Date of Hearing: April 28, 2025

ASSEMBLY COMMITTEE ON EMERGENCY MANAGEMENT
Rhodesia Ransom, Chair
AB 855 (Lackey) – As Amended March 4, 2025

SUBJECT: Vehicles: commercial electric vehicle safety

SUMMARY: Requires the California Office of Emergency Services, in consultation with the State Fire Marshal, California Highway Patrol, and others to develop an action plan for responding to commercial motor vehicle battery fires. Specifically, **this bill**:

1) Requires, on or before January 1, 2027, the California Office of Emergency Services (Cal OES) to develop and post on its internet website an action plan for responding to electric commercial motor vehicle battery fires.

2) Requires the action plan to include, at a minimum, best practices that address all of the following:
   (a) Assessing high-voltage hazards and fire risk following a collision.
   (b) Ensuring the safety of commercial drivers, first responders, other motorists, pedestrians, and surrounding communities.
   (c) Evaluating the health risks posed by toxic materials emitted into the air and establishing a safe and reasonable safety buffer to mitigate these risks.
   (d) Reducing wildfire risk.
   (e) Preventing structural damage to bridges and overpasses.
   (f) Achieving the most effective results using the least resources possible, including, but not limited to, water and air support resources.
   (g) Minimizing the duration of roadway closures.
   (h) Mitigating the risk of battery reignition.

3) Requires Cal OES, in developing the action plan to consult with relevant stakeholders, including, but not limited to, the Office of the State Fire Marshal, the Department of the California Highway Patrol, the Department of Transportation, electric truck manufacturers, and labor organizations.

4) Specifies that Cal OES, in developing the action plan, may also consult with any relevant state or federal agency.

EXISTING LAW:

1) Establishes the California Office of Emergency Services (Cal OES) within the office of the Governor and makes Cal OES responsible for the state's emergency and disaster response services for natural, technological, or manmade disasters and emergencies. (Gov. Code Section 8550)

2) Establishes the FIRESCOPE Program, under Cal OES, to maintain and enhance the efficiency and effectiveness of managing multiagency firefighting resources in responding to an incident, as specified. (Health and Safety Code Section 13071)

3) Establishes the State Fire Marshal (SFM), within the Department of Forestry and Fire Protection (Cal FIRE), to foster, promote and develop ways and means of protecting life and property against fire and panic. (Health and Safety Code Sections 13100-13100.1)

4) Requires Cal EPA to convene the Lithium-Ion Car Battery Recycling Advisory Group to review and advise the Legislature on policies pertaining to the recovery and recycling of lithium-ion batteries sold with motor vehicles in the state, and requires Cal EPA to appoint members to the group from specified departments, vocations, and organizations. (Public Resources Code Section 42450.5)

FISCAL EFFECT: Unknown. This bill has not been analyzed by a fiscal committee.

COMMENTS:

Purpose of the bill: According to the author, "As California leads the way in transitioning to electric vehicles, we have a responsibility to make sure safety measures evolve just as quickly. This bill ensures that first responders, drivers, and communities are protected from the serious risks posed by battery fires, while keeping our roads, economy, and drivers moving safely."

Equity impact: According to the author's staff, "This bill addresses safety gaps that disproportionately affect commercial truck drivers, first responders, and low-income communities located near highways. These groups face higher risks from battery fires due to toxic emissions, prolonged exposure, and lack of clear safety protocols. By requiring a statewide action plan, the bill ensures better protection for frontline workers and vulnerable communities, helping to reduce health risks, improve emergency response, and create a safer environment for all Californians."

Background: Electric vehicles rely on high-voltage batteries, which present dangers when involved in accidents or mechanical failures. Battery fires can be extremely difficult to extinguish, due to the toxic fumes that are released if water is put on the fires. These incidents pose severe risks not only to the commercial drivers involved but also to first responders, surrounding motorists, and nearby communities.

The problem is compounded by the absence of a coordinated statewide plan to address these fires, which has resulted in prolonged roadway closures, significant disruption to the flow of commerce, and increased danger of secondary incidents such as wildfires. Despite these dangers, no comprehensive strategy has been implemented to prepare for the safety risks associated with this transition. Without best practices for emergency response, local agencies are left to handle these complex incidents on their own, often without specialized knowledge.

United States Fire Administration's assessment of vehicle battery fires: According to the United States Fire Administration, "Firefighters should be cautious of potential chemical exposure during firefighting operations, and proper personal protective equipment should be donned. Firefighters need to adopt strategic cooling methods to manage these incidents effectively. Vehicle construction and design is different for battery electric vehicle/hybrid electric vehicle makes and models, so firefighters and other first responders should get Emergency Response Guides from original equipment manufacturers to inform critical actions such as safe and effective rescue and vehicle extrication. Familiarity with these unique designs is essential for swift and effective response."

Lithium-ion Batteries: Lithium-ion batteries are comprised of an anode, cathode, separator, electrolyte, and two current collectors (positive and negative). The anode and the cathode store the lithium. The electrolyte carries positively charged lithium ions from the anode to the cathode and vice versa through the separator. The movement of the lithium ions creates free electrons in the anode, which creates a charge at the positive current collector. The electrical current then flows from the current collector through a device being powered (cellphone, computer, etc.) to the negative current collector. The separator blocks the flow of electrons inside the battery.

Compared to other high-quality rechargeable battery technologies (nickel-cadmium, nickel-metal-hydride, or lead-acid), lithium batteries have a number of advantages. They have one of the highest energy densities of any commercial battery technology, approaching 300 watt-hours per kilogram (Wh/kg) compared to roughly 75 Wh/kg for alternative technologies. High energy densities and long lifespans have made lithium-ion batteries the market leader in portable electronic devices and electrified transportation, including electric vehicles and jets.

Risk of Thermal Runaway: One of the primary risks related to lithium-ion batteries is thermal runaway. Thermal runaway is a phenomenon in which the lithium-ion cell enters an uncontrollable, self-heating state. Thermal runaway can result in extremely high temperatures, violent cell venting, smoke, and fire. Faults in a lithium-ion cell can result in a thermal runaway, and these faults can be caused by internal failure or external conditions. Lithium-ion battery fires and explosions are triggered by the thermal runaway reactions inside the cell and, when stored near or next to another battery or batteries, can set off a chain reaction, making an already tough fire to fight even worse. When they reach thermal runaway, lithium-ion battery fires can burn for hours, or even days, until all the flammable chemicals in the battery have been consumed by the combustion reaction.

One such example occurred in Rancho Cordova in June of 2022, when a Tesla Model S, which had been badly damaged in a collision, was sitting in a wrecking yard and suddenly erupted in flames. When firefighters arrived, the car was engulfed, according to the Sacramento Metropolitan Fire District, "[e]very time the blaze was momentarily extinguished, the car's battery compartment reignited." Eventually, the firefighters used a tractor to create a pit in the dirt, were able to get the car inside, and then filled the hole with water. That allowed the firefighters to suffocate the battery pack and ultimately extinguish the fire, which burned hotter than 3,000 degrees and took more than an hour and 4,500 gallons of water to extinguish.

Lithium-ion batteries and PFAS: Lithium-ion batteries are used globally as a key component of clean and sustainable energy infrastructure, and emerging Lithoum-ion battery technologies have incorporated a class of per- and polyfluoroalkyl substances (PFAS) known as bis-perfluoroalkyl sulfonimides (bis-FASIs). PFAS are recognized internationally as recalcitrant contaminants, a subset of which are known to be mobile and toxic, but little is known about the environmental impacts of bis-FASIs released during Lithium-ion battery manufacture, use, and disposal.

Protecting Firefighters from Adverse Substances Act (PFAS Act): The PFAS Act directs the United States Fire Administrator to develop guidance for firefighters and other emergency response personnel on best practices to protect them from exposure to PFAS and to limit and prevent the release of PFAS into the environment. The PFAS Act also requires the Department of Homeland Security, in consultation with the U.S. Environmental Protection Agency, the Centers for Disease Control and Prevention/National Institute for Occupational Safety & Health (NIOSH), and the heads of other relevant agencies, to:

1. Develop and publish guidance for firefighters on training, education programs and best practices;
2. Make available a curriculum designed to reduce and eliminate exposure, prevent the release of PFAS into the environment, and educate firefighters and emergency response personnel on PFAS alternatives; and
3. Create a public repository on tools and best practices to reduce, limit, and prevent the release of and exposure to PFAS.

Growth of Battery Storage in California and Projected Need: Over the past several years, the deployment of battery storage systems has grown significantly in California, growing from 500 megawatts (MW) in 2019 to over 13,300 MW statewide in 2024. According to the CPUC, "Battery storage systems are one of the key technologies California relies on to enhance reliability and reduce dependency on polluting fossil fuel plants. Battery storage systems soak up clean energy in the daytime when the sun is shining, store that electricity, and then export it to the grid in the evening hours when the sun is down. In 2024, California made historic progress in clean energy deployment. The state brought more than 7,000 MW online—the largest amount in a single year in California's history. This includes over 4,000 MW of new battery storage. California's current installed battery storage capacity is over 20 percent of California's peak demand. The state's projected need for battery storage capacity is estimated at 52,000 MW by 2045."

Arguments in support: The California Association of Environmental Health Administrators (CAEHA) writes, "California has experienced a growing number of electric car battery fires which tax the resources of local government and emergency services and put the public's health at risk. Local environmental health programs play a key role in lithium-ion battery disposal and recycling as well in the clean-up of battery fires. Our programs recognize the growing burden that battery fires place on local jurisdictions. AB 855 will direct the Office of Emergency Services to provide a much-needed action plan for the prevention, management and clean-up of car battery fires at the local level."

The California Electric Transportation Coalition (CalETC) writes, "This bill takes an important step toward improving electric commercial motor vehicle (ECMV) battery fire response by requiring the California Governor's Office of Emergency Services (CalOES) to develop a statewide plan in coordination with key stakeholders. As California transitions into a zero-emission transportation sector, addressing safety concerns related to ECMV battery fires is essential."

Related legislation: AB 588 (Patel) of the Session. Would require the State Fire Marshal to convene a lithium battery working group, composed of specified members selected by the State Fire Marshal, to identify those safety issues associated with lithium batteries and associated charging infrastructure installed or used near or within residential or commercial occupancies, as specified, and to recommend potential solutions that will enhance building safety for the State Fire Marshal and other impacted agencies to consider, as provided. (Set to be heard by the Assembly Emergency Management Committee on April 28, 2025)

AB 696 (Ransom) Requires the California Environmental Protection Agency to convene a Lithium-Ion Car battery Advisory Group to review and advise the Legislature on policies on handling and disposing of lithium-ion vehicle batteries. (Pending in the Assembly Committee on Appropriations)

AB 841 (Patel) Requires the State Fire Marshal to develop, in consultation with the Division of Occupational Safety and Health, a working group to make recommendations regarding personal protective equipment used in responding to lithium-ion battery fires, as specified. (Pending in the Assembly Committee on Appropriations)

AB 1285 (Committee on Emergency Management) Requires the State Fire Marshal, in consultation with the Office of Emergency Services, to develop fire prevention, response, and recovery measures for utility grade lithium-ion battery storage facilities, as specified. (Pending in the Assembly Committee on Appropriations)

REGISTERED SUPPORT / OPPOSITION:

Support

California Association of Environmental Health Administrators (CAEHA)
California Electric Transportation Coalition
California Tow Truck Association

Opposition

None on file.

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