



**Examining Fire Hazards: Lithium-Ion Batteries and
Other Threats to Fire Safety**

Statement of

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President and Board Chair**

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Good morning, Chairman D'Esposito and Ranking Member Carter. I am John S. Butler, Fire Chief of the Fairfax County (Virginia) Fire and Rescue Department and President and Board Chair of the International Association of Fire Chiefs (IAFC). I appreciate the opportunity today to discuss lithium-ion batteries and other threats to fire safety.

The IAFC represents the leadership of over 1.1 million firefighters and emergency responders. IAFC members are the world's leading experts in firefighting, emergency medical services, terrorism response, hazardous materials (hazmat) incidents, wildland fire suppression, natural disasters, search and rescue, and public-safety policy. Since 1873, the IAFC has provided a forum for its members to exchange ideas, develop best practices, participate in executive training, and discover diverse products and services available to first responders.

America's fire and emergency service is an all-hazards response force that is locally situated, staffed, trained, and equipped to respond to all types of emergencies. There are approximately 1.1 million men and women in the fire and emergency service – consisting of approximately 300,000 career firefighters and 800,000 volunteer firefighters – serving in over 30,000 fire departments around the nation. They are trained to respond to all hazards ranging from earthquakes, hurricanes, tornadoes, and floods to acts of terrorism, hazardous materials incidents, technical rescues, fires, and medical emergencies. We usually are the first at the scene of a disaster and the last to leave.

Dangers Posed by Fires from Lithium-ion Batteries.

America's fire and emergency service is approximately five years behind the curve in addressing problems relating to lithium-ion batteries and we request federal assistance to catch up. Fires involving lithium-ion batteries present unique challenges to local fire departments. As a result, local communities must plan for a number of complicated factors. For example, the duration of the fires can be longer: an incident involving an electric vehicle can take four hours and one involving a power storage unit can take approximately 24 hours to extinguish the fire and complete post-fire mitigation. Firefighters must not only extinguish the fire. They also have to pack the device and prepare it for storage to prevent secondary fires. In addition, fire departments also must plan to decontaminate their gear and address concerns about the exposure of firefighters to the toxic smoke caused by a lithium-ion battery fire. All of these characteristics of fires involving lithium-ion batteries can be a burden for fire departments' limited staffing and resources.

Thermal runaway occurs in lithium-ion batteries when the individual cells become destabilized and enter a state of uncontrollable warming. The reaction is the root cause of the fires we see from lithium-ion batteries. Often this phenomenon begins with little to no warning, which can create later complications regarding the removal of any active lithium-ion batteries from an incident scene. Thermal runaway typically presents with large amounts of smoke or gas, which is highly flammable and toxic. These fires are not just contained to the devices they power. They can engulf the location of the initial fire, along with the surrounding dwellings. The risks posed by lithium-ion fires cannot be understated.

The Source of Fires Involving Lithium-ion Batteries

There is a great chance everyone in this room has some sort of lithium-ion battery on their person. These power the devices which many of us rely upon. Without question, lithium-ion batteries are part of the future of a greener, cleaner society. However, our nation's fire and emergency services have been responding to an increased number of incidents caused by fires involving lithium-ion batteries. Lithium-ion batteries are used to power electric scooters; electric bikes; hoverboards; wheelchairs; personal computers; cell phones; landscaping tools; electronic cigarettes; golf carts; energy storage systems used to power homes; all-terrain vehicles; electric vehicles (EV); commercial buses; trucks; and much more.

Our fire service is not just challenged in the EV and mobility space with completed products. With the rapid increase of cell manufacturing in the United States, many of our communities are struggling with new facilities that are part of the rapidly growing manufacturing sector. This may be a battery plant; manufacturing facility; automobile assembly; or even a battery laboratory. Our firefighters are challenged with not just the buildings, but the transit of these materials as part of the complete ecosystem. This can include the safe transport of products by rail, road, and waterways.

The battery is not the lone concern with the operation of many of these devices. The charging components, use of third-party replacement lithium-ion batteries, and large home energy storage systems also pose great concerns. It is also worth noting the growing prevalence of home energy storage systems that use lithium-ion batteries to power an entire home. Unfortunately, the increase of these batteries in our society has not led to increased response capabilities for the fire service or rapid adoption of current and model fire and building codes. The fire service is at the initial stages of exploring the best and safest methods to respond to fires caused by these batteries. Several things need to happen to make these devices safe for all. We need more help.

Lithium-ion Battery Fires Are a National Problem

I would like to thank my partners at the FDNY for their leadership in this effort. Without a doubt, New York City has experienced a high number of these fires. Over the last four years in New York alone, there were more than 400 fires related to lithium-ion batteries. These fires resulted in more than 300 injuries, 12 deaths and damage to more than 320 structures and more than 100 non-structures. As a response to these fires, the FDNY is one of the most proactive voices calling for the necessary enactment of laws and regulations to try and remedy this situation.

Nonetheless, I would like to call attention to how lithium-ion battery fires are affecting communities all over our nation.

- In Fairfax County (VA), we had 17 incidents involving lithium-ion batteries in 2023. They were in a variety of devices including vehicles, mobile phones, portable chargers, laptop computers, and remote-controlled cars.
- In March 2021, the Harrisburg (PA) Bureau of Fire experienced a line of duty death due to a fire caused by lithium-ion batteries found in hoverboards.
- In March 2023, the Brighton (MI) Area Fire Authority experienced three fires in one week, which involved a plug-in hybrid, a cell phone battery; and a mobility-based device.
- On March 2023, a lithium-ion battery from a hoverboard ignited a basement fire in Lodi, NJ.
- During 2023, Houston (TX) experienced more than 60 fires involving rechargeable lithium-ion batteries. These fires included lithium-ion batteries in hoverboards, scooters, and motor vehicles.
- Gainesville (FL) experienced several fires due to devices powered by lithium-ion batteries. In 2023, two of these fires involved surrounding structures and dwellings.
- Washington D.C. experienced eight fires in 2023 that were attributed to lithium-ion batteries. Three of these fires involved e-bikes and scooters and one involved a hoverboard.

The Need for Better Data on Lithium-Ion Fires

As the nation deals with an increase in lithium-ion battery fire incidents, it is important that we can track and better understand their occurrences. We need to know the answers to questions like “What devices cause these incidents? Who are the operators of these devices? Where are these incidents occurring, and how often?” These metrics will help us better understand how and where to allocate resources. Some representatives of the fire service are tracking this data and some states, like Florida, are beginning to require their fire departments to report lithium-ion battery fires. Yet, we still need a national understanding of the scope of the problem of lithium-ion fires.

Currently, the national fire and emergency service utilizes the National Fire Incident Reporting Systems (NFIRS) to track fire-related incidents. The United States Fire Administration (USFA) is developing a replacement for NFIRS that will include real-time data on fires. The IAFC supports the USFA’s effort to develop the National Emergency Response Information System (NERIS) and urges Congress to fully fund its development. The development of NERIS will give our communities the necessary tools to track information about incidents involving lithium-ion batteries. With a better understanding of the scope of the problem, Congress and the Administration will be able to allocate resources to help local fire departments respond to this growing problem.

The Need to Develop Codes and Standards

To prohibit the further entry of faulty lithium-ion batteries into our communities, model codes and standards must be developed, updated, and adopted. This will involve collaboration between many stakeholders, such as the fire service; federal, state, and local agencies; research organizations; and manufacturers. There are several ways this can be achieved:

- 1) **Look to notable fire service organizations that are leaders in the code and standard space, such as Underwriters Laboratories (UL), the National Fire Protection Association (NFPA), and the International Code Council (ICC).** The fire and emergency service needs strong partners that not only work to reduce these events from happening, but encourage the industry to develop solutions for post-incident mitigation of a fire where lithium-ion batteries are involved. Organizations such as UL, NFPA, and ICC are leading the effort to adapt codes and standards to adapt to technology using lithium-ion batteries. Further support of their work will lead to increased safety for not just consumers, but also first responders, who respond to lithium-ion battery fires. While we all know the power of using modern building and fire codes, states and communities also need support in adopting the most current codes and standards to address this rapidly changing industry.
- 2) **Pass and enact the Setting Consumer Standards for Lithium-Ion Batteries Act (H.R. 1797/ S. 1009).** This legislation would require the Consumer Product Safety Commission to issue safety standards on lithium-ion batteries in mobility devices. A high percentage of the fires caused by lithium-ion batteries are in devices like e-bikes, e-scooters, and hoverboards. With the increased use of micro-mobility devices powered by lithium-ion batteries, it is paramount that we set safety standards to ensure that consumers are not subject to harm. H.R. 1797, as amended, advanced out of the House Energy and Commerce Committee by a total of 42-0. I urge the full House of Representatives to swiftly consider this legislation and pass it without delay. In the meantime, I urge the Senate Committee on Commerce, Science, and Transportation Committee to begin consideration of S. 1009. The sooner Congress acts, the faster we can start to prevent unsafe lithium-ion batteries from being on America’s streets and in American homes.

The Need for More Training, Resources, and Increased Public Education.

Fire departments should work with organizations like the UL's Fire Safety Research Institute, the New York City Fire Department (FDNY), the USFA, and the IAFC to prepare for lithium-ion fires. The USFA can use the National Fire Academy and its relationship with the state and local fire training academies to train firefighters about how to respond to fires caused by lithium-ion batteries and how to safely manage and cleanup the incident scene after the fire. In addition, the USFA can develop public education campaigns to educate the public about the safe handling and storage of devices and vehicles using lithium-ion batteries.

The Assistance to Firefighters Grant (AFG) and the Staffing for Adequate Fire and Emergency Response (SAFER) grants provide matching grants that can be used to help local fire departments with incidents involving lithium-ion batteries. However, both programs already cannot meet the current demand for their funds. In addition, unless Congress passes the Fire Grants and Safety Act (H.R. 4090/S. 870), these programs will expire on September 30, 2024.

We recommend that Congress develop a new program that will help communities prepare for incidents involving lithium-ion batteries. The program should fund code adoption efforts; planning, training, and exercises; and equipment. The program also should fund research into issues like firefighter exposure to toxic fumes from lithium-ion fires and how to effectively decontaminate gear that has been used in a fire involving lithium-ion batteries.

Conclusion

I thank you for the opportunity to address the threat of lithium-ion batteries and other threats to fire safety. While lithium-ion batteries present a promise in providing power to new forms of technology, we must take steps to prepare for accidental fires caused by them. Congress can play a role in ensuring the nation's preparedness by passing legislation like the Setting Consumer Standards for Lithium-Ion Batteries Act (H.R. 1797/ S. 1009). In addition, it can pass the Fire Grants and Safety Act (H.R. 4090/ S. 870) to preserve programs like the AFG and SAFER programs and also create a program to help local communities work with their fire departments to prepare for incidents involving lithium-ion batteries. We also support increased funding for the USFA to ensure that it can improve data collection efforts and distribute training and public education to help local communities prevent fires involving lithium-ion batteries. The IAFC looks forward to working with the committee to ensure the safe adoption of this revolutionary new technology.