



January 30, 2024

The Honorable Theresa Manzella, Chair
The Honorable Denise Baum, Vice-Chair
Transportation Interim Committee
Helena, MT 59620-1706

Dear Chair Manzella and Vice-Chair Baum:

The Alliance for Automotive Innovation¹ (Auto Innovators) appreciates the opportunity to provide the following information regarding general industry practices to address electric vehicle (EV) safety, including first responder responses to EV fires. There has been considerable media attention devoted to this issue so it's important to understand the facts.

In the United States, [according to a 2023 study citing recent data](#) from the [National Transportation Safety Board](#) and the [Bureau of Transportation Statistics](#), gasoline-powered, internal-combustion engine (ICE) vehicles were involved in about 1,530 fires per every 100,000 sold. On the other hand, pure electric vehicles (meaning those powered only by batteries) were involved in just 25 fires per 100,000 sold. Accordingly, battery electric vehicles have only a 0.025% chance of catching fire, compared to 1.5% for internal combustion engine vehicles. Put another way, this means that internal combustion engine (ICE) vehicles are 61 times more likely to catch fire than BEVs.

Industry and First Responders Working Together

While electric vehicle fires are relatively rare compared to traditional internal combustion engine vehicles, they do pose unique challenges. With the introduction of EVs, government, industry and the first responder community, i.e., National Fire Protection Association (NFPA), recognized the need to develop firefighting, transport, and storage best practices and training materials for these vehicles. Auto Innovators' legacy association worked with and sponsored part of the NFPA research to develop its "[Best Practices for Emergency Response to Incidents Involving Electric Vehicles Battery Hazards](#)." This included live-burn testing that was used to form the basis for these practices and training course materials.

As a result of this testing, NFPA confirmed that current practices and associated personal protection equipment used to fight conventionally fueled vehicle fires are still appropriate for EV fires, namely the use of water as the cooling and extinguishing agent. However, it was noted that the amount of water and time to extinguish was longer.

¹ From the manufacturers producing most vehicles sold in the U.S. to autonomous vehicle innovators to equipment suppliers, battery producers and semiconductor makers – Alliance for Automotive Innovation represents the full auto industry, a sector supporting 10 million American jobs and five percent of the economy. Active in Washington, D.C. and all 50 states, the association is committed to a cleaner, safer and smarter personal transportation future. www.autosinnovate.org.

To address the potential for re-ignition of damaged batteries, NFPA developed best practices for both the towing and salvage industries². In addition, the National Highway Traffic Safety Administration (NHTSA) issued on-line guidance to the following entities: law enforcement, emergency medical services, fire departments,³ towing and recovery operators and vehicle storage facilities,⁴ and vehicle owners/general public⁵ regarding potential EV battery damage, fire or flooding.

Since the NFPA initially developed its first responder best practices and training program, it has conducted additional research to update and refine them. For example, research identified improved firefighting procedures that involve elevating the side of the vehicle to permit application of water directly to the underside of the battery pack. Because firefighters can now better access the battery pack, the amount of time and water needed to extinguish and sufficiently cool the battery to permit transport can be significantly reduced.

R&D Will Improve Safety

As the number of EVs in the U.S. expands, NHTSA continues to evaluate standards and technologies that can further enhance EV safety.⁶ NHTSA's rulemaking agenda includes an update to FMVSS 305, *Electric-powered Vehicles; Electrolyte Spillage and Electrical Shock Protection*. That update will incorporate the requirements developed under the Global Technical Regulation (GTR) for Electric Vehicle Safety, which includes requirements to mitigate fire of the propulsion batteries during normal vehicle operations, charging, and post-crash. The update to FMVSS 305 will also extend these requirements to heavy vehicles because currently FMVSS does not apply to vehicles greater than 10,000 lbs.

Manufacturers and others also continue to research improving future battery technology. National Renewable Energy Laboratory (NREL) researchers have been awarded federal funding to research the best methods to de-risk up-and-coming battery technologies to support vehicle electrification across the United States.⁷

Additional Efforts to Support First Responders

There are additional activities underway to continue to improve information delivered to first responders. NREL has recently been funded by the DOE Vehicle Technologies Office to lead Phase 1 of a project related to prototype development of a mobile app intended to help support first responders dealing with incidents involving EVs. As described above, there are resources currently

² <https://www.nfpa.org/Training-and-Events/By-topic/Alternative-Fuel-Vehicle-Safety-Training/Tow-operator-training>

³ https://www.nhtsa.gov/sites/nhtsa.gov/files/interimguide_emergencyresponse_012012_v3.pdf

⁴ https://www.nhtsa.gov/sites/nhtsa.gov/files/811576-interimguidehev-hv-batt_towing-recovery-storage-v2.pdf

⁵ https://www.nhtsa.gov/sites/nhtsa.gov/files/811577-interimguidehev-hv-batt_owner-v2.pdf

⁶ <https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=2127-AM43>

⁷ <https://www.nrel.gov/news/program/2023/nrel-receives-34m-in-federal-funding-to-evaluate-safety-of-next-generation-electric-vehicle-batteries.html>

available to support first responders in this regard (i.e. OEM-created emergency response guides and rescue sheets available on NFPA website and OEM sites), NREL will investigate the potential for creating a mobile app with the intent to provide a more user friendly experience and potentially include 3-D graphics and/or real-time incident data.

Collaboration is Key

Given that best practices and guidelines continue to evolve, it's important that we work together to proliferate the latest NFPA best practices and training to the first responder and salvage communities. To assist in these efforts, our member companies are working in several ways. Our members make their vehicle specific Emergency Response Guides (ERG) available on the NFPA website.⁸ As recommended by the National Transportation Safety Board (NTSB H-20-032) our members are also improving their ERGs to include the full range of safety information and consistent format as specified in International Organization for Standardization (ISO) 17840.⁹ Many manufacturers have already completed these improvements to their ERGs.¹⁰ In addition, one of our members provided funding to NFPA to deliver its EV training for free to 12,000 volunteer and underserved fire departments throughout the U.S.

Safety is a top priority for our members, which is why they have been engaged in longstanding efforts to address fire risks for both conventionally fueled vehicles and EVs—including by working with consumers, the first responder community and other stakeholders at the local, national and international levels. Hopefully this information helps to contextualize some of the complex issues involved with this topic.

We appreciate the opportunity to provide the industry's perspective on this important matter. If you have any further questions, please contact me at jfisher@autosinnovate.org.

Sincerely,



Josh Fisher
Senior Director
Alliance for Automotive Innovation.

⁸ <https://www.nfpa.org/Training-and-Events/By-topic/Alternative-Fuel-Vehicle-Safety-Training/Emergency-Response-Guides>

⁹ <https://www.iso.org/standard/78461.html>

¹⁰ <https://www.usfa.fema.gov/blog/ig-062322.html>