

# LITHIUM-ION BATTERY FIRES

## INITIAL ACTIONS

- Identify and announce the presence or potential of a Lithium-ion fire in thermal runaway
  - Establish command and order adequate resources
  - All personnel within 75' of smoke related to a Lithium-ion fire should be in full structural PPE on air with all areas of skin covered
  - Apparatus staged at or beyond 150'
  - Initial evacuation distance of 330' ERG guide 147
  - Remove and treat any victims in proximity to fire or smoke  
(Consider CYANOKIT use)
  - If battery is connected to charger or energy source, isolate power
  - Initiate suppression tactic for battery and fire type
  - Consider run off and atmosphere monitoring
- \*Water may be directed onto battery fire, as best action for protecting exposures\*
  - Consider use of EV blanket
  - Consider options to remove vehicle from building (i.e. tow cable) with aid of a protection line
  - Contingency planning should be made for inability to fully extinguish fire
- Building fire involving several batteries- Fire may exceed ability to control, in the event of defensive fire conditions:
    - Stop suppression efforts
    - Initiate large scale down wind evacuations

### \*\*\*SPECIAL CONSIDERATION\*\*\*

EVs in residential garages pose a **serious risk of explosion and firefighter injury**. If a white vapor is noted coming from an enclosed garage, do not use rotary saws on metal garage doors due to the ignition potential created from sparks. Efforts should be made to identify an alternative access, such as a man door.

## SUPPRESSION TACTICS

**PERSONAL or MOBILITY DEVICES-** if battery involved and in thermal runaway

- Exterior fire with no exposures-  
Allow fire to burn
- Fire inside a building-  
Attempt to control fire with large amounts of water. If battery fire is controlled, with the aid of a protection line (due to the potential for re-ignition), remove the battery from the building and place away from any exposure
- Consider use of Cellblock for battery containment  
(Requested through CRR HMS or Haz Mat)

### BATTERY ENERGY STORAGE SYSTEMS-

Fires in a **Lithium-ion Battery ESS** exceed ability to control and are specially designed to **self-contain fire**

- **Do not** attempt to enter ESS compartment
  - Maintain minimum distance of 50'
- Make exterior attempts to protect exposures
- Defensive fire conditions:
  - Stop suppression efforts
  - Initiate large scale down wind evacuations

### ELECTRIC VEHICLES or RESIDENTIAL WALL BATTERIES-

If battery is uninvolved

- Use normal suppression tactic

If battery involved and in thermal runaway

- Exterior fire with no exposures-  
Allow fire to burn
- Exterior fire with exposures-  
Protect exposures and allow battery involved in fire to burn
- Fire inside a building-
  - Hose lines directed to protect exposures within the building, not to extinguish the battery fire

## AFTER INCIDENT ACTIONS

- Removal/disposal of battery by CRR HMS
- Gross decon and turnout removal to minimize skin contact
- For EV or larger fires, double bag turnouts and send for commercial cleaning
- For EV or larger fires, blood draws for exposed members through Quest Diagnostics
- Complete exposure reporting

## ADDITIONAL RESOURCES

- Haz Mat Team(s)
- Community Risk Reduction HMS
- APD

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