

ELECTRIC VEHICLE SAFETY



Introduction

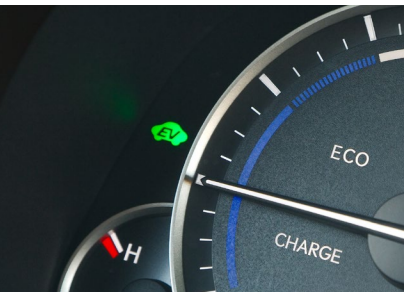
Over the last two decades, electric vehicles (EVs) have grown in popularity and use, and this trend is projected to continue as these vehicles become more widely available. EV crashes present unique challenges to first responders and require special considerations during response.

Identifying EVs

EVs will include indicators such as badges, vehicle instruments, warning labels and orange cables.*



Reference the **National Fire Protection Agency Emergency Response Guides for Alternative Fuel Vehicles** to find vehicle-specific information for fail-safe switches and other vital information



**This list is not exhaustive, and indicators will vary based on vehicle make and model*

Key Considerations

All responders should consider the following when responding to emergency situations involving EVs:

- Advise dispatch and incoming responders that the crash involves an EV.
- Treat as a hazardous material incident by staying uphill/upwind to avoid breathing toxic fumes.
- Chock the tires, place vehicle in park and set parking brake.
- Ensure the ignition is off and move keys at least 20 feet away from the vehicle.
- Be on alert for delayed fire or explosion.



Batteries & Cables

- Disconnect the 12-volt battery.
- **Where is the battery?** Use the National Fire Protection Agency Emergency Response Guides for Alternative Fuel Vehicles linked above to find vehicle-specific response information.
- Never cut orange high voltage (HV), or yellow or blue medium voltage (MV) cabling.
- Never touch damaged or submerged cables or components of either type.

Source: evsafetytraining.org

Emergency Medical Services Considerations

- Stop and evaluate the risk for patients (e.g., vehicle fire) and yourself (e.g., shock hazards) – are there immediate extrication needs? What needs to be done to protect yourself during extrication?
- Discharge the system with the EV's fail-safe switch before other response activities.
- Do not manipulate the EV with extrication equipment – this is a shock hazard.
- Do not approach cutting the battery cable like you would on a regular car.
- Wear heavy gloves and have as much electrical insulation as possible.

Tow Considerations

- Tow with a flatbed as towing with drive wheels on the ground may cause an electrical fire.
- Be aware that batteries may catch fire even days after a crash.
- Do not store EVs indoors or within 50 feet of a structure.

Training & Resources

National Highway Traffic Safety Administration
[nhtsa.gov](https://www.nhtsa.gov)

Electric Vehicle Safety Training
[evsafetytraining.org](https://www.evsafetytraining.org)

The Electric Drive Transportation Association
[electricdrive.org](https://www.electricdrive.org)

The Alternative Fuels and Advanced Vehicles Data Center
afdc.energy.gov/afdc

The National Alternative Fuels Training Consortium
naftc.wvu.edu/courses-and-workshops

Tesla First Responder Information
[tesla.com/firstresponders](https://www.tesla.com/firstresponders)

Fire Considerations

- EV fires require considerably more water to extinguish and can reignite without warning.
- Establish water supply to support long-term hose operations.
- Have a charged hose line ready even if there isn't a fire when you arrive on scene.
- Use a hose line to extinguish fires and to keep HV batteries cool; stay alert and consider CO extinguishers because there is a potential for electricity to follow the water stream.
- NEVER attempt to penetrate an HV battery or its casing to apply water.



Photo courtesy of Serenity Towing

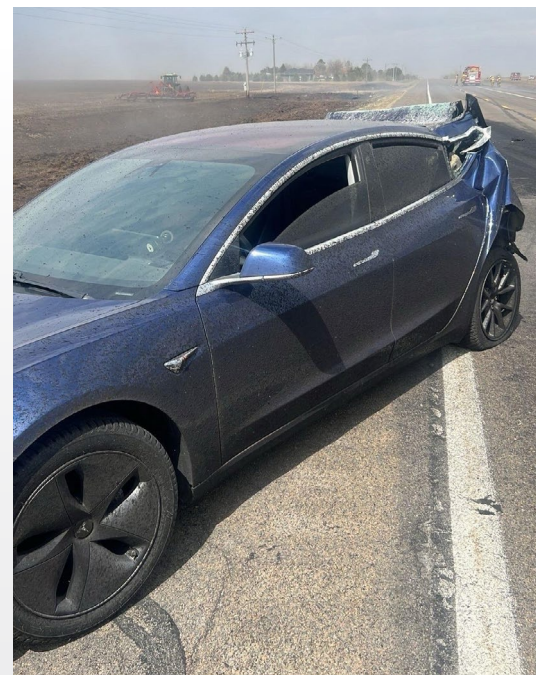


Photo courtesy of Lone Tree Towing