

BEBF-102



# OKLAHOMA

## Uniform Building Code Commission Technical Code Review Committee

### Public Comment Form

**NOTE:** This form and any attachments hereto are subject to the Oklahoma Open Records Act and may be disbursed, upon request, without further notice to the submitter.

#### INSTRUCTIONS:

1. Please type or print clearly.
2. Form must be signed. Any forms that are not signed or filled out completely, may not be considered.
3. Each requested change must be on a separate form.
4. If the space to show the proposed change or supporting information is not big enough to show the entire change, write the words "See Attached" in the space provided and submit the change on a separate page.

#### Contact Information:

Name Scott Lang

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Email Address scott.lang@honeywell.com Phone Number 630-762-5257

#### Code Change Information:

Will this change increase the cost of construction? Yes  No

Which code needs to be revised? 2021 International Fire Code

Which section of the code needs to be revised?

Section 1107 Table \_\_\_\_\_ Figure \_\_\_\_\_ Page \_\_\_\_\_

## Proposed Change:

Show the proposed new, revised, or deleted text in Legislative format. Line through text to be deleted and underline text to be added or revised.

### **1107 Energy Storage Systems**

#### **1107.1 Lithium-ion technology energy storage systems.**

The owner of an energy storage system (ESS) utilizing lithium-ion battery technology having capacities exceeding the values in Table 1207.1.1 and that was installed prior to the jurisdiction's adoption of the 2018 or later edition of the International Fire Code shall provide the fire code official a failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis in accordance with Section 104.8.2 for review and approval.

Exception: Detached one- and two-family dwellings and townhouses

#### **1107.1.1 Early Detection.**

In addition to the requirements of Section 1207.1.4.1 and 1207.1.4.2, the analysis shall include an assessment of the ability of the installed protection systems to provide for early detection and notification of a thermal runaway event in relation to the ability of emergency responders to safely mitigate the size and impact of a thermal runaway event.

#### **1107.1.2 Corrective action plan.**

Where hazards are identified by the analysis, a plan that includes a timetable for corrective action shall be submitted to the fire code official for review and approval. The plan shall include actions and system improvements necessary for eliminating or

## Supporting Information:

State the purpose and reason for the change and provide substantiation to support the proposed change.

Note: this proposal has been accepted for the 2024 edition of the International Fire Code.

Though both the 2018 International Fire Code, 2018 NFPA 1 Fire Code received significant enhancements to provide necessary protection levels which were improved further with the provisions of the 2020 NFPA 855 Energy Storage Systems, the 2021 International Fire Code and the 2021 NFPA 1 Fire Code, there are numerous installations that do not meet the new and necessary safety requirements. Even after the printing of the 2018 International Fire Code installers continued to install systems that did not meet the new standard of care, taking advantage of earlier editions of the codes that were still being enforced locally. A glaring example of a system that did not meet the requirements of the 2018 or 2021 editions of the International Fire Code was located in Surprise, Arizona where a thermal runaway event seriously injured 4 members of the fire service.

The purpose of this proposal is to start to address potential protection shortcomings in ~~the design, installation and maintenance of existing energy storage systems employing~~

Signature: **Scott Lang**  
Digitally signed by Scott Lang  
Date: 2023.04.24 12:21:40  
-05'00'

Date: 4/24/23

### Send completed form to:

Oklahoma Uniform Building Code Commission  
2401 N.W. 23 St, Ste 82, Oklahoma City, OK 73107  
Or email to [Kathy.Hehnl@oubcc.ok.gov](mailto:Kathy.Hehnl@oubcc.ok.gov) or [Lindsay.Heinrichs@oubcc.ok.gov](mailto:Lindsay.Heinrichs@oubcc.ok.gov)

\*Entire Change + Supporting documentation on Next 2 Pages

## Proposed Change

### 1107 Energy Storage Systems

#### 1107.1 Lithium-ion technology energy storage systems.

The owner of an energy storage system (ESS) utilizing lithium-ion battery technology having capacities exceeding the values in Table 1207.1.1 and that was installed prior to the jurisdiction's adoption of the 2018 or later edition of the International Fire Code shall provide the fire code official a failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis in accordance with Section 104.8.2 for review and approval.

Exception: Detached one- and two-family dwellings and townhouses

#### 1107.1.1 Early Detection.

In addition to the requirements of Section 1207.1.4.1 and 1207.1.4.2, the analysis shall include an assessment of the ability of the installed protection systems to provide for early detection and notification of a thermal runaway event in relation to the ability of emergency responders to safely mitigate the size and impact of a thermal runaway event.

#### 1107.1.2 Corrective action plan.

Where hazards are identified by the analysis, a plan that includes a timetable for corrective action shall be submitted to the fire code official for review and approval. The plan shall include actions and system improvements necessary for eliminating or mitigating any identified hazards, including listed methods for early detection and notification of a thermal runaway event.

#### **Supporting Information:**

Note: this proposal has been accepted for the 2024 edition of the International Fire Code.

Though both the 2018 International Fire Code, 2018 NFPA 1 Fire Code received significant enhancements to provide necessary protection levels which were improved further with the provisions of the 2020 NFPA 855 Energy Storage Systems, the 2021 International Fire Code and the 2021 NFPA 1 Fire Code, there are numerous installations that do not meet the new and necessary safety requirements. Even after the printing of the 2018 International Fire Code installers continued to install systems that did not meet the new standard of care, taking advantage of earlier editions of the codes that were still being enforced locally. A glaring example of a system that did not meet the requirements of the 2018 or 2021 editions of the

International Fire Code was located in Surprise, Arizona where a thermal runaway event seriously injured 4 members of the fire service.

The purpose of this proposal is to start to address potential protection shortcomings in the design, installation and maintenance of existing energy storage systems employing lithium-ion technology by requiring that a hazard analysis conforming to the requirements of Sections 1207.1.4.1 and 1207.1.4.2 of the current ESS requirements.

Proposed Section 1107.1 sets the scoping to those systems installed prior to the local adoption of the 2018 IFC or later that exceed the thresholds in Table 1207.1.1 which is the trigger for new installations. It utilizes similar language for the hazard analysis as currently exists for new systems at 1207.1.4 for consistency in application. An exception for one- and two-family dwellings and townhouses is included.

Proposed Section 1107.1.1, in addition to the requirements of Sections 1207.1.4.1 and 1207.1.4.2, requires the inclusion of an assessment of the ability of the installed protection to provide an early warning of a thermal runaway event and to provide notification of that event in relation to the ability of responders to safely mitigate the event. Early detection of a thermal runaway utilizing listed methods of early detection, such as sensing cell off-gassing or other compliant methods, is essential to mitigation efforts and the safety of responders.

Proposed Section 1107.1.2 requires the submission of a corrective action plan for the review and approval of the fire code official that includes actions and system improvements necessary for eliminating or mitigating identified hazards.

This retroactive provision is consistent with the 2023 edition of NFPA 855 Energy Storage Systems.