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for Transport

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From the Second Permanent Secretary

Sir Geoffrey Clifton-Brown

Chair of the Public Accounts Committee
House of Commons
London
SW1A 0AA

[Sent via email]

Dear Sir Geoffrey,

Firefighting Techniques for Battery Electric Vehicle Fires

I am writing to you regarding the Committee's questions on the potential fire risk of electric vehicles during the recent evidence session on EV charging infrastructure.

As we said, there is no evidence to suggest that fires in electric vehicles (EVs) are more likely to occur than in petrol or diesel vehicles. Although there is limited data for such incidents currently available in the UK, some studies of international data have indicated that EV fires are in fact less likely to occur. However, the nature of EV fires is different to petrol or diesel vehicles. Battery fires may result in jet-like, directional flames. Similar to petrol and diesel vehicles, however, EV fires can be extinguished using water. Depending on the nature of the fire, more water and time may be required.

Fire prevention, fire detection, and firefighting in EVs is a developing area and the Government continues to review guidance and regulations in step with the development of best practice. National Operational Guidance (NOG) has been developed by the London Fire Brigade, the National Fire Chiefs Councils, and the Local Government Association, with oversight from the Home Office. It contains specific hazard guidance for alternative fuel vehicles, including control measures on how to identify and immobilise the vehicle, then isolate and stabilise its high-voltage system. This guidance is for all Fire and Rescue Services (FRS) across the UK.

If an EV with a lithium-ion battery is involved in a fire, the NOG advises:

- using copious volumes of water to extinguish the fire, sufficiently cool the high-voltage battery, and reduce the risk of reignition;
- aiming water directly at the battery pack;
- and it notes that in Switzerland and the Netherlands, the entire vehicle is submerged in a tank of water.

Further to this, in July 2023 we published fire safety guidance for covered car parks,¹ which includes measures for FRS to manage EV fires should one occur. The guidance suggests:

- standard firefighting procedures are sufficient when fighting EV fires;
- larger quantities of water are required (10,000l vs 4,000l for internal combustion engines);
- different tools may be required to reach the EV battery;
- additional PPE may be necessary;
- first responders should be aware of vapour clouds;
- EVs involved in a fire need to be monitored with thermal imaging cameras to check for reignition.

There has been some public concern that water used to extinguish an EV fire can be contaminated with lithium and heavy metals.² However, tests on both treated and untreated water used to extinguish the Stavanger Airport fire in Norway found no lithium and only low concentrations of cobalt and other heavy metals in concentrations that have no toxic effects on the environment.³ This area is developing, and we continue to monitor and learn from international action in this space.

Reliability of chargepoints

Finally, later in the evidence session when discussing chargepoint reliability as part of the Public Charge Point Regulations 2023 (Q86) we may have given the impression that the current 99% reliability requirement applies to all chargepoints irrespective of power. To clarify, the current 99% regulatory requirement only applies to chargepoints of 50kW and above. We will continue to review implementation of these regulations and assess whether further intervention is required.

I hope this letter provides you with the information you were seeking. I look forward to continuing to engage with the Committee across the Department's portfolio.

Yours sincerely,



Jo Shanmugalingam
Second Permanent Secretary

¹ Office for Zero Emission Vehicles. Covered car parks: fire safety guidance for electric vehicles. GOV.UK. 11 July 2023. <https://www.gov.uk/government/publications/covered-car-parks-fire-safety-guidance-for-electric-vehicles>.

² Risk minimization of electric vehicle fires in underground traffic infrastructures. Federal Roads Office (Switzerland). August 2020. https://www.empa.ch/documents/56066/11711165/AGT_2018_006_EMob_RiskMin_Undergr_Infrastr_Final_Report_V1.0.pdf/b0dd84d7-5440-42e2-adf7-6e03095f7f8f

³ Storesund et al. 2020. Evaluation of fire in Stavanger airport car park 7 January 2020. RISE Report 2020:91. RISE Research Institutes of Sweden. <https://risefr.com/media/publikasjoner/upload/2020/rise-report-2020-91-evaluation-of-fire-in-stavanger-airport-cark-park-7-january-2>