



# REQUEST FOR PROPOSAL

**IAFF Residential Energy Storage System Testing  
Fire Fighter Tactical Response**

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**Issue Date: Aug. 5, 2026**

**Proposal Due Date and Time: Friday, Sept. 4, 2026, at 5 p.m. (ET)**



# REQUEST FOR PROPOSAL

## IAFF Residential Energy Storage System Testing Fire Fighter Tactical Response

### 1. INTRODUCTION

#### 1.1 Purpose of the Request for Proposal (RFP)

The International Association of Fire Fighters (“IAFF”) is seeking proposals from qualified entities to conduct large-scale testing to collect data supporting recommendations to the fire service regarding tactics to mitigate potential battery-gas explosion hazards in a two-car residential garage setting.

This project is funded in whole or in part with federal financial assistance from the U.S. Department of Homeland Security (“DHS”) through the Federal Emergency Management Agency (“FEMA”). The selected contractor will be required to comply with the applicable requirements associated with work performed under the federal award.

#### 1.2 Project Background

A precursor project, “Considerations for Fire Service Response to Residential Battery Energy Storage System (RBESS) Incidents,” published in December 2023, identified novel explosion hazards that may result from a RBESS involvement in the fire environment compared to the expected hazards of traditional residential fires. The project reported these hazards and developed size-up and hazard assessment considerations for the fire service.

The “Lithium-ion Battery Incident Reporting” database, compiled by an outside entity, has recorded over 10,000 global Li-ion thermal runaway failure incidents between 2021 and 2024, including technologies such as ESS, electric vehicles (EVs), micro-mobility devices, and consumer products. While the outcomes of the precursor project provided initial insights into the hazards of Li-ion battery involvement in residential fires, there is still insufficient data on effective and ineffective ventilation and suppression tactics that the fire service may use while addressing these incidents.

Meanwhile, incidents continue to occur. These incidents may involve fire or the accumulation of flammable gases from Li-ion thermal runaway. This latter case can result in the development of an explosion hazard. Such explosions can occur without warning and remain a clear and severe hazard to fire fighter health and safety. For these reasons, the fire service remains vulnerable to ineffective approaches to incidents with Li-ion batteries.

One publicized example of this vulnerability occurred on April 12, 2023, when fire fighters from Mountain View Fire Rescue, which services a large portion of unincorporated Boulder and Weld counties in Colorado, responded to a report of smoke in a residential structure. The smoke was in fact flammable gas released from a vehicle battery undergoing thermal runaway. While conducting initial situational assessments and beginning suppression response, the accumulated battery gas ignited, resulting in an explosion in the garage that ejected the garage door from the structure. The door knocked the helmet off the responding fire fighter outside the structure, narrowly avoiding a catastrophic injury. The fire fighters inside the structure were also impacted by the pressure wave and narrowly escaped injury.

#### 1.3 Project Objectives and Scope

This project will expand upon the precursor project by developing research-based response tactics for mitigating Li-ion fire and explosion hazards including ventilation and/or suppression tactics. In addition, the project sponsor will develop training materials for the fire-service through online and in-person training opportunities.

The selected contractor will conduct large-scale testing with representative battery gas accumulation. The large-scale test matrix will be informed by fluid dynamics simulation to provide insights into gas dispersion physics and initial gas dispersion conditions at the time of intervention. The project is currently conducting computer modeling exercises utilizing the Fire Dynamics Simulator (FDS). The large-scale test matrix will be



# REQUEST FOR PROPOSAL

## IAFF Residential Energy Storage System Testing Fire Fighter Tactical Response

developed utilizing the results of these simulations and recommendations from the Project Managers and Advisory Panel. The firefighting tactics that will be investigated may include:

- o Creating multiple natural ventilation openings high in a compartment wall
- o Creating multiple natural ventilation openings in the middle of a compartment wall
- o Creating multiple natural ventilation openings low in a compartment wall
- o Utilizing standard exterior door sized opening for natural ventilation
- o Forced ventilation using hydraulic ventilation from a fire service nozzle spray pattern in one of the aforementioned vents
- o Forced ventilation of an opening with PPV in one of the aforementioned vents

Based on the computer modeling exercises, the three most promising ventilation approaches will be selected for tests. No less than three experiments should be run per tactic. Prior to the testing of individual tactics, a baseline test shall be performed.

The contractor will be responsible for creating the initial battery gas dispersion conditions necessary to initiate each test.

The project requires a series of scenario-based tests utilizing lithium-ion battery gas (or an appropriate representation) in a mock-up residential two-car garage setting. The test structure should be designed to be similar to the referenced 2023 Considerations for Fire Service Response to Residential Battery Energy Storage System Incidents. This is required to develop comparable data on the tactical considerations developed in the project to potential validation techniques in this current project. Testing is expected to examine how tactical interventions may influence the accumulation, distribution, and evacuation of battery thermal runaway gases. It should be determined whether this results in mitigation, or escalation of associated fire and explosion hazards.

Project managers estimate the ability to conduct a minimum of five large-scale tests. Respondents must separately identify a cost per additional test.

### 1.4 Anticipated Schedule

The project must be completed within the required timeframe to meet grant performance periods. The anticipated schedule is as follows:

- Proposal deadline: Friday, Sept. 4, 2026, at 5 p.m./Eastern
- Virtual Meeting with Program Managers: The week of Sept. 7, 2026
- In-person Advisory Panel Meeting in Washington, D.C.: Sept. 29 – 30, 2026
- Large-scale testing completed: April 16, 2027
- Draft Test Report: Aug. 1, 2027
- Final Test Report: Sept. 1, 2027

### 1.5 Reference

Schraiber, A., Barowy, A., Gaudet, B., and Kimmerly, V., *Considerations for Fire Service Response to Residential Battery Energy Storage System Incidents*, UL Fire Safety Research Institute, December 4, 2023. Available at: [IAFF Residential ESS Considerations Report](#).



# REQUEST FOR PROPOSAL

## IAFF Residential Energy Storage System Testing Fire Fighter Tactical Response

## 2. ADMINISTRATIVE INFORMATION

### 2.1 Questions and Points of Contact

This RFP is issued by the International Association of Fire Fighters. Questions regarding this RFP must be directed to:

**James Burgess**

Director, Training, Education, and Grants Administration  
International Association of Fire Fighters  
jburgess@iaff.org

**Sean DeCrane**

Assistant to the General President for Health and Safety  
International Association of Fire Fighters  
sdecrane@iaff.org

Only written amendments or clarifications issued by IAFF will modify this RFP.

### 2.2 Proposal Submissions

Proposals must be received no later than 5 p.m. Eastern Time on Friday, Sept. 4, 2026. Respondents are responsible for the timely and complete delivery of their proposals.

### 2.3 Anticipated Contract and Federal Award Requirements

The selected contractor will be required to enter into a contract with IAFF and to accept the applicable requirements associated with work funded under the FEMA federal award, including applicable DHS terms and conditions.

### 2.4 Reservations and Costs of Proposal Preparation

Issuance of this RFP and submission of a proposal do not obligate the IAFF to award a contract or guarantee that any respondent will receive work. IAFF may request clarification or additional information concerning a proposal.

Respondents are not entitled to reimbursement for any costs incurred in preparing or submitting a proposal, participating in the procurement process, or performing work before execution of a contract.

## 3. INSTRUCTIONS TO RESPONDENTS

### 3.1 General Instructions

Proposals should be clear, concise, and sufficiently detailed to permit the IAFF to evaluate the respondent's qualifications, technical approach, schedule, and pricing. Proposals should follow the organization below and address each requested item.

### 3.2 Required Proposal Contents

Proposals should include the following sections:



# REQUEST FOR PROPOSAL

## IAFF Residential Energy Storage System Testing Fire Fighter Tactical Response

- Cover letter
- Capability Statement and Minimum Qualifications
- Relevant Experience
- Technical Approach
- Test Structure and Facilities
- Testing Plan and Schedule

### 3.3 Minimum Qualifications

To be eligible for consideration, a respondent must demonstrate the following capabilities, availability, and experience:

- Large-scale testing capabilities up to the scale of structures, including a two-car garage similar to the structure described in the referenced 2023 report. (Available at: [IAFF Residential ESS Considerations Report](#))
- Lab time availability of approximately one month for build out and testing
- Capability to measure gas concentrations, temperatures, pressures, and to conduct high-speed video recording
- Capability to develop simulated battery gas to specified mixture measurements
- Experience and expertise in fire and explosion testing
- Experience and expertise in explosion hazard mitigation
- Experience and expertise in deflagration testing
- Experience with battery gas explosion testing
- Experience in battery gas explosion mitigation
- Experience and expertise to mitigate hazards if unplanned situations arise during testing

### 3.4 Price Proposal

The price proposal must state the total proposed price, identify the number of large-scale tests included in that price, and state a separate cost per additional test. The price proposal should identify all assumptions affecting the proposed price.

## 4.EVALUATION AND SELECTION PROCESS

### 4.1 Initial Review

The IAFF will first review each timely submitted proposal for completeness and compliance with the submission requirements and minimum qualifications stated in this RFP.

### 4.2 Evaluation Factors

Proposals that proceed beyond the initial review will be evaluated using the following factors:

#### 4.2.1 Technical Approach

The IAFF will evaluate the respondent's understanding of the project and the soundness and feasibility of its proposed technical approach. The IAFF will select the best value proposal considering the following factors, not necessarily in this order:



# REQUEST FOR PROPOSAL

## IAFF Residential Energy Storage System Testing Fire Fighter Tactical Response

### 1. Capabilities and Facilities

The IAFF will evaluate the respondent's ability to conduct structure-scale testing and the suitability and availability of its proposed facilities and equipment.

### 2. Experience

The IAFF will evaluate the relevant experience of the respondent in the technical areas identified in this RFP.

### 3. Schedule

The IAFF will evaluate the respondent's ability and proposed approach to meet the required testing and report dates.

### 4. Price

The IAFF will evaluate the respondent's proposed price, including the price for the proposed testing and the cost per additional test.

The IAFF reserves the right to conduct clarifying discussions with any/all respondents.