Inquiry into e-mobility safety and use in Queensland

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Queensland Fire Department
Submission to the State Development, Infrastructure and Works Committee

Inquiry into e-mobility safety and use in Queensland

Term of Reference 3

Issues associated with e-mobility ownership, such as risk of fire, storage and disposal of rechargeable lithium-ion batteries

Respect Integrity Courage Loyalty Trust

Queensland Government

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1. Introduction

The Queensland Fire Department (QFD) thanks the State Development, Infrastructure and Works Committee for the opportunity to make a submission on the matter of e-mobility safety and use in Queensland.

The content of this submission focuses on *Term of Reference 3: Issues associated with e-mobility ownership*, with particular reference to fire safety considerations arising from the prevalence of rechargeable lithium-ion batteries used to power e-mobility devices.

Additional information is available at the Committee's request.

2. Battery types

E-mobility devices like e-bikes and e-scooters are usually powered by **rechargeable lithium-ion batteries**.

The chemistry of lithium-ion batteries differs markedly from traditional batteries. When compromised, lithium-ion batteries can lead to sudden and catastrophic fires.

Fire authorities around the world are facing increasing numbers of lithium-ion battery related fires, with e-mobility devices accounting for a significant number of these fires.

2.1 Traditional, non-rechargeable batteries

Traditional batteries, like **alkaline and lithium-metal batteries**, are generally safe and not used in rechargeable devices. Alkaline batteries are stable, provide consistent energy and have a relatively long shelf life. Lithium metal batteries are also stable, have high energy density, long shelf life, and long service life.

While these batteries still carry some fire risk and must be disposed of thoughtfully, they are relatively low risk, are not used in e-mobility devices, and are not contributing to increasing fire incidents.

Traditional, low risk batteries

Alkaline batteries *Lithium metal batteries*

These example images are included for information purposes only and are not intended to promote or endorse any brand or suggest any association with brands mentioned.

2.2 Rechargeable lithium-ion batteries

If a battery is rechargeable, it is likely to be a **lithium-ion battery**.

These batteries come in different shapes and sizes, and are lightweight and compact. Lithium-ion batteries store more energy in less space than traditional batteries and can deliver higher voltages than other battery types.

Lithium-ion batteries are commonly used in portable, rechargeable devices, including e-cigarettes and vapes, computers and mobile phones, vacuum cleaners and power tools, e-scooters and e-bikes, and electric vehicles.

The number of individual lithium-ion battery cells in rechargeable devices varies based on the power needs of the particular device, e.g. a battery pack for a rechargeable drill may contain around six battery cells, whereas a battery pack for an e-scooter or e-bike can contain many more cells.

Further, similar products from different manufacturers, brands or models will often have different battery designs, different cell types, and more or fewer individual cells.

Different types of rechargeable lithium-ion batteries and battery packs[1]

Examples of number of battery cells in different battery packs[2]

vape (1 or 2 cells)

e-scooter (10 to ~70 cells)

electric vehicle (~up to 7,000 cells)

[1]These images are used to provide examples of what rechargeable lithium-ion batteries look like, and the numbers and types of battery cells used in various devices. As they are widely circulated online, their original source could not be identified for attribution.
[2] ibid

3. Fire risks of lithium-ion batteries

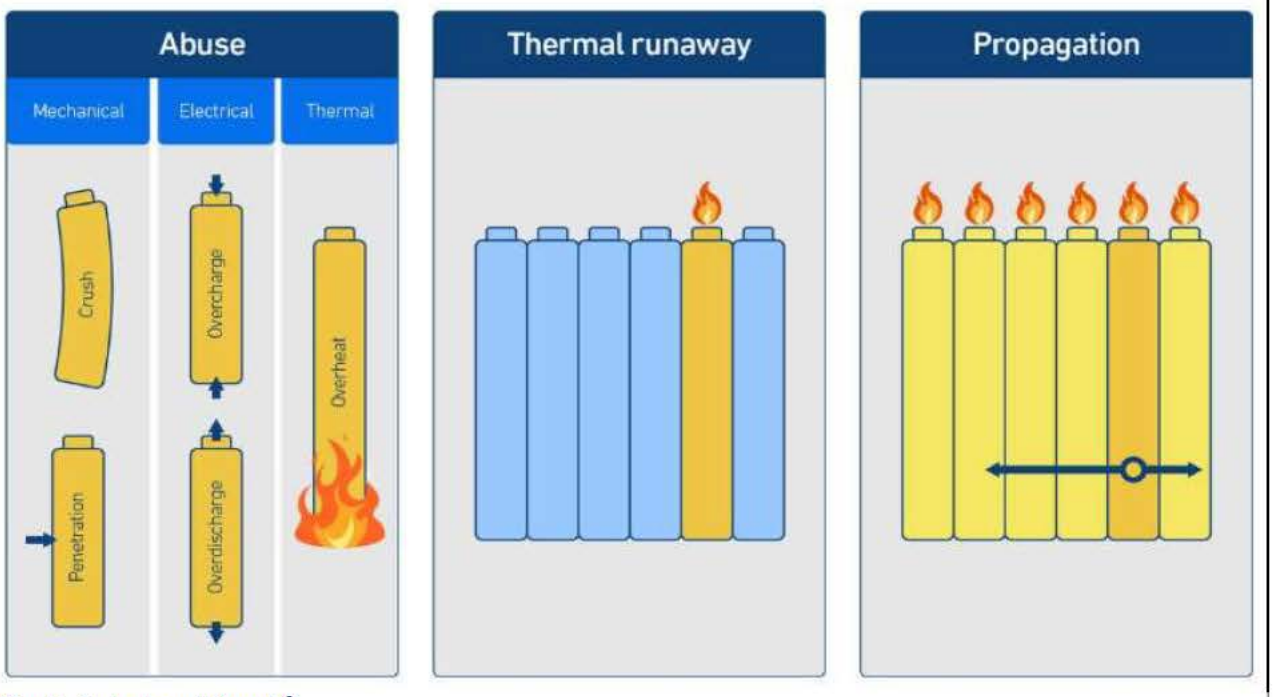
The energy density that makes lithium-ion batteries practical for portable devices can also mean that when they are compromised (by damage, misuse or fault) and fail, they can fail suddenly and catastrophically. This can lead to serious harm to individuals and serious damage to property. Despite their pervasiveness, when lithium-ion batteries fail they can become highly reactive and pose serious safety-related challenges, including susceptibility to fires and explosions.

3.1 Thermal runaway

Failure of a lithium-ion battery may lead to 'thermal runaway'. Thermal runaway is a self-sustaining chemical reaction where the heat generated in a battery surpasses the amount of heat that can be dissipated. This leads to a rapid increase in both temperature and pressure in the battery cell. Thermal runaway in one cell can then trigger thermal runaway in adjacent cells ('propagation').

Thermal runaway can be caused by mechanical abuse (e.g. accident, breakage, puncturing, crushing), electrical abuse (e.g. using an incorrect charger, overcharging), thermal abuse (e.g. exposure to heat, leaving a battery in a hot car), exposure to moisture, or manufacturing defect.

Once thermal runaway starts, it cannot be stopped. Firefighter response to lithium-ion batteries in thermal runaway is aimed at cooling other battery cells to reduce propagation, or if safe to do so, monitoring the incident and letting the device burn out while protecting surrounding areas.

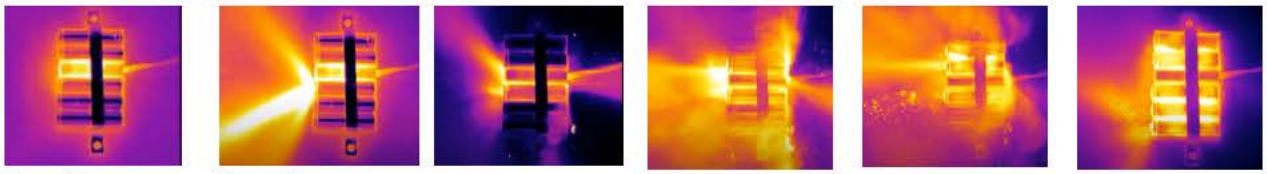


(Credit: Technology Networks[3])

When a lithium-ion battery cell is compromised (by damage, misuse or fault), it can go into thermal runaway, which can then trigger the same process in adjacent cells.

[3] Harrison, K, Lawrence, L, 2023, Discovering the Future of Batteries in Space and Aeronautics with Brianne DeMattia, *Technology Networks*, image adapted from FengX et al, 2018, Thermal runaway mechanism of lithium ion battery for electric vehicles: A review, *Energy Storage Materials*, Volume 10, 2018, pp246-267.

Thermal imaging of thermal runaway and propagation in action



(Credit: George Brilmyer)

To view thermal imaging of the full process of thermal runaway and propagation in lithium-ion batteries under controlled conditions, see 'Thermal imaging Li-ion cells in Thermal Runaway' at http://www.youtube.com/watch?v=hwXccpeN6Qc

3.2 Fire behaviour of lithium-ion batteries in thermal runaway

A battery in thermal runaway can –

- lead to rapid fire growth
- 'off-gas', i.e. release toxic gases and flammable vapour (this is not 'smoke'[4])
- explode with little or no warning[5]
- create blast waves
- produce jet-like flames
- reignite long after the fire seems to be out (with reports of battery cells igniting up to 68 days after initial thermal runaway[6])
- eject cells/materials, which can become projectiles that lead to rapid fire spread (with reports of cells being projected as far as 40 metres[7]).

The following images demonstrate characteristics of fire behaviour associated with lithium-ion batteries in thermal runaway.

[4] Although the vapour looks like smoke, it is highly toxic and highly flammable vapour consisting of: hydrogen (approximately 30-50%) ethane, methane and other hydrocarbons; small droplets of organic solvents; sulphur dioxide and nitrogen oxides; carbon monoxide; hydrogen fluoride; hydrogen chloride; hydrogen cyanide; carbon dioxide.
[5] QFD social media – https://www.facebook.com/qldfiredepartment/videos/1009965421257765 .
[6] NSW Association of Fire Investigators, 2024, *Education Night Case Study: Tesla Model 3 Incident*, EV FireSafe (https://www.youtube.com/watch?v=jJkOk2q5lEw from 49:18, accessed on 16 May 2025).
[7] Blum, A et al, 2016, *Hazard Assessment of Lithium Ion Battery Energy Storage Systems*, page 31 (Hazard Assessment of Lithium Ion Battery Energy Storage Systems | NFPA (https://www.nfpa.org/education-and-research/research/fire-protection-research-foundation/projects-and-reports/hazard-assessment-of-lithium-ion-battery-energy-storage-systems accessed on 16 May 2025).

Lithium-ion battery cells become projectiles

Battery cells in thermal runaway can be ejected from the battery pack. They become projectiles that lead to rapid fire spread. This fire was caused by an e-bike (marker 12). The other yellow markers indicate where battery cells were found.
Three separate fires were caused by ejected battery cells.
(QFD image)

Sudden explosion, jet like flames, rapid fire spread

Explosion at 08:08:18

Full room involvement within seven seconds at 8:08:25

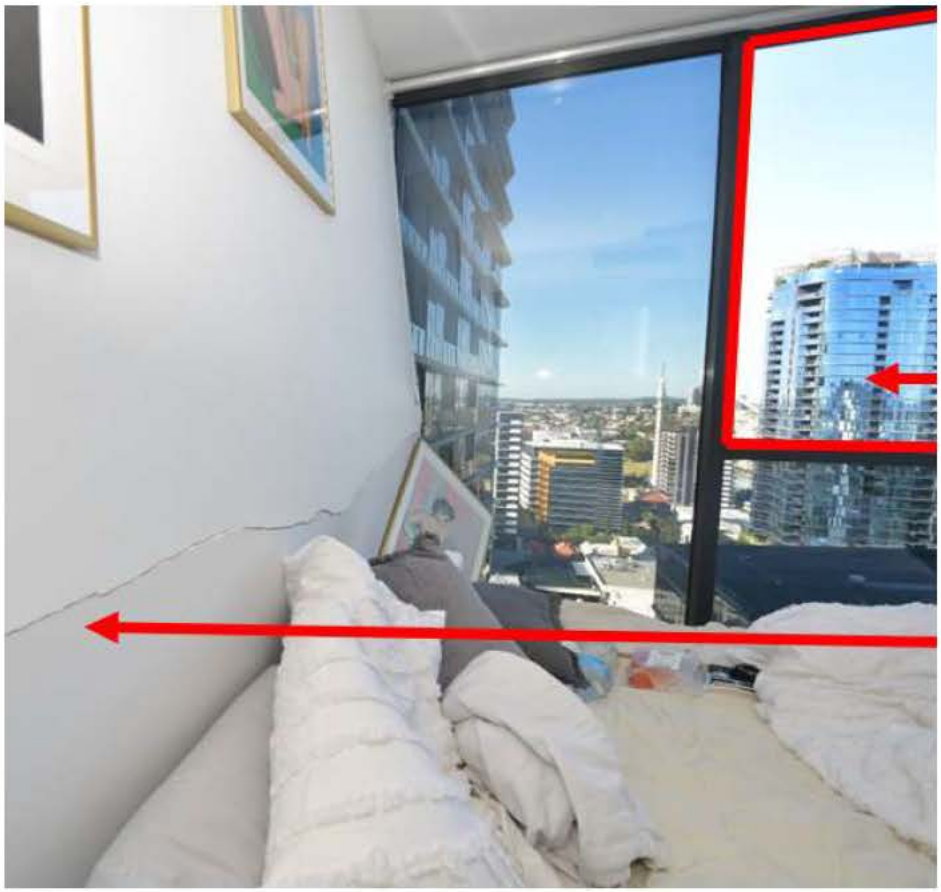
Full clip available on QFD's Lithium-ion battery safety page[8]
(Footage courtesy of Fire and Rescue NSW)

[8] https://www.fire.qld.gov.au/safety-education/battery-and-charging-safety/lithium-ion-battery-safety).

E-scooter fire and explosion on Level 22 of a Brisbane apartment complex[9]

Automated sprinkler activation prevented fire spread

Impact of the explosion on the adjacent room



Window glass dislodged and fell 22 floors

Damage to wall in adjoining room from explosion

(QFD images)

[9] QFD reference QF5N-22-077492

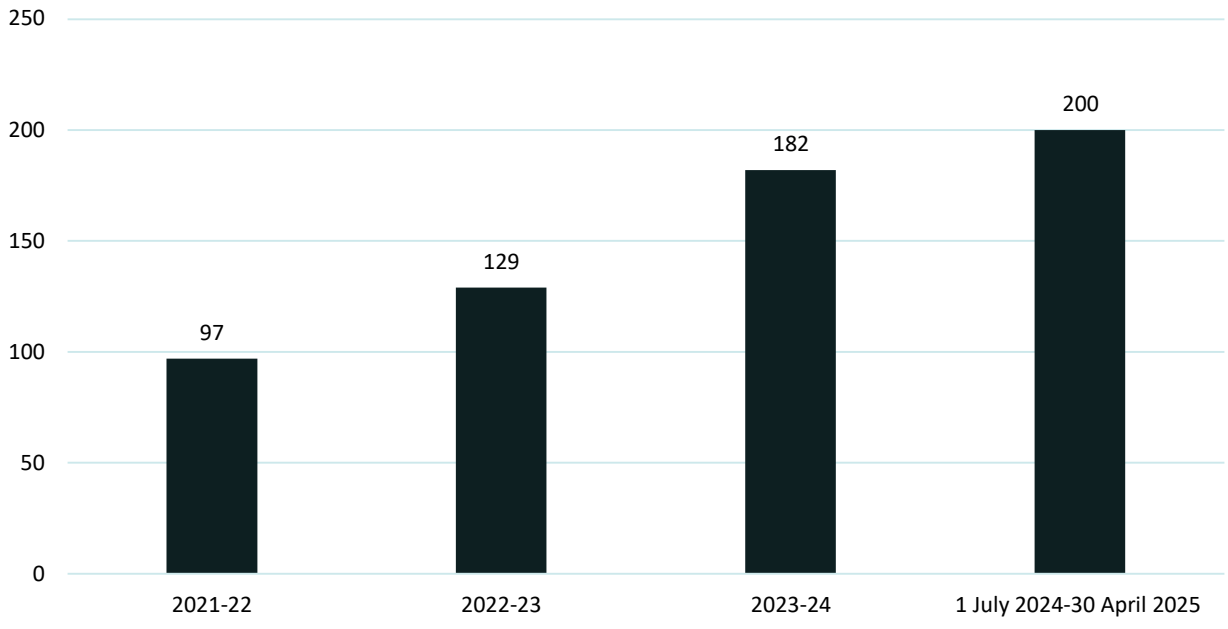
4. QFD data on incidents involving lithium-ion batteries and e-mobility devices

4.1 All fire incidents involving lithium-ion batteries

Figure 1 shows incidents attended[10] by QFD between 1 July 2021 and 30 April 2025 that were caused by lithium-ion batteries[11].

This pattern of increasing numbers of lithium-ion battery-related fires is consistent across other Australian and international jurisdictions.

Figure 1. Number of incidents caused by lithium-ion batteries by financial year



These numbers are likely to reflect an under-reporting of fires involving lithium-ion batteries.[12]

Given the nature of the data collection, it is likely there are other incidents involving lithium-ion batteries that have been recorded differently and are not captured in this dataset. Incidents where the lithium-ion battery was not responsible for ignition but became involved in the fire and contributed to the severity of the incident, are also not captured in this dataset.

Further, the destructive nature of fires initiated by lithium-ion batteries can preclude definitive determination of the cause of some fires.

[10] QFD captures incident reports in its Operations Management System (OMS) using codes from the Australian Incident Reporting System (AIRS). The data reflects incidents where the *Form of Heat Ignition* was recorded in OMS as '201 Battery Dry cell rechargeable (e.g. Lithium Ion or NiCad)'. This code was introduced across Australia in July 2021. Therefore, little data on lithium-ion battery related fires is available prior to 2021.
[11] Data extracted 28 May 2025.
[12] OMS reporting is based on information available to the recording officer at the time of the incident and may be supplemented by further information as it becomes available. Information may be subject to change as incident reports are edited as part of ongoing data quality practices, including if a fire investigation has occurred. Therefore, data may be subject to further updates and revisions.

4.2 Fire incidents involving e-mobility devices

During 2023, QFD introduced additional codes to help identify specific devices involved in fires caused by lithium-ion batteries. The new codes included a specific code for '*electric recreational vehicle/device, e.g. e-scooters, e-bikes, hoverboards (battery powered)*'.[13]

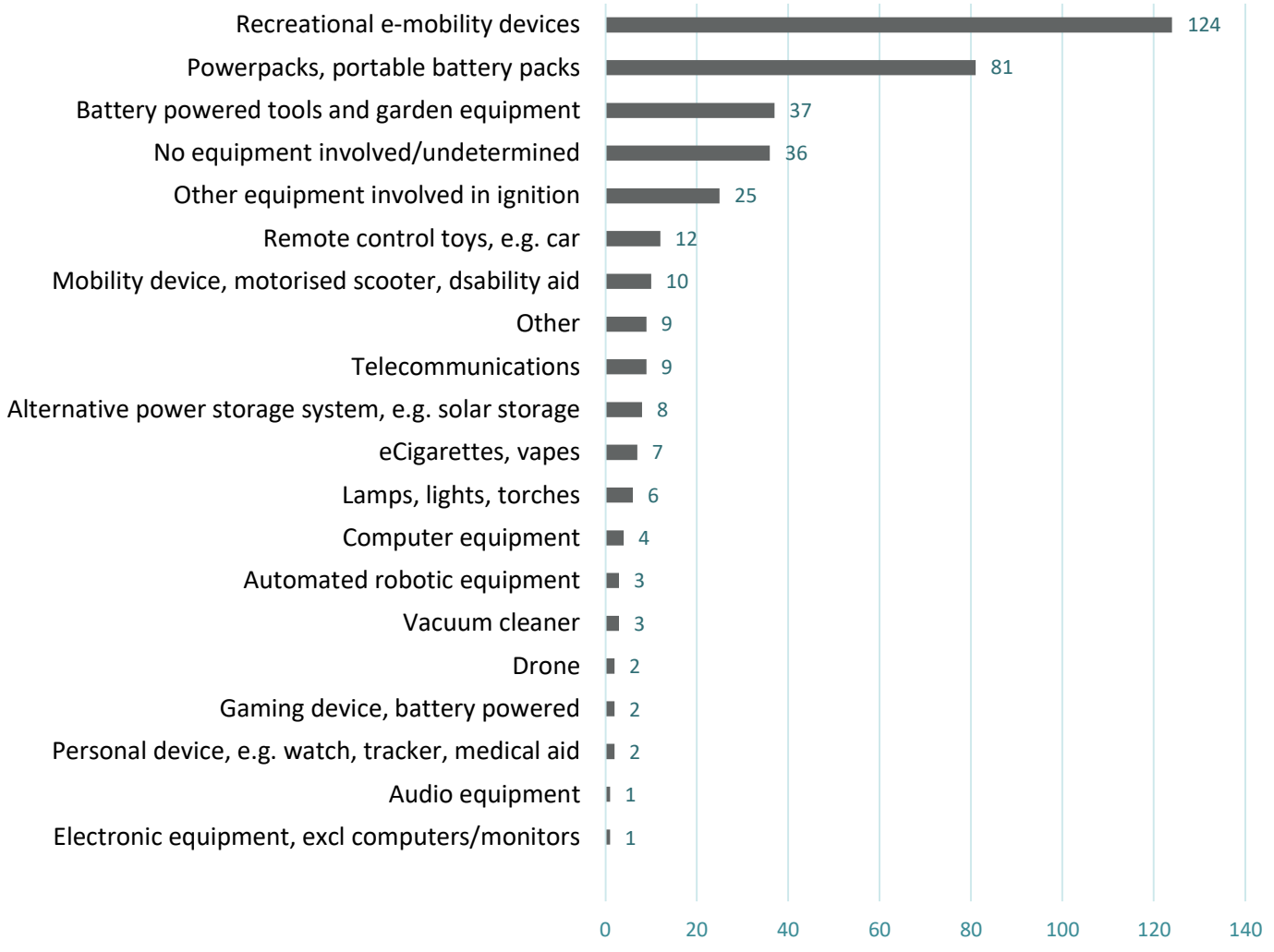
Since these reporting codes for specific devices were introduced, it has become clear that e-mobility devices are the largest single cause of lithium-ion battery-related fires in Queensland.

Focusing on the period during which this additional coding has been available, i.e. from 1 July 2023 to 30 April 2025, there were 382 lithium-ion battery-related fires. Of these, 124 were from a recreational personal mobility device, e.g. e-scooters and e-bikes[14].

Figure 2 shows the type of device identified as the cause of a lithium-ion battery fire.

Figure 2. Most common devices involved in lithium-ion battery fires

1 July 2023 to 30 April 2025



[13] While the code for lithium-ion batteries was introduced across Australia in July 2021, there are currently no national standards for codes to differentiate between products within this category. Therefore, in 2023, Queensland introduced its own additional codes into OMS to identify products and devices powered by lithium-ion batteries. These codes are used to identify *Equipment Involved in Ignition*.
[14] Data extracted 28 May 2025.

5. Firefighter observations

Attendance at fires initiated by lithium-ion batteries is a regular occurrence for firefighters, and fires involving e-mobility devices are of high concern to firefighters.

In Queensland, numerous fatalities, serious injuries and complete loss of structures have been associated with fires caused by e-mobility devices. Fires involving lithium-ion batteries also have environmental impacts, such as contaminated water run-off and challenges with safely disposing of batteries.

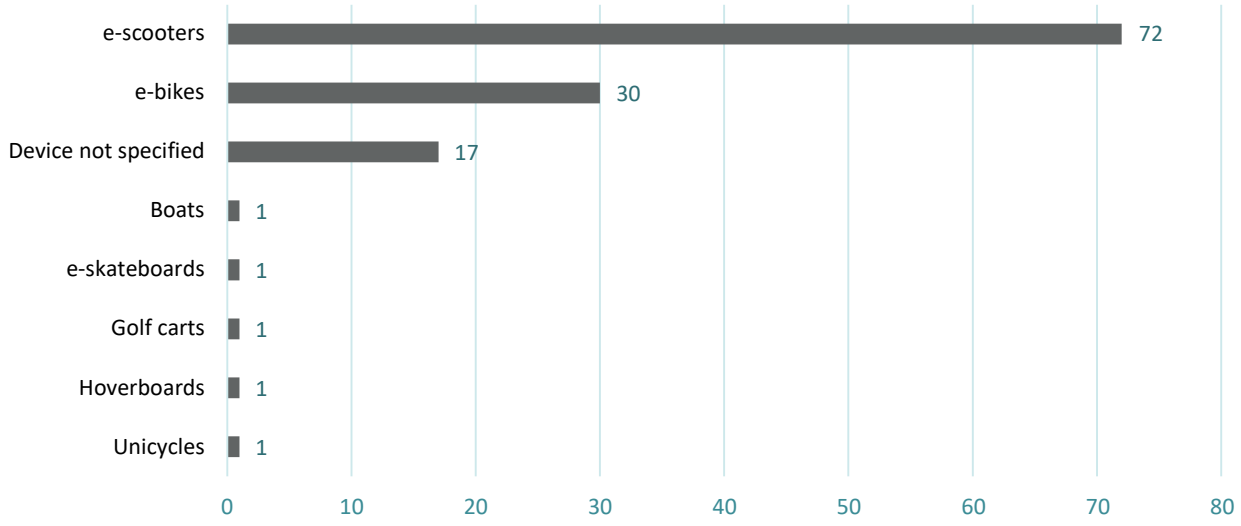
5.1 E-scooters

A manual review of firefighters' notes from reports of incidents involving recreational e-mobility devices indicate that from 1 July 2023 to 30 April 2025, of the 124 known incidents involving e-mobility devices, more than half were e-scooters.[15]

Figure 3 shows the specific e-mobility devices identified in firefighter notes as the cause of lithium-ion battery fires, i.e. the devices involved in the 124 incidents within 'Recreational e-mobility devices' in Figure 2.

Figure 3. Firefighter observations of e-mobility device types involved in fires

1 July 2023 to 30 April 2025



Incorrect charger use, overcharging, home modifications to increase speed and/or battery capacity, battery quality, and do-it-yourself conversions, all contribute to the high number of incidents involving e-scooters. Firefighters have observed that these factors, i.e. unsafe charging practices and tampering with or modifying batteries, also increase the risk of fires from e-bike batteries.

While other devices (such as portable powerpacks and chargers, and battery packs for power tools and garden equipment) also frequently cause lithium-ion battery incidents attended by QFD, incidents involving these smaller battery packs tend to be less severe and lead to less serious injuries.

[15] Data extracted 28 May 2025.

Firefighters' observations of e-scooter incidents are confirmed by research findings. Under controlled experiments, a room in a modern furnished house will transition to 'flashover' (i.e. the room is fully involved in fire) in **three to five minutes**.[16] In comparable experiments with fire caused by an e-scooter, time to flashover is **under one minute**.[17]

This rapid onset of fire diminishes the warning period provided by smoke alarms before potentially catastrophic explosion or fire spread. This is especially concerning in areas where people sleep, where smoke alarms detect smoke and provide an alarm in the early stages of a fire, giving occupants early warning and the opportunity to evacuate while the fire is still small. A key aspect of conventional fire safety strategy relies on smoke alarms giving building occupants early warning of fire to enable evacuation before a fire has grown to an extent that conditions in the building become untenable for safe evacuation. However, the effectiveness of this fire safety strategy may be reduced by a lithium-ion battery fire. This is due to the potential for explosion and rapid fire development to leave insufficient time for occupants to safely escape. Images from the research article below demonstrate the rapid fire growth from lithium-ion battery failure in an e-scooter.[18]

Quantifying the Fire Hazard from Li-Ion Battery Fires Caused by Thermal Runaway in E-scooters

Charles Fleischmann[1] · Craig Weinschenk[1] · Daniel Madrzykowski[1] · Alexandra Schraiber[2] · Benjamin Gaudet[2]

Received: 26 September 2024 / Accepted: 11 January 2025

These nine images are taken at one second intervals.

The first three images show the buildup of thermal runaway gases prior to ignition.

The remaining six images show the explosion and rapid fire spread.

[16] For a comparison of flashover time for modern, synthetic furnishings (<5 minutes) compared to older, natural furnishings (>30 minutes), see Fire Safety Research Institute, *Home Furnishings Comparison (Natural vs. Synthetic)* at https://www.youtube.com/watch?v=87hAnxuh1q8.

[17] Fire Safety Research Institute, *Intentional E-Scooter Overcharge: Bedroom* at https://fsri.org/resource/intentional-e-scooter-overcharge-bedroom.

[18] Fleischmann, C et al, 2025, Fire Technology, *Quantifying the Fire Hazard from Li-Ion Battery Fires Caused by Thermal Runaway in E-scooters*, page 14. (https://link.springer.com/article/10.1007/s10694-025-01707-z accessed 21 May 2025).

5.2 Fatalities and serious incidents

QFD's fire investigators have attended incidents that have resulted in fatalities, serious and critical injuries, and complete or partial destruction of property associated with lithium-ion battery related fires.

While a Coroner is responsible for investigating reportable deaths, since March 2022 QFD's firefighters have attended four fatal fires[19,20,21] and numerous other incidents causing serious burns[22,23,24] that firefighters suspect were related to e-scooters.

E-scooter-related incidents have also resulted in serious and complete property damage from fire and/or explosion.

Firefighters' observations of the severity of burns sustained from fires involving e-scooters are confirmed by an Australian-first study published by Queensland doctors.[25] The study's main findings indicate –

- most burns victims were male, and in the 25 to 44-year age group
- of the serious burns requiring inpatient treatment, 57% were from e-scooter related fires and 36% were from vapes
- fires from e-scooters caused deeper burns over larger areas and required longer hospital stays
- vape burns were often on the thigh caused by a vape igniting in a trouser pocket
- of the less serious burns treated in Emergency Departments (rather than inpatient treatment), the main culprit was powerpacks (67%).

5.3 High risk practices and environments

5.3.1 Unsafe charging practices

Many thermal runaway incidents can be attributed to unsafe charging practices, especially using an incorrect charger for a device. It is a common misconception that if a charger fits into a device and works to charge the device, then it is appropriate for use. This is not the case.

Rechargeable devices should only be charged with the original charger supplied by the manufacturer. A charger should have the Regulatory Compliance Mark[26] to show it has met relevant Australian Standards. Devices should not be left unattended while charging, and chargers should be disconnected once charging is complete. Batteries should be allowed to cool after use and before recharging.

Charging of e-scooters and e-bikes should occur in a dry, well-ventilated area (i.e. outdoors), on a non-combustible surface and away from soft furnishings or combustible materials.

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[19] Duff, M et al, 2024, *Lithium-ion battery related burns and emerging trends: a retrospective case series and data analysis of emergency presentations* (https://pubmed.ncbi.nlm.nih.gov/39205421/ accessed on 16 May 2024).
[20] For the surviving victim's account of the incident, see Woman whose partner was killed by e-scooter battery fire warns of danger of lithium-ion batteries (https://www.9news.com.au/national/woman-whose-partner-was-killed-by-escooter-battery-fire-warns-of-danger-of-lithium-ion-batteries/7a4bb3d9-9716-4f8d-9baf-8804b5dcd918 accessed on 16 May 2025).
[21] QFD references QF6-22-031253, QF5N-22-041423, QF4-23-121253, QF5N-25-031541.
[22] QFD reference QF5S-24-139240. For the victim's account of the fire see New Farm fire: Brisbane man speaks out after 'miraculous' escape from house fire (https://www.9news.com.au/national/queensland-man-speaks-out-after-miraculous-escape-from-house-fire/41febc38-9b02-414a-ab0c-8ef6d31cc9b0 accessed on 16 May 2025).
[23] QFD reference QF5S-24-043194. See E-scooter fire leaves two people in critical condition after suffering extensive burns - ABC News (https://www.abc.net.au/news/2024-04-20/qld-new-farm-unit-fire/103749054) (accessed on 16 May 2025).
[24] QFD reference QF6-25-011264, QF6-24-023188.
[25] Duff M, Manzanero S, Barker R, Barlas P, Westacott G, Lisec C, 2024, *Lithium-ion battery related burns and emerging trends: a retrospective case series and data analysis of emergency presentations*, ANZ Journal of Surgery Volume 94, Issue 11 (https://onlinelibrary.wiley.com/doi/full/10.1111/ans.19218#reference accessed on 22 May 2025).
[26] https://www.eess.gov.au/rcm/regulatory-compliance-mark-rcm-general/.

5.3.2 Home modifications and DIY

Constructing homemade lithium-ion battery packs has become increasingly popular among hobbyists and DIY enthusiasts. However, while it can be viewed as a cost-effective solution, it comes with significant risks if not done correctly. QFD's State Fire Investigation Unit has observed an upward trend of fire incidents linked to unsafe home modifications of e-mobility devices. Many users attempt to enhance battery capacity or power output by installing larger, non-standard batteries, potentially sourced from unreliable manufacturers.

These modifications significantly increase the risk of fire due to –

- incompatible chargers: the use of mismatched chargers leads to overcharging, overheating, and battery instability
- unregulated battery replacements: counterfeit or low-quality imported batteries may lack critical safety features, making them prone to thermal runaway
- poor installation practices: DIY battery installations often bypass essential protective circuits, leading to electrical faults and short-circuiting
- excessive power draw: modified e-mobility devices may demand more power than their original design can handle, overloading electrical systems and increasing fire risk
- DIY construction of battery packs: construction of battery packs from second-hand batteries collected from various sources, and mixing and matching of those batteries, is a high-risk practice that increases the risk of fire and explosion.

The second-hand market for e-scooters compounds this issue, as consumers may unknowingly purchase a device with a modified or compromised battery system. These types of modifications put lives and property at significant risk. Commercial battery solutions, while more expensive, tend to be extensively tested and safer, especially for high-energy applications.

5.3.3 Waste vehicles and facilities

QFD notes the increasing number of lithium-ion battery related fires resulting from inappropriate disposal of batteries in household and commercial waste, and the challenges these fires pose for waste collection vehicles and facilities.[27] The QFD website provides advice on how to safely dispose of batteries, as well as links to recycling services.

5.3.4 Evacuation routes and exits

Given the speed and ferocity of fires from e-mobility device batteries in thermal runaway, the location of an e-scooter or e-bike can prevent occupants exiting a building[28,29] and this scenario has been observed by QFD when undertaking fire investigations.

Many jurisdictions have recorded fatalities in these circumstances, especially in multi-dwelling buildings where evacuation routes have been blocked by an e-scooter or e-bike battery in thermal runaway, e.g. in hallways, near doors, and near stairwells. Fatalities have not been limited to owners of devices. Neighbours and residents above or below where the device was located have died as a result of evacuation routes being blocked by devices on fire. [30,31,32]

[27] 'More than 10,000 fires a year' – https://www.abc.net.au/news/2024-06-20/lithium-ion-batteries-10000-fires-australia-waste-management/104002912 (accessed on 16 May 2025).
[28] Footage from London Fire Brigade – https://www.youtube.com/watch?v=Ka2hMktqoCY&t=3s (accessed on 16 May 2025).
[29] 'Resident escapes e-scooter fire' – Resident climbs from burning unit to escape e-scooter fire | ABC News (accessed on 16 May 2025).
[30] Sofia's Story | London Fire Brigade – https://www.london-fire.gov.uk/safety/lithium-batteries/sofias-story/ (accessed 16 May 2025).
[31] 'Another e-bike fire turned deadly in New York City' – https://www.youtube.com/watch?v=ytVU2Jk7jkE (accessed on 16 May 2025).
[32] 'E-Bike Battery Caused Fire That Killed Young Journalist, Officials Say', https://www.nytimes.com/2024/02/28/nyregion/fazil-khan-fire-lithium-ion-battery.html; Man who died in NYC apartment fire ID'd as 27-year-old Indian journalist Fazil Khan – https://nypost.com/2024/02/25/us-news/man-who-died-in-harlem-apartment-fire-idd-as-27-year-old-indian-journalist/ (accessed 5 June 2025).

5.3.5 Enclosed environments

The vapour emitted from a lithium-ion battery in thermal runaway can ignite and explode, and cause inhalation injuries that can lead to lengthy hospital admissions and be fatal[33]. Although toxic and flammable gases are also emitted by small devices with lithium-ion batteries, the larger battery packs in e-scooters and e-bikes can make them particularly dangerous.

In enclosed environments where gases cannot readily dissipate, intense explosions can produce extreme pressure[34]. This explosive force can blow windows from a room[35,36], and the injuries sustained by occupants of that room can be catastrophic.

Explosion and rapid fire development, especially in a confined area, can mean conditions become untenable before occupants can move to a place of safety. People in the vicinity of a failing battery may have limited time for escape or the effects of a failing battery, e.g. fire and toxic vapours, may block the escape route. For these reasons, a number of jurisdictions have banned e-scooters and/or e-bikes from trains[37].

Incidents have also occurred in lifts/elevators that have led to critical injuries and fatalities. This enclosed environment provides no mitigation against the immediate and proximate impacts from thermal runaway, leaving occupants badly burned and/or impacted by blast.[38]

6. Summary

Most rechargeable lithium-ion batteries, when used and charged appropriately, and manufactured to high standards, will be safe. New South Wales provides a contemporary example of how regulatory change can seek to ensure high battery standards[39].

Data, research findings, and firefighters' observations, are all consistent in demonstrating that lithium-ion batteries used to power e-mobility devices can be a serious fire risk. When compromised (by damage, misuse or fault) these batteries can fail catastrophically, with loss of life, life-altering injuries, and property loss being predictable outcomes.

E-scooter batteries are of high concern to firefighters, and battery failures in e-scooters in Queensland have had significant consequences.

QFD's website provides important messaging around the safe use, charging, storage and disposal of lithium-ion batteries at https://www.fire.qld.gov.au/safety-education/battery-and-charging-safety/lithium-ion-battery-safety.

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[33] QFD reference QF5N-25-031541.

[34] Wang, H et al, *Fire and explosion characteristics of vent gas from lithium-ion batteries after thermal runaway: A comparative study*, eTransportation Volume 13, August 2022 (https://www.sciencedirect.com/science/article/abs/pii/S2590116822000364?via%3Dihub accessed on 21 May 2025).

[35] Fire Safety Research Institute, *Intentional E-Scooter Overcharge: Bedroom* at https://fsri.org/resource/intentional-e-scooter-overcharge-bedroom, and *Intentional E-Scooter Overcharge: Living Room* https://vimeo.com/768559847/589a05cc67?share=copy (accessed on 16 May 2025).

[36] See image on page 7 of damage from lithium-ion battery explosion.

[37] For example, e-scooters have been banned from trains in the UK (London underground and UK overland trains), Ireland, Dubai, and major cities in Germany and Spain. Non-folding e-bikes have been banned across most transport networks in London (see BBC reporting https://www.youtube.com/watch?v=qHIEsOAFQUg and TfL advice https://tfl.gov.uk/info-for/media/press-releases/2025/march/tfl-announces-safety-ban-of-non-folded-e-bikes-on-its-transport-network accessed on 26 May 2025).

[38] CCTV footage from explosions in lifts in international jurisdictions is available via a simple online search, but can be distressing to watch.

[39] See NSW developments in regulating micromobility devices, batteries and chargers at https://www.nsw.gov.au/housing-and-construction/safety-home/electrical-safety/lithium-ion-battery-safety/new-standards-for-lithium-ion-batteries-e-micromobility-devices, and the NSW Legislative Council report *Use of e-scooters, e-bikes and related mobility options* at Report No 25 - Portfolio Committee No. 6 - Transport and the Arts - Use of e-scooters, e-bikes and related mobility options.pdf.