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Temporary Electric Vehicle Fire Safety Guideline for Trade Shows in Atlantic City, NJ

This guideline provides practical steps to safely display electric vehicles (EVs) in indoor assembly rooms, like ballrooms, during trade shows in Atlantic City, NJ. It follows the New Jersey Uniform Fire Code, National Fire Protection Association (NFPA) standards, and best practices from agencies like Underwriters Laboratories (UL). It also addresses the unique fire risks of lithium-ion batteries. Always check with the Atlantic City Fire Department for local rules.

1. Turn Off the Batteries

- **What to Do**: Disconnect the EV's high-voltage battery to ensure the vehicle can't start accidentally.
- **Why It Matters**: This prevents electrical faults or unintended movement that could cause a fire. The NJ Fire Code, Section 314.4, allows battery disconnection for indoor displays unless the fire official requires otherwise.
- **How to Do It**: Have a qualified technician disconnect the battery following the manufacturer's instructions. Confirm it's disconnected before moving the EV to the display area.
- **Atlantic City Note**: Verify with the manufacturer if they require any specific disconnection procedures.

2. Keep Batteries at a Low Charge

- **What to Do**: Drain the EV's battery to below 20% charge before displaying it.
- **Why It Matters**: Lower charge levels reduce the risk of thermal runaway, where lithium-ion batteries overheat and catch fire. This is a best practice, as high charge levels increase fire risks.
- **How to Do It**: Use manufacturer-approved equipment to safely discharge the battery. Document the charge level for fire officials to review.
- **Atlantic City Note**

A. Manufacturer Requirements

- Check with the manufacturer to confirm specific charge level requirements for the battery.

B. Documentation for Fire Official

To demonstrate that the battery is at 20% State of Charge (SoC) or below for the permit inspection, compile the one of the following:

B1. Signed Statement from a Qualified Technician

- Confirm the battery is disconnected and drained to below 20% charge.
- Include the technician's name, qualifications, contact information, inspection date, and a declaration that the State of Charge (SoC) is below 20%

B2. Supporting Photos or BMS Reports

- Provide timestamped photos of the EV's dashboard displaying the SoC below 20%. Ensure photos are clear and include vehicle identification.
- If available, include a Battery Management System (BMS) report from the EV for a digital record.

Permit

- Submit the technician's statement and or photos/BMS reports as part of the special event permit fire safety inspection to the Atlantic City Fire Department

3. Have Fire Extinguishers Ready

- **What to Do**: Place at least one 2A:20B:C fire extinguisher within 50 feet of the display area.
- **Why It Matters**: This extinguisher type can handle fires involving ordinary materials, flammable liquids, and electrical components, which are risks with EVs.
- **How to Do It**: Ensure extinguishers are clearly marked, accessible, and maintained per NFPA 10 standards. Consider adding more for larger displays.
- **Atlantic City Note**: The fire department may require additional extinguishers based on the display size.

4. Use a Sprinklered Area

- **What to Do**: Set up the display in a part of the building with a working sprinkler system.
- **Why It Matters**: Sprinklers are required in most assembly spaces like ballrooms. They help control fires, especially intense ones from EV batteries.
- **How to Do It**: Confirm with the venue that the sprinkler system is active and covers the display area.
- **Atlantic City Note**: Ensure compliance with local fire codes, as Atlantic City enforces the NJ Uniform Construction Code.

5. Keep Exits Clear

- **What to Do**: Ensure all exits, hallways, and fire escape routes are free of obstructions.
- **Why It Matters**: Clear exits are critical for safe evacuation. This is especially important in crowded trade show settings.
- **How to Do It:** Position EVs to ensure a minimum 15-foot clearance around exits and a 10-foot clearance between vehicles. Monitor regularly throughout the event to confirm pathways remain unobstructed.
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- **Atlantic City Note**: The fire department may inspect exit paths during permitting.

6. No Charging, Operating, or Repairs Inside

- **What to Do**: Do not charge, fuel, operate, or repair EVs inside the building.
- **Why It Matters**: These activities can create electrical or fire hazards. Charging, in particular, increases risks with lithium-ion batteries.
- **How to Do It**: Post signs prohibiting these activities and monitor the display area. Charge EVs outside using certified equipment if needed.
- **Atlantic City Note**: A fire watch must be maintained at all times while the EV is indoors.

7. Get a Permit

- **What to Do**: Obtain a Type 7 permit from the Atlantic City Fire Department before the event.
- **Why It Matters**: The NJ Uniform Fire Code (NJAC §5:70) and Atlantic City Firesafety Code (Chapter 128) require permits. Type 7 – Special event permits ensure compliance with safety rules.
- **How to Do It**: Submit a permit application at least 5 days before the event, including details of the display setup and safety measures. Be prepared for possible reinspection fees ($50 for re-inspections, per Chapter 128).
- **Atlantic City Note**: Late applications may incur a $200 fee, and outstanding city fees could lead to permit denial.

8. Plan for Emergencies and Train Staff

- **What to Do**: Create an evacuation plan for the display area and train staff on EV fire risks.
- **Why It Matters**: EV battery fires (thermal runaway) can be intense and hard to extinguish. Staff need to know how to respond and evacuate safely, as recommended by NFPA and the U.S. Fire Administration.
- **How to Do It**: Develop a plan with clear exit routes and assembly points. Train staff to:
    - Recognize battery fire signs (smoke, unusual smells).
    - Use fire extinguishers (per NFPA 10).
    - Guide attendees during evacuation.
    - Contact the fire department.
- **Atlantic City Note**: The fire department may require a copy of your evacuation plan during permitting.

9. Handle Lithium-Ion Battery Risks

- **What to Do**: Take extra precautions for lithium-ion batteries, which can cause intense fires.
- **Why It Matters**: Lithium-ion batteries can enter thermal runaway, leading to fires that are difficult to control. NFPA and UL 2272 standards emphasize prevention and preparedness.
- **How to Do It**:
  - Keep EVs away from flammable materials.
  - Ensure good ventilation in the display area.
  - Train staff on battery fire risks and response.
  - Consider having Class D fire suppression agents for metal fires, though 2A:20B:C extinguishers are usually sufficient.
- **Atlantic City Note**: Check with the fire department for any specific battery safety requirements.

Compliance and Local Considerations

- **Local Verification**: The Atlantic City Fire Department enforces the NJ Uniform Fire Code and local ordinances. Reach out to ensure compliance with any additional rules for indoor EV displays.

Table: Summary of Safety Measures

Safety Step	Action	Why It's Important	Atlantic City Note
Turn Off Batteries	Disconnect high-voltage battery	Prevents electrical faults or movement	Verify with the manufacturer if they require any specific disconnection procedures.
Low Battery Charge	Drain to <20%	Reduces thermal runaway risk	Check for specific charge level rules - Documentation for Fire Official
Fire Extinguishers	Place 2A:20B:C within 50 feet	Handles electrical and other fires	May need more for larger displays
Sprinklered Area	Use area with sprinklers	Controls fires in large spaces	Verify with venue and fire department
Clear Exits	Keep exits unobstructed	Ensures safe evacuation	Inspected during permitting
No Indoor Operations	Prohibit charging, repairs	Avoids fire hazards	Fire Watch Shall be implemented
Permit	Obtain from fire department	Ensures compliance	Submit 5 days early; fees may apply
Emergency Plan	Create plan, train staff	Prepares for EV fire risks	May need to share plan with fire department
Battery Precautions	Avoid flammables, train staff	Manages thermal runaway risks	Check for specific battery rules

Recommendations for Next Steps

- **Contact the Atlantic City Fire Department to confirm permit requirements and any local rules for EV displays as research continues.**
- **Consult EV manufacturers for model-specific battery safety protocols, especially for disconnection and charge levels.**
- **Consider advanced fire suppression options for lithium-ion batteries if recommended by the fire department, though standard extinguishers should suffice for displays.**

This guideline ensures a safe EV display in Atlantic City while addressing lithium-ion battery risks. Always verify with local authorities for the latest requirements.