



NHTSA

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

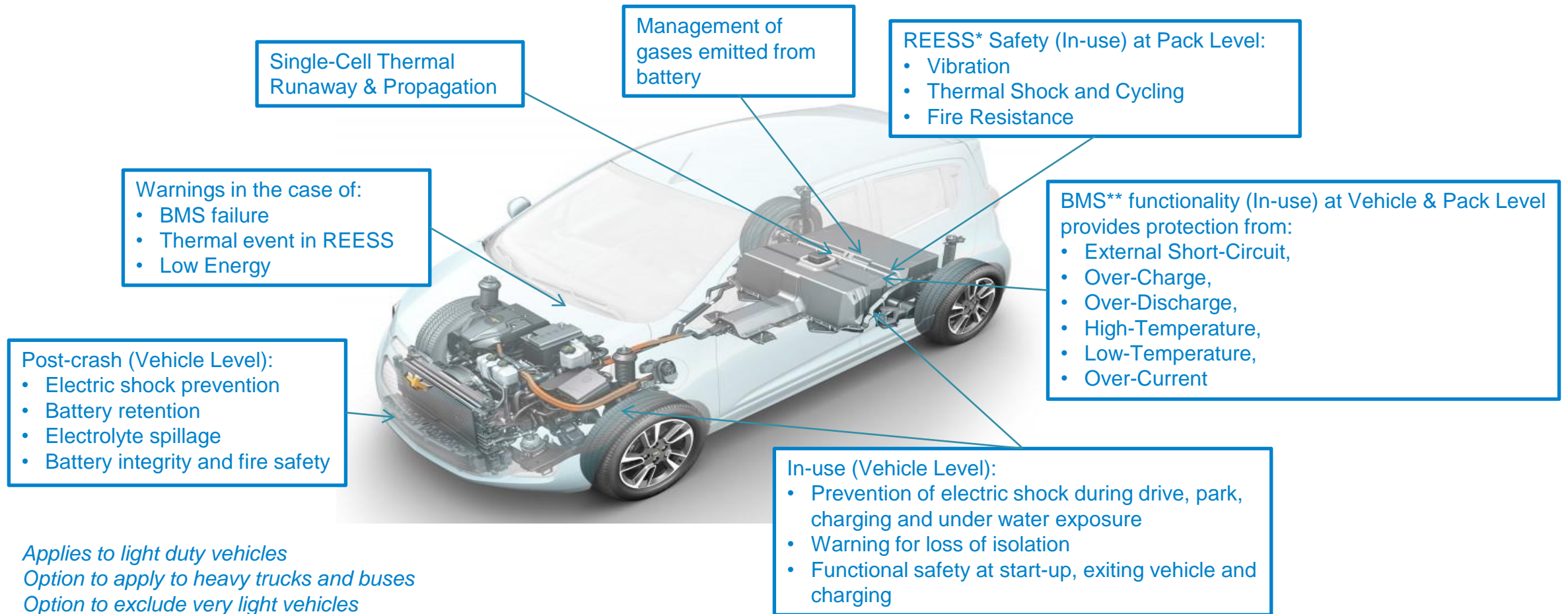
Global Technical Regulation (GTR) No. 20 & FMVSS No. 305

January 2023

Global Technical Regulation (GTR) No. 20

- In 2012, the United Nations World Forum for Harmonization of Vehicle Regulations (WP.29) established UN GTR No. 20 on Electric Vehicle Safety.
- **Objective** – To develop performance-based requirements which address potential safety risks from high voltage systems and electrical components.

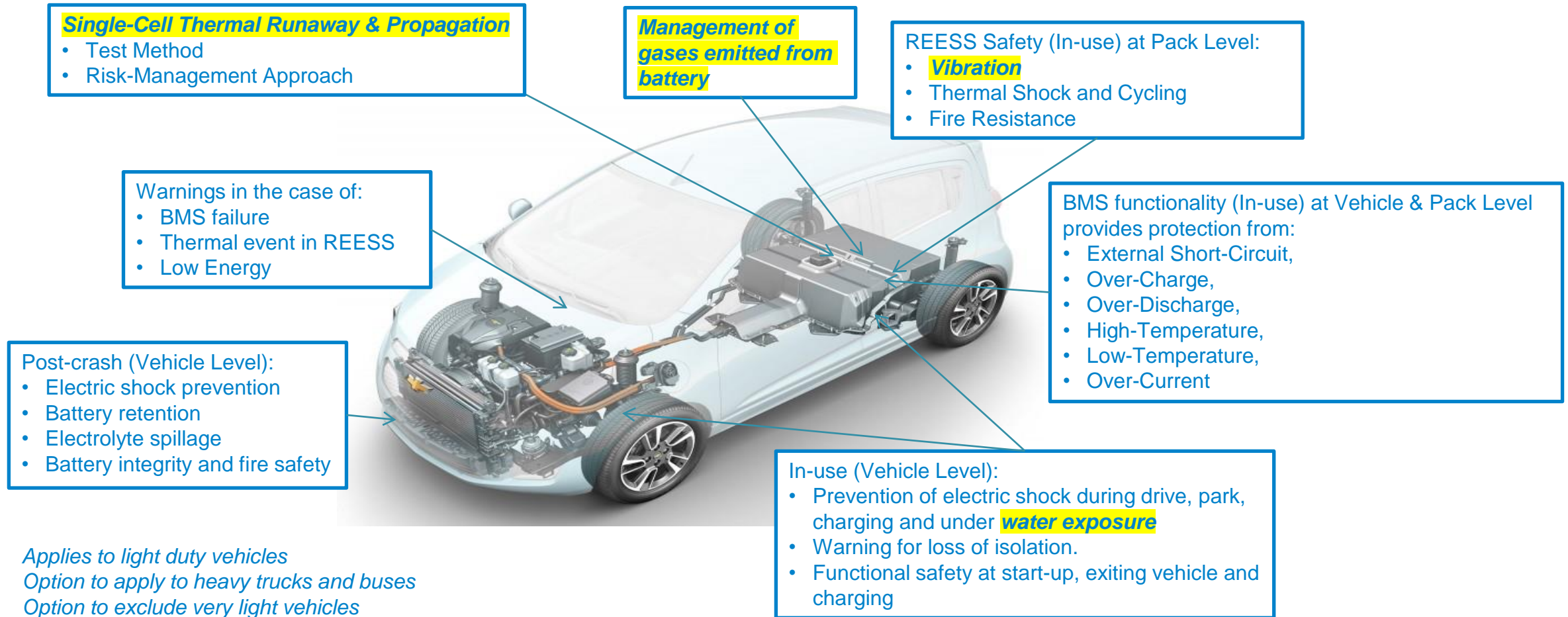
GTR No. 20 – Phase I Safety Requirements



*Rechargeable Electric Energy Storage System (REESS)

**Battery Management System (BMS)

GTR No. 20 – Phase II Safety Requirements



General Principles for Developing Federal Motor Vehicle Safety Standards (FMVSS)

- Meet the need for motor vehicle safety
 - Need for mitigating the unreasonable risk of death or injury
- Be reasonable and practicable
- Performance-oriented (***not design-restrictive***)
 - More innovation is needed in the area of prognostics and diagnostics to prevent fires from occurring in the first place
- Objectively measurable compliance
- Appropriate for each applicable vehicle type
- Based on best available scientific, technical, and motor vehicle safety information

NHTSA Research Areas to Advance the Safety of EV Systems

Prevention

- Battery diagnostics and prognostic systems
- Sensor evaluation and comparison

Mitigation

- Thermal Runaway & Propagation
- Water Immersion

Response

- First responder and post-crash safety
- Best strategies and tools to efficiently suppress EV fires

FMVSS No. 305 – Electric-Powered Vehicles: Electrolyte Spillage and Electrical Shock Protection

- Current requirements:
 - Protection against electric shock – post-crash & during normal vehicle operations
 - Battery retention, electrolyte spillage
 - Absence of High Voltage
 - Electrical Isolation
 - Protection Barrier (Direct & Indirect Contact Protection)
 - Vehicle level crash tests
 - Frontal barrier, rear moving barrier impact, side moving deformable barrier impact, post-impact test static rollover
- NHTSA has announced in its regulatory agenda a rule proposing battery safety requirements into the FMVSS to further align the standard with GTR No. 20.