



Conférence Européenne
des Directeurs des Routes
Conference of European
Directors of Roads

FOREVER

Future **O**perational impacts of **E**lectric **V**ehicles on national **E**uropean **R**oads

Research project funded under the CEDR Transnational Road
Research Programme

CEDR Call 2012: Noise - Integrating strategic noise management into the operation and maintenance of national road networks

CEDR Call 2012: Noise is a Transnational Road Research Programme organised by CEDR (Conference of European Directors of Roads). The funding partners for this programme are Belgium/Flanders, Germany, Ireland, Norway, Sweden and United Kingdom.

Details

Acronym:	FOREVER
Start:	January 2013
End:	December 2014
Budget:	€213.7k
Co-ordinator:	Phillip Morgan, TRL, UK
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Partners:	Austrian Institute of Technology, Austria Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux, France Trinity College Dublin University of Bath, UK
PEB Project Manager:	Pam Lowery, UK

Project summary

The FOREVER project (Future operational impacts of Electric Vehicles on national European Roads) addresses future vehicle technologies, specifically electric and hybrid-electric vehicles and low-noise tyres for the CEDR Transnational Road Research Programme Call 2012 on Noise. The project aims primarily to provide data and information on the potential future noise impacts of electric vehicles on national roads. As such, this takes a different focus from much of the previous research in these areas, which has generally focussed on the noise impacts in city (low-speed) environments.

The project will focus on the following issues:

- **Identification of the noise emission levels from electric and hybrid-electric vehicles:** This will involve a review of the state-of-the-art in vehicle noise evaluation methods and how these can be applied to electric vehicles, considering the issue from the perspective of operation in controlled conditions rather than just strict type-approval conditions. Practical testing will be carried out on a range of electric vehicles to determine power-train and tyre/road noise emission levels, as well the emission levels of added alert sounds currently available. The objective is to derive input data for use within noise prediction models such as CNOSSOS-EU. The noise impacts from the perspective of other road users, e.g. bicyclists will also be considered, through a series of subjective participant trials;
- **Noise emission from low-noise tyres:** This will involve a market analysis of the types of tyres that are/will be used on electric vehicles. Practical measurements will be performed to look at tyre/road noise levels generated on real-world road surfaces and the potential relative differences between tyres. Modelling will also be undertaken to examine the noise impacts of electric vehicles using different types of tyres;
- **Estimation of the noise impacts of electric vehicles:** Based on current fleet compositions and predicted future fleet compositions, assuming different take-ups of electric vehicles and low-noise tyres, potential noise impacts will be calculated using an



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appropriate model, e.g. CNOSSOS-EU, for different road categories. The results will also be used to give an indication of the likely traffic noise impacts in agglomerations.

In addition to deliverables describing the outcomes of the individual tasks, the outcomes of the project will be summarised in formats suitable for NRAs and policy makers and the scientific research community. A website will also be used to promote the work of the project to NRAs, other stakeholders, the scientific research community and the wider public.