

	Department of Public Safety	
	Standard Operating Guidelines	
	Subject:	Response to EV and Alternative Fuel Vehicle Fires
	Section:	Operations
	Guideline Number:	315
	Effective Date:	December 22, 2025
	Revised Date:	
Signature of Approval:	Charles R. Pruitt Director of Public Safety 	

PURPOSE

Define guidelines for effective response, mitigation, and safe operational procedures for electrical vehicle fires.

SCOPE

This policy shall apply to Accomack County Department of Public Safety personnel.

DEFINITIONS

Hybrid Vehicle: Hybrid vehicles are vehicles that use both batteries and another source of flammable or combustible liquid or gas the most common being gasoline.

Fully Electric Vehicles: A fully electric vehicle is one that uses only battery power to operate.

LPG Vehicles: Vehicles that use Liquid Petroleum Gas to operate.

LNG Vehicles: Vehicles that use Liquefied Natural Gas to operate.

CNG Vehicles: Vehicles that use Compressed Natural Gas to operate.

Thermal Runaway: Lithium-ion (Li-ion) battery thermal runaway occurs when a cell, or area within the cell, achieves elevated temperatures due to thermal and/or mechanical damage, internal/external short-circuiting, or electrochemical abuse. This elevated temperature releases energy which in turn further increases the temperature. It is a phenomenon known as a positive feedback loop in which the lithium-ion cell enters an uncontrollable, self-heating state.

BLEVE: Boiling Liquid Vapor Explosion. This happens as heat and pressure build-up inside of a pressurized container, containing both gas and liquid, causing the liquid portion to boil creating more pressure until the container fails, usually in the form of an explosion. These are often caused by damaged, faulty or missing pressure relief devices.

Pressure Release Device: A device found on pressurized containers that are designed to release pressure when the internal pressures exceed the tanks limits.

Blow Torch Effect: The ignition of gases being released through a pressure release device, often producing a large flame. The flame can be long lasting while the gas in the container burns off.

GUIDELINES

A. LPG/LNG/CNG Vehicle Types

1. Properly identify the type of fuel being used LPG, LNG or CNG which should be identified by place cards on the vehicle.
2. Determine if the fuel container is involved in the fire. If not use standard fire fighting techniques to extinguish the fire. Once extinguished ensure all fuel lines are turn off appropriately.
3. If the fuel system is involved or affected by the fire use the following guidelines:
 - a. Full PPE and SCBA shall be worn until HAZMAT clears the removal of the SCBA.
 - b. Establish a safety perimeter of 80 to 100 feet around the vehicle per NFPA recommendations.
 - c. Set the parking brake and chock the wheels if safe to do so.
 - d. Alert for HAZMAT response for detection and monitoring as well as leak control.
 - e. Eliminate ignition sources by shutting off the vehicle's ignition and disconnecting the battery(ies), extinguishing flames, and turning off unnecessary electronics.
 - f. Approach the vehicle from a 45-degree angle, as vehicle movement or projectiles are a potential hazard.
 - g. If safe to do so, attempt to close the manual fuel shut-off valve at the tank.
 - h. Provide ventilation by opening door and/or windows to allow for accumulated gases to escape. This especially important for CNG vehicles.
4. LPG and LNG fires:
 - a. LPG (propane) and LNG (methane) are liquefied gases stored in cylinders and when heat is applied excessive pressure build-up in the cylinder will open the relief valve. If the valve opens and is venting with or without ignition of the gases it should be allowed to continue to vent until the pressure normalizes.
 - b. The engine crew shall keep the cylinder cool by using a hand line or set up a portable monitor and/or deck gun if the area deemed is unsafe. Not cooling the tank could result in a BLEVE even if the cylinder is venting properly.
 - c. A fire can originate with a gasoline leak and may eventually involve both fuels. A BASIC PRINCIPLE IS THAT A PROPANE FIRE SHOULD NOT BE EXTINGUISHED EXCEPT BY SHUTTING OFF THE FLOW OF ESCAPING PROPANE. It is important that we extinguish the gasoline fire by using foam, dry chemical or water spray and at the same time COOLING THE PROPANE CYLINDER WITH HOSE STREAMS TO PREVENT A BLEVE.

5. CNG fires:

- a. CNG is stored in pressurized cylinders up to 3,000 PSI. They are protected with a fusible plug pressure relief device that will open when exposed to heat or fire. CNG cylinders are subject to failure but not subject to BLEVE's. Only extinguish these fires by stopping the flow of gas, if the flow cannot be stopped let it burn. DO NOT APPLY WATER TO CNG cylinders exposed to fire as this may cool the pressure relief device resulting in it not activating. This can cause a catastrophic cylinder failure (high Pressure gas rupture), turning the cylinder into a projectile.
- b. The HAZMAT team shall use monitoring equipment to ensure the safety of those around the incident.

B. All Electric Vehicle Types

1. Wear full PPE and SCBA on all vehicle fires.
2. Identify the type and model of vehicle if possible and locate where the batteries are and how to best shut down the vehicle if possible. This information can be found at nhtsa.gov/ERG
3. Block all traffic immediately and call for HAZMAT response. Additional units maybe necessary to assist with traffic control if this is on Lankford Highway.
4. Conduct a 360-degree scene size-up with a thermal imaging camera (TIC) to locate any heat patterns or fire extension near the battery case, which are often located between the frame rails or in the back seat area. Confirm the power source (i.e. EV, LPG, LNG, or CNG)
5. Establish command and designate a safety officer to keep an eye on traffic and the fire.
6. Determine tactical priorities: Fire, Extrication, or victim care.
7. Approach the vehicle from a 45-degree angle to avoid any potential projectiles and chock and/or crib the vehicle for stabilization.
8. Power down the EV from the information in the ERG above. Remember there are 600- and 12-volt systems that both need to be de-energized.
9. Unless there are exposure issues you shall let the vehicle burn. This is due to the amount of water required (5,000-30,000 gallons or more) to extinguish the fire and the risk of contaminated water run-off to the environment.
10. Call for the air trailer as this will be an extended-on-scene time and SCBA should be worn at all times. Until the HAZMAT team has cleared the area for any toxic gases.
11. Share with the tow company that this an EV with the possibility of a rekindle and the vehicle should be stored at least 50 feet from any other vehicles, buildings, or other combustibles.
12. Perform gross decontamination on the scene and then have all PPE thoroughly decontaminated in a washer-extractor at the training center or at Painter VFC before reuse.
13. An EV that has been submerged in salt water shall be monitored for any signs of thermal runaway using a TIC. Notify the tow company to follow the same 50' radius from combustibles due to the high likely hood of salt water intrusion causing thermal runaway.