



Bulletin ID	2022-GCR-01
Date Issued	April 22, 2022
Motorsport Discipline	Race
Subject	Accommodation of Electric Vehicles in the General Competition Regulations

Background

CACC Regulatory Bulletin 2022-GCR-01 provides safety regulations to allow electric vehicles to compete in the CACC Race Discipline.

Regulation

23. Electric Vehicles

Electric Vehicles may compete, as allowed by class rules, as long as they meet the requirements of Section 23

Production Electric Vehicles that meet the Section 18 Race Regulations for Improved Production vehicles are considered to have met the requirements of Section 23.2.

23.1 General

A. Master Switch. There must be a clearly marked switch, accessible by both the driver and safety workers, which will de-energize both the vehicle high and low voltage systems. This switch shall meet the requirements of Section 20.4.D. For Production Vehicles, this switch must only interrupt the low voltage battery feed to accomplish the shutdown.

B. High Voltage System Energized. Whenever the High Voltage system is energized, one or more flashing amber lights must be activated. These lights must be visible in daylight and must be placed so that they are visible from all sides of the vehicle.

C. Vehicle Powertrain Identifier. Electric Vehicles must be marked on both sides of the vehicle with the orange electrified diamond per ISO 17840-4. One symbol must be placed on each side of the vehicle in front of or behind vehicle number and must be a minimum of 6" tall.

D. Fire Suppression. A Fire suppression system meeting CACC regulations for Onboard Fire Suppression Systems must be installed. Nozzles should be directed into the driver's compartment between the battery pack and driver. If the Battery Pack is of a custom design, additional nozzles should be directed into the battery pack enclosure.

E. Charging.

1. Electric vehicles may not be charged in the pre-grid or hot pits.
2. Onboard chargers must utilize a commercially available Electric Vehicle Supply Equipment (EVSE) to charge from a 120/240VAC electrical supply.
3. Off-vehicle charging systems may be utilized as long as they are galvanically isolated between the AC and DC outputs and the charger enclosure is connected to Earth Ground of the AC input and Vehicle Chassis Ground. A crew member must continually monitor the charging operation.

23.2 Modified Electric Vehicles

Other than Production Electric Vehicles that meet Section 18 of the Race Regulations, all other Electric Vehicles must meet the requirements of Section 23.2.

A. Fuse. An appropriate sized fuse must be installed on the positive lead of the main battery pack before the Main Contactor and Service Disconnect

B. Contactors. Contactors must be installed on both the positive and negative leads of the battery pack to allow the control system, or Master Switch, to completely disconnect the battery.

C. Service Disconnect . In addition to the Master Switch, there must be a Service Disconnect which mechanically breaks the positive high voltage lead from the battery. The Service Disconnect must be clearly marked and must be accessible to the driver, crew, and safety workers.

D. High Voltage Wiring & Contacts. Visible high voltage wiring must be orange in color. No HV potential shall be exposed anywhere on the vehicle under normal operation. Any components with high voltage contacts, or devices inside, shall have ISO 7010 Electrical Warning decals attached.

E. Battery Pack Design & Mounting

1. Custom Battery Packs, or OEM battery packs that have been modified in any way, may only be installed in vehicles with a roll cage. The complete battery pack must be inside the roll structure. Battery packs must utilize commercially available cells/modules. It is prohibited to modify individual cells except for the tab connections to enable connection. Individual cells/modules must be securely fastened together and mounted in a protective enclosure. The enclosure mounting system must be able to contain the battery pack in a vehicle crash, and the cell/module retaining system should prevent shorting of any High Voltage components.

2. The battery pack enclosure should be constructed of aluminum, steel, or other materials which will not melt/combust in the event of a battery fire. Composite sandwich materials are acceptable if at least one of the layers is aluminum or steel.

3. The bottom of the battery pack shall be protected by steel, alloy aluminum, or composite material to prevent penetration damage by foreign objects.

F. Battery Management System (BMS). A commercially available BMS must be installed to monitor battery pack operating conditions. As a minimum, it needs to monitor individual cell voltages and the battery pack temperature. The BMS must alert the driver/crew if any cell drops below the minimum cell limit or exceeds the maximum cell limit, or the pack temperature rises above the safe operating temperature specified by the manufacturer of the battery cell. During charging, the BMS must automatically shut-off charging when the battery pack is fully charged..

G. Voltage Isolation. The battery pack, and all high voltage components, must be electrically isolated from the chassis ground at all times. A minimum of 500 ohms isolation per volt is required. The Battery Management System, or a separate Isolation Monitor, must alert the driver/crew of any isolation problem during vehicle operation or charging.

H. Motors and Inverters. Only commercially available production motors and inverters are permitted. Re-purposed OEM motors and power electronics may be utilized.