

## PROPOSAL TO DEVELOP A GLOBAL TECHNICAL REGULATION CONCERNING QUIET VEHICLES

Technical Sponsor: United States of America and Japan

### **A. Objective of the proposal**

The objective of this proposal is to develop harmonized pedestrian alert sound requirements for electric and hybrid-electric vehicles (UN GTR) under the 1998 Global Agreement. The work on the GTR will provide an opportunity to consider international safety concerns and leverage expertise and research from around the world.

The United States of America is currently in the process of developing a regulation to address the safety concerns surrounding electric and hybrid-electric vehicles following the enactment of the Pedestrian Safety Enhancement Act, which requires the National Highway Traffic Safety Administration to conduct a rulemaking to establish a Federal Motor Vehicle Safety Standard requiring an alert sound for pedestrians to be emitted by all types of electric and electric-hybrid vehicles.

In 2009, the NHTSA published a report on the incidence rates of crashes involving hybrid-electric vehicles and pedestrians under different scenarios. The US study, using crash data collected from several states, compared vehicle to pedestrian crash rates for hybrid electric-vehicles and vehicles with internal combustion engines (ICE). The study found that there is an increased rate of pedestrian crashes for hybrid electric vehicles versus similarly sized ICE vehicles. In 2010, the US published a second report on a study that found that the overall sound levels for the hybrid-electric vehicles tested were lower at low speeds than for the ICE vehicles tested.

The Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), after studying the feasibility of alert sounds for electric and hybrid-electric vehicles, issued guidelines for pedestrian alert sounds in 2010. MLIT concluded that pedestrian alert sounds should be required only on hybrid-electric vehicles that can run exclusively on an electric motor, electric vehicles and fuel-cell vehicles. MLIT guidelines recommend that electric and hybrid-electric vehicles generate a pedestrian alert sound whenever the vehicle is moving forward at any speed less than 20 km/h and when the vehicle is operating in reverse. MLIT guidelines do not recommend vehicles to produce an alert sound when the vehicle is operating, but stopped, such as in heavy traffic. Also, the manufacturer is allowed to equip the vehicle with a switch to deactivate the alert sound temporarily.

The UN World Forum for the Harmonization of Vehicle Regulations (WP.29) also determined that vehicles propelled in whole or in part by electric means, presents a danger to pedestrians and directed its subsidiary Group of Experts on Noise (the GRB) to develop possible solutions based on acoustic measures. During its March 2011 session, WP.29 adopted guidelines covering alert sounds for electric and hybrid vehicles that are closely based on the Japanese guidelines. The guidelines were published as an annex to the UNECE Consolidated Resolution on the Construction of Vehicles (R.E.3). The guidelines developed by the UNECE recommend that electric and hybrid-electric vehicles emit pedestrian alert sounds beginning when the vehicle starts moving and continuing until the speed of the vehicle reaches 20 km/h. The guidelines do not specify that a vehicle emit an alert sound when the vehicle is stopped or when a hybrid-electric vehicles' ICE is engaged and thus emitting sound. The

guidelines were developed by GRB.

## **B. Description of the proposed regulation**

The UN GTR will specify sound emission requirements for electric and hybrid-electric vehicles that would activate in certain vehicle operating conditions to aid visually-impaired and other vulnerable pedestrians in detecting the presence, direction, location, and operation of those vehicles. We expect that these requirements if mandated by the Contracting Parties would improve the safety of pedestrian.

The scope of the regulation (its application) will cover electric and hybrid-electric vehicles.

The GRB existing Informal Working Group on Quiet Road Transport Vehicles (QRTV) is envisioned as the appropriate group of experts that, upon conclusion of their original mandate (in February 2012), would transition its full attention to the development of the UN GTR. The expected establishment date for the new UN GTR is November 2014.

## **C. Existing regulations and directives**

Because this is a new area of concern, there are no known regulations to reference at this time. However the following standards, research reports and guidelines documents will be taken into account during development of the new UN GTR. In addition, other materials that may come to the attention of WP.29 will also be considered.

- Research on Quieter Cars and the Safety of Blind Pedestrians, A Report to Congress, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C., October 2009.
- Quieter Cars and the Safety of Blind Pedestrians: Phase I, John A. Volpe National Transportation Systems Center, DOT HS 811 304 April 2010.
- Guideline on measures against the quietness of hybrid vehicles, etc., Japan, September 2010.
- The United States Pedestrian Safety Enhancement Act of 2010.
- World Forum for Harmonization of Vehicle Regulation of the United Nations Economic Commission for Europe (UNECE) guidelines covering alert sounds for electric and hybrid-electric vehicles as annexed to the UNECE Consolidated Resolution on the Construction of Vehicles (R.E.3)

-----