



Hurricane Preparedness Checklist for Lithium-Ion Batteries and Electric Vehicles



Why does it matter?

Lithium-ion batteries power many electronic devices and vehicles, including electric cars, E-bikes, golf carts, scooters, and laptops. However, these batteries can cause fires or even explode if they malfunction, are damaged, or are submerged in water. Fires caused by lithium-ion batteries can pose a significant risk for users and first responders as they are difficult to extinguish.

When collisions or floodwaters damage a lithium-ion battery, a short circuit can cause the cells to discharge energy and heat up. This leads to a condition called “thermal runaway,” in which the heat moves from one cell to the next, causing the cells to ignite and burn in an uncontrollable, self-heating state.

When a lithium-ion battery is underwater, contaminants or saltwater can cause short-circuiting. Damaged lithium-ion batteries can also short-circuit after a motor vehicle collision or when moved or loaded onto a tow truck.

Hurricane Ian raised awareness of EV battery issues when it damaged some electric vehicles. Those submerged in saltwater resulted in long-duration, high-voltage electrical battery fires, and several parked in garages or near buildings caused the buildings to ignite as well.

Consider and prepare for the potential dangers of lithium-ion battery-powered vehicles and other equipment, especially before disaster strikes.

Where do I start?

Follow all Lithium-Ion Battery Powered Vehicle Safety and Storage Tips

- Follow the manufacturer’s guidelines to charge your electric vehicle and use only charging devices certified by a nationally recognized testing laboratory.
- Stop using the vehicle and notify 9-1-1 immediately if you notice an odor, color or shape change, increased heat, leaking, smoke, or odd noises from the lithium-ion battery-powered vehicle. Be aware that a lithium-ion battery could be damaged without immediately showing these signs.
- If you suspect your lithium-ion battery-powered vehicle has been exposed to or damaged by water, salt water, or other conditions, do not attempt to go near the vehicle, charge or drive the vehicle, or store the vehicle indoors or near structures.

- Notify 9-1-1 immediately if you suspect your electric vehicle has battery damage.
- According to the Florida Department of Environmental Protection:
 - Electric vehicles with suspected battery damage should be towed and inspected by the vehicle dealer or a mechanic certified for hybrids or EVs before use.
 - The recommended distance away from EVs with damaged lithium batteries is 50 feet.
 - If an EV has sustained damage and cannot be towed, request assistance from emergency responders to disconnect the battery pack from the vehicle safely.
 - Damaged lithium-ion batteries can heat up uncontrollably, resulting in fires, off-gassing, and explosions.
- Damaged lithium-ion batteries can pose a risk after the initial damage; some were observed to have reignited days after the original damage.

More Resources

NFPA Lithium-Ion Battery Safety <https://www.nfpa.org/-/media/Files/Public-Education/Resources/Safety-tip-sheets/LithiumIonBatterySafety.ashx>

Electric Vehicle Charging Safety Tips, <https://www.usfa.fema.gov/downloads/pdf/publications/electric-vehicle-safety-handout.pdf>

Post-Storm Guidance: How to Handle Electric Vehicle Lithium-Ion Batteries, <https://floridadep.gov/waste/waste/documents/post-storm-guidance-how-handle-electric-vehicle-lithium-ion-batteries>

Considerations for Fire Service Response to Residential Battery Energy Storage System Incidents, https://www.iaff.org/wpcontent/uploads/IAFF_DOE_ResidentialESSConsiderations_Final.pdf