

metroSTOR Webinar Summary

E-mobility: A Fire & Rescue Service View

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Electronic Powered Personal Vehicles includes e-scooters, e-bikes and hoverboards. Two serious thermal runaway incidents led to TfL implementing a ban on along the entirety of the TfL network, included the buses, trams, rivers and underground network.

Lithium batteries store a lot more energy than regular batteries and when they fail, they fail catastrophically, such as when subjected to extreme temperatures, if they're damaged or subjected to over-charging.

The LFB believe that more research and market surveillance is required to understand the problem, but we can't ignore the rise that we're seeing in fires, and unfortunately, last year we have seen some fatal fires with some of the incidents that we've gone to.

During thermal runaway a toxic vapor cloud is released from the device, so we don't recommend members of public trying to fight these fires. A regular fire extinguisher won't extinguish it and without respiratory protection, you'd be inhaling that toxic vapor cloud.

The majority of e-bikes and e-scooters are powered by lithium batteries and in recent years they have increased significantly in popularity and there's various makes and models of e-bikes and e-scooters now available, with some having speeds of up to 75 miles an hour.

The Met police confiscated just under 3000 non-compliant e-scooters back in 2021, incurring a cost of £380,000. The FDNY have a very similar amount of lithium battery fires to us in London; last year we had three confirmed fatalities and the FDNY had 17.

We have created guidance note GN103 for the storage of EPPVs in residential and commercial premises to assist responsible people in making their buildings safer.

We have been collecting data on lithium battery fires from 2017 and from 2020 to 2021 there was a huge rise and that rise since has only continued this year, by the 19th of January, LFB had already responded to eight different lithium fire incidents.

According to the data collected, most people injured in fires related to e-bikes and e-scooters were in their twenties, and often the fires were in homes where multiple adults were living together with children.

An e-bike fire is most likely to take place when charging the batteries, and we believe that at least 40% of fires involving e-bikes are where they have been converted from a regular bicycle through the attachment of a conversion kit.

We implemented our #chargesafe social media campaign early last year as firefighters in London are tackling an increasing number of ferocious fires caused by lithium batteries that produce toxic gases and are very hard to extinguish.

E-mobility fires are the fastest growing trend in London, we are calling for more research and better regulation for products like e-bike conversion kits, as well as providing more information about safe buying, use, storage and charging of their devices.

So what can we do to reduce the risk? Here are some really simple basic tips that we're telling residents that they should follow if they have some of these devices in their homes:

- Don't block your exit routes when charging batteries, if a fire breaks out, you won't be able to safely leave your home.
- If you can, store them in a shed or garage. We do not recommend storing them on balconies because there are still many developments with combustible cladding.
- Never leave your battery charging when you're out or whilst you're asleep.
- Make sure your battery and charge meet UK safety standards, it's really important to use the correct charger for your battery and make sure you buy the device from a reputable seller.
- Let your battery cool before charging it.
- Unplug your charger once the battery is charged.
- Fit smoke alarms in the area where you charge your batteries.
- Make sure everyone that lives in your premises has an escape plan and they know what to do in the event of a fire.
- Don't use a battery if it's been damaged or malfunctioning.
- Only charge on a non-combustible surface.
- Don't cover the device whilst the charging.

Products such as conversion kits, batteries and chargers sold on online marketplaces may not meet the correct UK safety standards and may therefore be at a much higher risk of malfunctioning so always check for CE markings and purchase from a reputable seller.

The Home Fire Safety Checker is an interactive tool that allows residents who don't have a computer to call the LFB up and go through the home room by room highlighting any risks and establishing whether or not they need a priority given to them.

We haven't come across a fire extinguisher that could extinguish a lithium battery fire, we submerge them in a metal bucket of water and allow to vent off in the bucket by removing it from the premises and leaving outside until it's cool. Our advice is to get out, get your family out, shut the door, call 999.

The majority of batteries failed whilst they were charging but we have gone to incidents where they haven't been on charge. The problem is you just don't know what has happened to those batteries beforehand.

Many mobility scooters still have traditional lead acid batteries but there are an increasing number with Lithium batteries so it's the same advice given really, it's more difficult with mobility scooters because they're generally larger and often stored within the residence on escape routes.

The gig economy utilises e-bikes now, so with the #chargesafe campaign, we've been going out with local crews and really pushing that information. With mobility scooters, our advice is, if possible, not to store them along escape routes and to ensure the individual's living there know exactly what to do in case a fire breaks out.

That risk can be minimized by having it in a separate room with a fire door, working smoke alarm and compartmentation of some description. We know residents don't have that luxury of space, so it's trying to mitigate that the best way we can and informing them of the hazards and risks that they could encounter.

The existing guidance from the National Fire Chiefs Council on mobility scooters is still very relevant, important to ensure mobility are not charged in communal areas and implementing external storage where the flats too small and the escape routes would be blocked.

There's a big cultural difference in Japan, they store their devices outside because no one steals them, whereas we know residents chain anything up on London streets and sometimes it's not there when you get back.

If residents can't mobilise to an external store, we may need to question whether this is the right accommodation for them, in some locations we have allowed it inside, but it's on the basis of having a robust fire door in place.

Challenge for landlords to actually establish which residents might have e-bikes or e-scooters because once it's behind an individual's locked door, it doesn't really fall under the RRO. All we can keep doing is pushing safety messaging and informing them of what the risks and hazards are to try and mitigate that risk.

The majority of social housing stock doesn't have anywhere that you could really safely and securely charge a mobility scooter, e-bike or e-scooter. We'd like to see the government requiring them to be registered. Even though e-scooters can't legally be used on the public highway, it doesn't stop people buying them and it doesn't stop them storing them in our buildings either.

The horse has well and truly bolted, we should have had the legislation ahead of the technology, but we have to make do with what we've got right now. The technology is not going to go anywhere. For some people it's an easier way for them to travel, it could be for reduced mobility, it could be for cost.

We have to try and educate members of the public that utilize this type of device. We're also waiting for the review from the OPSS to find out if we can have more regulation and what their findings are on the online marketplaces, whether we can have more legislation put in place. The Electrical Safety First campaign is also very helpful.

External charging lockers are available if you have the space for them, but of course they come at a cost, so for the future we are looking at rental options and even bike sharing platforms to reduce the overall number required.