Portfolio Committee No. 6 - Transport and the Arts

Inquiry into the use of e-scooters, e-bikes and related mobility options

OCN Post-hearing Response

Dear Chair.

Thank you for the opportunity to provide this response.

During evidence you asked Commissioner Fewtrell:

Chair "Is it the case that, for example, with e-bikes and e-scooters, if they're bought with good lithium batteries from reputable providers and not tinkered with, they're a lot safer generally, or is there an issue that all lithium ion batteries at some point can be inherently dangerous, in your experience?

Commissioner Fewtrell: "There is an inherent issue with the chemistry of a lithium ion battery that it is prone to combustion ..... It is important to note—and this was a point that Mr Tuckwell raised in his evidence—that it is only an issue if batteries are being misused. That's not the case."

I was subsequently asked by Senator Fang "Mr Tuckwell, we've had owners' corporations give us evidence previously about their fear in relation to the risk of fire from these batteries. It seems to be your evidence is contrary to that. How would you come up with your determination? Have you engaged with experts? Have you sought advice from battery experts and commissioned any reports, or is it just research that's been done by your organisation?"

The purpose of this response is to provide the expert opinion on the Commissioner's view that lithium-ion batteries are "prone to combustion" and to answer Senator Fang's question relating to the veracity of our evidence.

I reiterate that OCN are experts in residential strata, not batteries. We research and seek facts from the relevant experts to ensure our members have the best available information on which to make their decision about strata living.

Following is a summary of that research and expert opinion, as Senator Fang requested.

<u>Are Lithium-ion batteries prone to combustion and just catch fire or is fire due to misuse?:</u>

> Professor Amanda Ellis, Head of Chemical Engineering Melbourne University states "There is no denying that lithium-ion batteries do catch on fire as we see this in the news. However, this is due to poor use, poor battery quality, overcharging and/or misadventure. With further government standards and regulations these events will be substantially minimised."

And “Overall, they’re actually very safe if they’re operated correctly.” “Batteries are safe but they’ve got to be operated in the conditions that they were designed for”[1]

Commissioner Fewtrell is quoted by the ABC: “stressed batteries were "safe and effective" when used properly – meaning bought from reputable suppliers, charged appropriately and disposed of when damaged.”[2]

Dr Adam Best CSIRO Principal Research Scientist: “the cause of thermal runaway isn't related to the battery necessarily, but the products containing them. "What happens is that secondary vendors will purchase those [batteries] and then package them up in their own way.”[3]

CPSC Data on E-Bikes and E-Scooters: The U.S. Consumer Product Safety Commission (CPSC) tracks incidents involving lithium-ion batteries in e-bikes and e-scooters. Their data shows that battery-related fires are usually linked to a triggering event, such as overcharging, physical damage, or short-circuiting, rather than an unexplained or random fire occurrence. While lithium-ion batteries can catch fire under certain conditions, spontaneous combustion without any external cause is extremely rare.

NFPA (National Fire Protection Association) Research: Research by the NFPA has shown that the vast majority of lithium-ion battery fires are caused by abnormal conditions, such as thermal runaway initiated by external factors like overcharging, internal defects, or damage from impacts. Lithium-ion batteries themselves don’t spontaneously combust; a catalyst—like excessive heat, overcharge, or physical trauma—is almost always necessary for failure.

All this data (and more) supports the position I presented in evidence that Lithium-ion battery failure or spontaneous combustion just does not occur, it is caused by some form of misuse.

Perhaps it is my use of the term 'misuse' that is confusing? I used it as a catch-all to describe all the conditions that cause Li-ion battery fire as quoted in the expert data above.

The point remains that it is all these types of misuse – including faulty or wrong batteries, manufacturing defects, incorrect charging, cell damage, excessive heat, short

[1] Guardian Article: https://www.theguardian.com/technology/2024/nov/15/lithium-ion-battery-explosions-why-fire-risk-e-bikes?CMP=Share_AndroidApp_Other
[2] ABC quote https://www.abc.net.au/news/2024-03-13/lithium-ion-fires-recycling-plants-trucks-vapes-exploding/103582110
[3] ABC Quote Dr Adam Best CSIRO Principle research scientist: https://www.abc.net.au/news/2024-03-16/lithium-ion-battery-fires-nsw-low-quality-products/103592290

circuiting that cause fires. Lithium-ion batteries per se do not normally spontaneously combust.

Lithium-ion battery fires are rare but increasing

Considering all these causes of Li-ion battery fires vs the huge number of battery powered devices in the market, battery fires are a rare event, about 1 in 150,000, akin to the risk of being killed by lightning in any year.

(Fire NSW Data reports on 285 Li-ion battery fires on NSW in 2023. Data on the number of Li-ion battery devices in the market is not available, but this number is growing. The ACCC estimate there will be 33 battery devices in every home by 2026. If we assume less than half that number now, that means 35 to 45 million devices already in the market in NSW in 2023, which is in the order of 1:150,000 risk).

Dr Adam Best confirms LIB fires are "increasing in line with the huge number of battery powered devices in the market"[4]

ACCC confirms this to be the case: "AFAC also submitted that as the uptake of Li-ion batteries increases, the number of incidents reported is expected to increase, consistent with international trends" [5]

What does this mean for e-bike and e-scooter battery fires

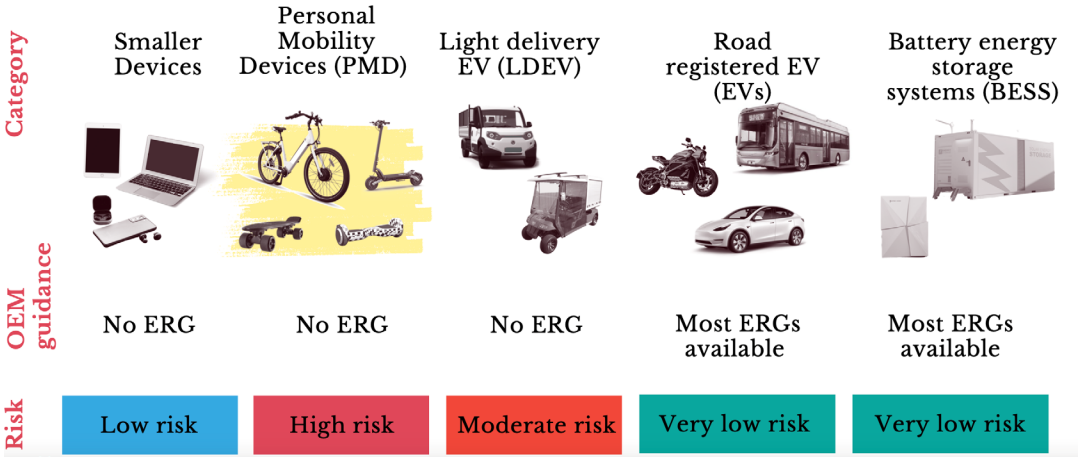
Notwithstanding this data, there is no denying that these fires are devastating and dangerous events that need to be urgently addressed.

EV FireSafe, an Australian research and expert firefighting company, funded by the Department of Defence, have produced a handy graphic to help demonstrate the difference in the fire risk between lithium-ion battery powered devices:

[4] ABC report://www.abc.net.au/news/2024-03-13/lithium-ion-fires-recycling-plants-trucks-vapes-exploding/103582110

[5] PP 27 https://www.accc.gov.au/system/files/lithium-ion-batteries.pdf

Lithium-ion battery categorisation for emergency response - common uses



ERG = Emergency Response Guide – data to assist with fire management

It highlights the Personal Mobility Devices or e-micromobility – e-bikes and e-scooters are the highest risk category. The ACCC and CSIRO confirms this is largely due to the lack of regulation, number of poor-quality devices and misuse, including damage, exposure to the elements, modification and poor charging practices[6]. Heightened by being charged indoors and in apartments.

Recommendations

OCN's position remains, which is we urge the focus on addressing the real causes of Li-ion battery fires and not lose the benefits of a sustainable, efficient and viable means of transport that e-bikes and e scooters offer.

Education and regulation are key in achieving this outcome.

To play our part in education and risk mitigation in apartment buildings, OCN has presented webinars, compiled information and developed policies and a template by-law, for owners corporations to help manage the risk.

Along with ACCC and CSIRO[7], we continue to advocate for better regulation.

We congratulate NSW Fair Trading for leading with new regulations relating to micromobility to take effect from Feb 2025. This will help consumers buy better products and help end dangerous imports.

The Government has stopped short of legislation to ban modifications. We continue to advocate for such bans, and to educate consumers on the risk.

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[6] PP 38 https://www.accc.gov.au/system/files/lithium-ion-batteries.pdf
[7] Recommandations: https://www.accc.gov.au/system/files/lithium-ion-batteries.pdf