



Independent workplace compliance



White Paper

Electric vehicles and fire safety

May 2024



Electric vehicles and fire safety

Recent stats indicate that as of the end of April 2024 there are over 1.75 million electric vehicles (EV) on UK roads (1.1 million battery electric vehicles (BEV) and 655,000 plug-in hybrid vehicles (HEV) (figures from zapmap)).

As with all vehicles, safety is a primary issue and while essentially fulfilling the same role (getting you from one place to another), EVs create a number of different risks to their petrol/diesel counterparts.

Much of the HSE advice, for example, is currently “aimed at people working with these vehicles in the motor vehicle repair and roadside recovery industries and also the emergency services.” However a growing concern has been that of fire risk and EVs, so this month we are looking at the subject in a little more detail.

In this whitepaper:

- [1. EVs and fire](#)
- [2. What should I be considering with EV charging?](#)
- [3. What about e-scooters and e-bikes?](#)
- [4. In summary](#)



1. EVs and fire

We are seeing an 83% increase of fires attributed to electric vehicles year on year, impacting not only our personal property, but damaging business such as car dealerships who have lost entire fleets and buildings. It is important to note however that the number has increased along with the increasing presence of electric vehicles on our roads. Initially, we saw guidance issued by the insurance industry, however this is now a big topic in the Building Management Industry.

Last year, The Fire Protection Association (FPA) and RISC Authority developed and released "RC59: Recommendations for fire safety when charging electric vehicles". This guide focusses on fire hazards and good-practice risk control measures for the charging of EVs that use lithium-ion batteries, and are driven on highways, (i.e. cars, motorcycles, bicycles, lorries, coaches/buses, etc.).

[RC59 - Recommendations for fire safety when charging electric vehicles.pdf](#)

Following this, the London Fire Brigade (LFB) released a guidance note "GN 103 - charging and storage for electric powered personal vehicles". This provides detailed guidance for office premises up to 18 metres in height and sets out a suggested approach for both office and residential buildings greater than 18 metres in height.

[Fire Safety Guidance Note GN103 - Guidance and principles for the charging and storage of electric powered personal vehicles \(london-fire.gov.uk\)](#)



2. What should I be considering with EV charging?

Some key considerations that are recommended across the industry for EV Charging are as follows (although not all may be relevant to you):

- Were your insurers notified/did they provide any recommendations/advice/guidance?
- Are the charging points installed underground? Or are they open air/roof/top deck? Ideally, they should be installed externally, and located as far as possible from important buildings, structures and utilities. Charging units should not be installed in any location where flood or excessive surface water run-off and pooling is considered a risk.

In circumstances where electric vehicle charging units are installed internally, charging/parking areas should be located as close as possible to exits and preferably on the ground level to allow easy access for the fire brigade. The generation of toxic gases is particularly problematic for firefighting activities in below ground charging areas. It is therefore essential that below ground or concealed charging and parking areas are provided with adequate ventilation.

- If installed internally in the building i.e. in the basement, does the structure provide at least 120 minutes fire resistance between the charging area and any other part of the premises.

Where there is access to the premises from the charging area, the fire doors should provide the same degree of fire resistance as the structure in which they are located (i.e. at least 120 minutes fire resistance).

- Charging points for electric car chargers, electric bikes, and electric scooters should be separated by fire resisting construction or by space-separation, suitably arranged and clearly marked for their intended purpose.
- Ideally charging should be limited to 'in hours' only and avoided at weekends/late of evening when very few staff or no staff are present – so is there means of early warning/detection present, security lighting and monitored by CCTV?
- No charging should be undertaken within 10 metres of any combustible materials e.g. waste materials, stock, or combustible elements of the structure.
- No charging should be undertaken within 15 metres of hazardous installations such as transformers, flammable liquid stores, and LPG tanks.
- Emergency manual isolation of charging points should be provided to ensure safe shutdown of equipment in the event of a fault on the mains electrical supply. The isolation points should be prominently signed and strategically located where it will be readily accessible to trained staff and firefighters. The safe isolation of these should be included in the evacuation procedure i.e. who takes on this responsibility etc.

Emergency isolation switches should incorporate lock-out facilities to prevent unauthorised reinstatement during maintenance and emergencies.

- Ensure the nominated charging area provides suitable space for vehicles to park and connect safely. The length of charging cables should be sufficient to allow their use with the intended equipment without risk of damage.

- Ensure there is sufficient electrical infrastructure for the electrical supply at the point of installation. The circuit should be dedicated to the use of the chargers, and not be part of a ring main or used for other purposes.
- Explore installing bollards or other measures to provide mechanical protection for charging points.
- Was a suitably qualified provider selected to install the charge points?
- Confirm that charging cables will not present a trip risk to passers-by or be located where they could be damaged by passing traffic. This may require relocation of access and walkways.
- Has signage been installed where multiple chargers are in use?
- Is there clear differentiation from conventional charging points and rapid charging points?
- Have employees been provided with adequate training covering the safe use of such chargers? This training should include the undertaking of visual inspections of the charging equipment prior to each use. Damaged and defective equipment should be reported immediately, isolated, taken out of service pending repair, and visible warning notice and/or barrier placed to prevent use.
- Have the charge points been included in regular fixed wiring inspections. Best practice would be testing of the system every three years with inspection of conductors annually. This is on the basis that:
 - The circuit is powered on and off at irregular times and potentially left unused over weekends or other periods of time.
 - The terminals are outside and exposed to environmental conditions such as moisture, frost, or direct sunlight.
 - Users may be pulling the cabling, stretching the cable and there is contact of conductors when placing it into the vehicle terminal and charging point terminal when finished.
- Because of the intense and prolonged nature of fires involving lithium-ion batteries, where it is necessary to locate charging areas in basements, careful consideration should be given to the design of the sprinkler system and ventilation arrangements. Have you liaised with the Fire and Rescue Service concerning access for firefighting?



3. What about e-scooters and e-bikes?

While not the primary consideration of this article, Electric Powered Personal Vehicle (EPPV) – including e-bikes and e-scooters - usage has also increased significantly over recent years. So too has the number of fires with the LFB reporting in 2018 they recorded just five incidents involving EPPVs, however in the first six months of 2023 they had already attended 91 incidents.

Charging such equipment is also a lot simpler, many just plugging straight into an electrical socket - that convenience doesn't come without risk though. As a result, both the Government and LFB, amongst others, have also produced guidance on the subject.

Produced in Feb 2024 the Department of Transport published new guidance to enhance e-bike and e-scooter safety. It is targeted at consumers and addresses areas such as:

- battery safety;
- warning signs for fire risks; and
- responsible battery disposal.

Broadening the scope of the information, "separate guidance has been issued to help public transport operators assess and manage fire risks associated with the carriage of e-bikes and e-scooters on trains and buses. Similar information has been produced for those managing premises such as schools and workplaces."

Likewise, LFB have produced two guidance notes focussed on "responsible person and landlords, or others responsible for fire safety in buildings". The documents cover "storage and charging, and also specifically look at the risks associated with fires in communal areas."

The links to the documents mentioned are below:

[New guidance to enhance e-bike and e-scooter safety - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

[E-bike and e-scooters - guidance for responsible persons | London Fire Brigade \(london-fire.gov.uk\)](https://london-fire.gov.uk)

[Fire Safety Guidance Note GN84 - Fires in Communal Areas - Information for External Partners \(london-fire.gov.uk\)](https://london-fire.gov.uk)



4. In summary

The increasing use of electric vehicles has necessitated the provision of charging facilities that if not managed appropriately, can introduce potential ignition hazards into the workplace, or public areas, such as motorway service areas and car parks, as well as into dwellings where EVs (and EPPVs) are charged.

The approach remains the same as with any hazard being introduced within our properties – risk assessment, and implementation of suitable control measures.



Assurity Consulting is the UK's leading independent consultancy specialising in workplace health, safety and environmental solutions. As your partner in compliance management you will reap the benefit of our more than 35 years' experience of helping customers across a range of different sectors – manage their compliance responsibilities as effectively as possible. If you need any help with your health, safety or environmental compliance, or if you would like more information on the services Assurity Consulting offer, please get in touch.



Call us on
+44 (0)1403 269375



Email us at
info@assurityconsulting.co.uk



Visit our website
assurityconsulting.co.uk