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### **Economic Commission for Europe**

#### **Inland Transport Committee**

#### **World Forum for Harmonization of Vehicle Regulations**

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Item 18.9 of the provisional agenda

##### **Progress on the development of new UN GTRs and of amendments to established UN GTRs:**

**Draft UN GTR on Electric Vehicles Safety (EVS)**

### **Authorization to develop Phase 2 of the UN GTR**

#### **Submitted by the representatives of China, Japan, United States of America and European Union \***

The text reproduced below was prepared by the representatives of China, Japan, United States of America and European Union to develop Phase 2 of the United Nations Global Technical Regulation (UN GTR) for electric vehicle safety. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Executive Committee of the 1998 Agreement (AC.3) for consideration. This document, if adopted, shall be appended to the amendment of the UN GTR in accordance with the provisions of paragraphs 6.3.4.2., 6.3.7. and 6.4. of the 1998 Agreement.

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\* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Background

1. The Electric Vehicle Safety UN Global Technical Regulation (EVS UN GTR) is a result of numerous meetings and the excellent cooperation between the governments of Canada, China, the, Japan, Republic of Korea, the United States of America and the European Union including standards organizations, testing authorities and industry experts. In 2012, the World Forum for Harmonization of Vehicle Regulations (WP.29) and the Executive Committee of the 1998 Agreement (AC.3), adopted a joint proposal by China, the European Union, Japan and the United States of America to establish two Informal Working Groups (IWGs) to address the safety and environmental issues associated with electric vehicles.
2. The objective of the two working groups was to seek regulatory convergence on the global scale via the work in the framework of the 1998 Agreement. Consequently, an IWG was established to develop provisions to address the safety of electric vehicles. These provisions will address the safety performance during in-use and post-crash of electric vehicles using science-based, data driven and performance-based approach. Over the last five years, the EVS IWG has conducted meetings and necessary research and testing to complete the first phase of the efforts which resulted in a draft UN GTR. The draft UN GTR is expected to be established in the Global Registry of the 1998 Agreement by a consensus vote at the November 2017 session of the Executive Committee of the 1998 Agreement (AC.3).
3. While the draft UN GTR contains a significant set of critical safety provisions, there are still areas that are not fully addressed in Phase 1 due to the necessarily long research and testing. The EVS IWG seeks approval to start Phase 2 immediately after the establishment of the draft UN GTR to begin to work on unresolved technical items.

## II. Proposal

4. An extension of the mandate for the EVS GTR IWG shall address the remaining safety issues. Phase 2 activities should be started immediately after the endorsement of this authorization by WP.29 and AC.3.
5. The scope of work in Phase 2 should cover the following items:
  - (a) Water immersion test;
  - (b) Long-term fire resistance test;
  - (c) Rechargeable Electrical Energy Storage System (REESS) rotation tests;
  - (d) REESS vibration profile;
  - (e) Flammability, toxicity and corrosiveness of vented gas (i.e. quantification of venting for tests addressing safety of REESS post-crash, potential risk of "toxic gases" from non-aqueous electrolyte);
  - (f) Thermal propagation and methods of initiation in battery system;
  - (g) Post-crash REESS safety assessment and stabilization procedures;
  - (h) Light electric vehicles (e.g. categories L<sub>6</sub> and L<sub>7</sub>, low speed vehicles);
  - (i) Protection during Alternating Current and Direct Current charging and feeding process;
  - (j) Overcurrent requirements plus tests (component based).

### **III. Timeline**

6. The work of the IWG on EVS UN GTR Phase 2 is expected be completed by [2021]. The work may continue until the end of [2021] without a formal modification of this mandate, unless otherwise needed due to circumstances.

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