 907 for additional fire alarm system requirements.*

FIRE CONTROL AND SUPPRESSION

NFPA 855:2026 SECTION 4.9.1 Fire Control and Suppression
Where required elsewhere in this standard, fire control and suppression for rooms or areas within buildings and outdoor walk-in units containing ESS shall be provided in accordance with this section, unless modified in Chapter 9 through 13.

Notes to the Applicant *Fire control and suppression are not required for remote outdoor energy storage systems unless they are a walk-in unit. Where fire control and suppression are required, refer to NFPA 855:2026 for design criteria. All designs shall comply with the applicable codes and standards (i.e., NFPA 13, NFPA 15, etc.) and full submittals including shop drawings and product data shall be provided.*

Pleas also refer to 2024 IFC Section 1207.5.5 for additional requirements, specifically with regards to fire sprinkler design densities. 2024 and 2021IFC Sections 903 and 904 provide additional details on fire control and suppression systems, where required.

WATER SUPPLY

NFPA 855:2026 SECTION 4.9.5
Where no permanent adequate and reliable water supply exists for firefighting purposes, the requirements of NFPA 1142 shall apply. Please see the General Submittal Information at the beginning of this Guide for more information on required onsite water supplies.

Accessible fire hydrants shall be provided for site ESS installations where a public or private water supply is available.

Notes to the Applicant: *Where omission of water supply is requested for outdoor remote installations, a formal request with supporting rationale shall be provided and documented in the HMA.*

Water tanks for private fire protection shall be installed in accordance with NFPA 22 (2024 IFC 507.2.2)

THERMAL RUNAWAY PROPAGATION PREVENTION

Notes to the Applicant: *Thermal runaway propagation prevention systems (TRPP) are active means to mitigate thermal runaway propagation and are an emerging fire safety technology and strategy. They are not currently discussed in 2024 IFC or NFPA 855:2026. Where provided, TRPP shall be validated by UL 9540A testing. TRPP systems shall also be included as part of the HMA.*

OPERATION AND MAINTENANCE

Notes to the Applicant: *Both NFPA 855:2026 and IFC Section 1207 have similar requirements for Operation and Maintenance, with slight variations in each. Both the NFPA 855:2026 and IFC requirements are extracted and provided here for reference.*

NFPA 855:2026 SECTION 6.3

The operation and maintenance documentation shall include the following:

1. Procedures for the safe startup of the ESS system and associated equipment
2. Procedures for inspection and testing of associated alarms, interlocks, and controls.
3. Procedures for maintenance and operation of the following, where applicable:
   a. Energy storage management systems (ESMS).
   b. Fire protection equipment and systems.
   c. Spill control and neutralization systems.
   d. Exhaust and ventilation equipment and systems.
   e. Gas detection systems.
   f. Other required safety equipment and systems
4. Response considerations similar to a safety data sheet (SDS) that address response safety concerns and extinguishment where an SDS is not required.
5. An instruction that equipment or system changes to the installation are required to be recorded by updating any engineering documentation.

IFC SECTION 1207.2.2 Operation and Maintenance

An operating and maintenance manual shall be provided to both the ESS owner or their authorized agent and the ESS operator before the ESS is put into operation and shall include the following:

1. Manufacturer's operation manuals and maintenance manuals for the entire ESS or for each component of the system requiring maintenance, that clearly identify the required routine maintenance actions.
2. Name, address and phone number of a service agency that has been contracted to service the ESS and its associated safety systems.
3. Maintenance and calibration information, including wiring diagrams, control drawings, schematics, system programming instructions and control sequence descriptions, for all energy storage control systems.
4. Desired or field-determined control set points that are permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.
5. A schedule for inspecting and recalibrating all ESS controls.

6. A service record log form that lists the schedule for all required servicing and maintenance actions and space for logging such actions that are completed over time and retained on site.
7. The ESS shall be operated and maintained in accordance with the manual and a copy of the manual shall be retained at an approved onsite location.

NFPA 855:2026 SECTION 7.2 System Maintenance
The ESS shall be maintained in accordance with the system manufacturer's instructions.

IFC SECTION 1207.2.2.1 Ongoing inspection and testing.
Systems that monitor and protect the ESS installation shall be inspected and tested in accordance with the manufacturer's instructions and the operating and maintenance manual. Inspection and testing records shall be maintained in the operation and maintenance manual.

EMERGENCY OPERATIONS PLAN & TRAINING

NFPA 855:2026 SECTION 4.3.3 Emergency Operations Plan

Notes to the Applicant: *An Emergency Operations Plan (EOP) is required for all ESS installations. It shall be approved prior to commissioning. The EOP shall be submitted as part of the Construction Documents; however, it may also be a deferred submittal.*

Both the IFC and NFPA 855:2026 have similar requirements. The NFPA 855:2026 requirements are extracted and provided here for reference.

The emergency operations plan shall include the following:

1. Procedures for safe shutdown, de-energizing, or isolation of equipment and systems under emergency conditions to reduce the risk of fire, electric shock, and personal injuries, and for safe start-up following cessation of emergency conditions.
2. Procedures for inspection and testing of associated alarms, interlocks, and controls.
3. Procedures to be followed in response to notifications of system alarms or out-of-range conditions that could signify potentially dangerous conditions, including shutting down equipment, summoning service or repair personnel, and providing agreed-upon notification to fire department personnel, if required.
4. Emergency procedures to be followed in case of fire, explosion, release of liquids or vapors, damage to critical moving parts, or other potentially dangerous conditions.
5. Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required.
6. Procedures for dealing with ESS equipment damaged in a fire or other emergency event, including contact information for personnel qualified to safely remove damaged ESS equipment from the facility.
7. Other procedures as determined necessary by the AHJ to provide for the safety of occupants and emergency responders.
8. Procedures and schedules for conducting drills of these procedures.

Personnel responsible for the operation, maintenance, repair, servicing, and response of the ESS shall be trained in the procedures including the emergency operations plan in 4.3.2.1.