POLICY BRIEF

BATTERY FIRES FROM ELECTRIC BIKES AND SCOOTERS

Only a few years ago, e-scooters and e-bikes descended on downtowns seemingly overnight, drawing a wide range of reactions from commercial properties—some seeing them as an amenity, others viewing them as a nuisance. Now, another related and more serious issue has emerged in the form of an alarming trend of fires from the vehicles' batteries. The threat is real, the fires are particularly dangerous, and fatalities have occurred. While governments and codes bodies are scrambling to consider new rules, commercial properties can take steps to limit the risks.

THE CHALLENGE

Electric scooters and bikes arrived only recently en masse, part of a transportation trend now known as micromobility, promising a convenient, affordable transportation option for short trips and connections. Employing an “ask for forgiveness later” strategy, companies blanketed some cities with scooters—literally leaving them on street corners in the dark of night—prior to holding any discussions with local governments or other stakeholders, and leaving commercial properties to consider whether this is a welcome change for the better or a potential problem to avoid.

With the prevalence of electric bikes and scooters comes the prevalence of their lithium-ion batteries, and while most batteries are perfectly safe, there has been an increase in battery fires with sometimes tragic consequences. As the vehicles increased in popularity only a few years ago, there were scattered reports of exploding batteries across the world—from an e-bike catching fire outside a Seattle restaurant, to an e-scooter exploding in a residential area in Australia.

The incidents appear to be increasing in regularity and fatalities have occurred:

- The U.S. Consumer Product Safety Commission announced it had received reports of 19 deaths since the start of 2021, as a result of micromobility devices that caught fire or overheated from the batteries.
- Local fire departments are an even better source of information on these incidents; in New York City alone, the fire department reported more than 200 incidents in 2022, resulting in six deaths and 140 injuries.

ELECTRIC VEHICLE BATTERIES POSE A SIMILAR THREAT

The batteries that power electric vehicles (EVs) are similar to those in scooters and e-bikes—only much larger. While EVs and EV batteries may be otherwise safe, a potential fire poses a much greater threat. A vehicle fire involving a lithium-ion battery—regardless of the cause—differs significantly from a traditional internal combustion engine vehicle.

Battery failure—referred to as "thermal runaway"—can cause rapid fire growth or explosion that can be more difficult to contain, can last longer, and can reignite. The threat of an EV fire in a parking structure is a particularly dangerous scenario, with difficult access for firefighters and the potential for a massive disaster. This can require specially trained responders.

This particular issue related to fire—as well as the added weight of EVs that tend to be much heavier—may need to be addressed in codes and standards, which currently say little about EVs in parking garages. Some safety concerns are addressed in the National Fire Protection Association (NFPA) National Electrical Code and the Standard for Parking Structures.

Lithium-ion batteries have been on the market since the early 1990s, representing a significant advancement as a rechargeable, lightweight, and powerful battery. They are increasingly omnipresent, powering smartphones, laptop computers, power tools, and electric vehicles. In certain situations, they can also be dangerous, as evidenced by the rules surrounding lithium-ion batteries on passenger planes.

Fire safety experts are now particularly focused on the batteries for e-bikes and scooters as the evidence of fires mounts.The batteries contain a chemical solution that is dense and flammable. The material has the advantage of being able to handle the voltage involved, but if anything goes wrong, there's a lot of energy packed into a small package.

Fires can happen if the batteries are overcharged, overheated, defective or damaged. Resulting fires can be especially challenging for firefighters to contain as the chemicals undergo a violent reaction, and they can be so intense that they can envelope an entire building within minutes. The fast-moving fires usually occur without warning, grow rapidly and are difficult to extinguish—plus it's possible for the chemicals to reignite after the fire is out.

THE CRE PERSPECTIVE

The threat of battery fires poses a risk to life and property, leading commercial buildings to consider next-steps. While many buildings may have settled on policies related to scooters and e-bikes on their properties, the fire issue adds a new layer of uncertainty. Among the challenges is the lack of clarity around the fires' causes—it could be the vehicle, a damaged battery, a knock-off substandard battery, the charger, etc. And even where there are rules or policies in place, there will always be individuals who find creative ways to store or charge their vehicles.

There's currently very little regulation of e-bikes and scooters. Given the spate of fires, local and state governments are beginning to consider options to further regulate the vehicles and toughen standards around the batteries, Codes bodies are also exploring options, including at the International Code Council (ICC), where BOMA International is engaged in the discussions. It's possible that governments will require certifications such as through Underwriters Laboratories (UL), or the U.S. Consumer Product Safety Commission may institute regulations. But commercial properties may not want to wait for these processes to unfold.

NEW YORK, NY
Two youths lost their lives when an electric bicycle caught fire while being charged near the front entrance of a multifamily building. Firefighters arrived within three minutes of the call but the fire chief cited the fast-moving and intense nature of the fire, adding that they likely would have been able to put out the fire without incident if it wasn't from a bike battery.

BROCKTON, MA
A charging scooter sparked a heavy fire in the basement of a home at around 8pm, and firefighters fought back the two-alarm fire for 45 minutes. At 1am that same night, the fire reignited, causing firefighters to return to the home and battle what turned into a three-alarm blaze.

HUNTINGTON BEACH, CA
An e-bike had been charging for days inside an apartment when the battery ruptured and exploded. Flames spread rapidly and blocked the front door, forcing the family to escape through a window and eventually leaving multiple neighbors without a place to stay.

RECOMMENDATIONS

As this issue begins to be considered throughout the different levels of government, commercial properties should examine their particular risks and develop interim plans. While the following guidance should not be considered an exhaustive list, it can provide a starting point for further discussion:

Review emergency plans

This issue provides a good reason to get out property emergency plans, review with staff and tenants, and consider needed updates.

Talk with your fire department

It's always a good idea to connect with the local fire department, share any concerns, and gather recommendations for your specific property and fire safety tips for your tenants.

Consider policy changes

Possible options include:

- Ban storage and charging inside office spaces.
- Require that any interior storage and/or charging can only take place if the vehicle, battery and charger are compatible and meet the safety standards of an approved agency (such as UL, ETL or CSA).
- Ensure that any designated, separate interior space for storage or charging is in a safe area and has proper sprinkler coverage and/or one-hour fire-rated walls and ceilings.

Talk with your local officials

If this issue is already being discussed in your locality, meet with elected officials and agency staff to review options and offer your perspective and expertise; if the issue isn't yet on the radar locally, raise the issue as a growing concern.