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Office of the Secretary
U.S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

Submitted via *regulations.gov*

**Comments of Consumer Reports to the
Consumer Product Safety Commission on the Notice of Proposed Rulemaking:
Safety Standard for Lithium-Ion Batteries Used in Micromobility Products and
Electrical Systems of Micromobility Products Containing Such Batteries
Docket No. CPSC-2025-0012**

Consumer Reports (CR), the independent, nonprofit, and nonpartisan member organization,¹ welcomes the opportunity to submit the following comments to the Consumer Product Safety Commission (CPSC) regarding its notice of proposed rulemaking (NPR) for a safety standard for lithium-ion batteries used in micromobility products and electrical systems of micromobility products containing such batteries. According to the CPSC, from 2017 to 2024, electric bicycles (or, as abbreviated in the NPR, eBikes), electric scooters (eScooters), and self-balancing scooters (hoverboards) were associated with 45 fire-related deaths.² Strong, mandatory safety standards are long overdue and necessary to prevent additional fatalities and injuries related to hazardous batteries and battery management systems. We offer the following comments on the proposed rule, as well as considerations to address additional areas of concern.

Performance and Labeling Requirements

We support the incorporation by reference of UL 2849-20, *Standard for Electrical Systems for eBikes*; UL 2272-24, *Standard for Electrical Systems for Personal E-Mobility Devices*; and UL 2271-23, *Standard for Batteries for Use in Light Electric Vehicle (LEV) Applications*; as well as the proposed modifications to the standards' performance and labeling requirements in order to eliminate or adequately reduce the unreasonable risks of injury.

¹ Founded in 1936, CR has a mission to create a fair and just marketplace for all. Widely known for our rigorous research and testing of products and services, we also survey millions of consumers each year, report extensively on marketplace issues, and advocate for consumer rights and protections around safety, digital rights, financial fairness, and sustainability. CR is independent, nonprofit, and nonpartisan.

² CPSC, "Micromobility Products-Related Deaths, Injuries, and Hazard Patterns: 2017–2024" (Apr. 2026) (online at: www.cpsc.gov/s3fs-public/Micromobility_Products-Related_Deaths_Injuries_and_Hazard_Patterns_2017-2024.pdf).

Adding Strong Tamper-Resistant Battery Enclosure Requirements

CR's supports the CPSC's proposed addition to address the risk of injury from accessing battery enclosures/compartments. To reduce the risk of injury associated with accessing a micromobility product's battery pack, we agree with adding the tamper-resistant requirements of UL 2272-24 section 9.2.3 to UL 2849-20 and UL 2271-23, while simultaneously removing that section's allowance for a tamper-evident seal, which does not provide a sufficient level of protection on its own, to be used as an alternative to more stringent tamper-resistant requirements. These proposed modifications would ensure that a battery compartment be ultrasonically welded or equivalently secured, or that a battery pack is designed to be inaccessible using common household tools.

Adding a Post-Discharge Charge Test to UL 2849-20 and UL 2271-23

CR supports the proposed addition of a post-discharge test that would help to limit the risk of fire associated with charging. From 2019 to 2023, of the 188 recorded battery hazard incidents involving a single victim, nearly 53% of incidents occurred while a micromobility product was charging.³ To reduce the risk of death, injury, and property damage caused by overcharged or improperly charged batteries overheating and thermal runaway, we agree with adding the post-discharge charge test requirements of UL 2272-24 section 28 to UL 2849-20 and UL 2271-23. This requirement will ensure that battery management systems (BMS) prevent charging when battery cells exceed a temperature higher than the manufacturer-specified maximum charging temperature. By requiring the second charge cycle to be initiated immediately after the first full discharge and prior to the second and third charge/discharge cycle, this proposed requirement accounts for the worst-case, yet eminently foreseeable, scenario in which a consumer charges a battery immediately after it has died.

Requiring a Reverse Polarity Test

We support the proposed addition of a reverse polarity test to the UL 2849-20, UL 2272-24 and UL 2271-23 testing requirements to prevent damage to the battery pack through use of an incompatible battery charger. As the CPSC notes, the primary concern with aftermarket battery chargers is compatibility with the micromobility product charging circuit and battery. The proposed test, which would subject the electrical system or battery pack to a reverse polarity charging condition for four hours (or until a fire or explosion occurs), and require that the system prevent reverse voltage from reaching the battery cells, will help protect consumers against electric shock and fire risks associated with incompatible, aftermarket charging components. To avoid redundancies, we agree with the agency's proposal to waive the reverse polarity testing requirements under UL 2849-20 and UL 2272-24 if the battery system has separately passed the reverse polarity test under UL 2271-23.

³ CPSC, "Safety Standard for Lithium-Ion Batteries Used in Micromobility Products and Electrical Systems of Micromobility Products Containing Such Batteries – Table 3.3 Single Victim Incidents, Fatalities, and Injuries by Product and Hazard" (June 24, 2026) (online at: www.govinfo.gov/content/pkg/FR-2026-06-24/pdf/2026-12749.pdf).

Labeling and Instruction Requirements

Recognizing that warning labels on their own are insufficient to adequately reduce the hazards associated with lithium-ion batteries and micromobility product electrical systems, we agree with the proposed additions to the UL standards' labeling requirements. Specifically, we support the proposed increases to the text sizes used in warning labels, and the inclusion of additional labeling requirements that provide information on proper BMS usage, warn users against attempting to access the battery, and address hazard patterns not currently included in the applicable UL standards. To help consumers safely pair a battery with a micromobility device, we agree that a battery pack should be marked with text that identifies every mobility product it is compatible with. We also agree with the proposed modifications and additions to a device's instruction manual requirements. It is important that instructions include all cautionary markings required on a product and battery, as well as language that addresses proper battery removal and water exposure risks, and provides complete information on compatibility with aftermarket chargers.

Chemical Flame Retardants

CR also appreciates the agency's request for comments on whether plastic battery enclosures should use chemical flame retardants. Under the proposed standard, micromobility electrical systems would have to comply with UL 2849 and UL 2272, which require plastic enclosures to meet flammability ratings of UL 94, *Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances*. To satisfy these small open-flame tests, plastic manufacturers add chemical flame retardants to the battery's plastic housing. However, as mounting peer-reviewed evidence has highlighted, these chemical additives can create health risks without providing clear protection from fires.⁴⁵ Small flame tests like those in UL 94 evaluate resistance to a minor external flame for a few seconds, but they cannot adequately slow or contain thermal runaway fires that originate inside of a battery pack.

Therefore, while the safety benefit of using chemical flame retardants is unproven, the harms are well documented. Because consumers often charge micromobility products inside their homes, these additives can off-gas into indoor air. Flame retardants can also degrade the strength of the plastic enclosures themselves, making them more brittle and increasing fire toxicity by producing denser smoke and higher levels of carbon monoxide during a fire.⁶ Safety, in this case, would then largely depend on stopping thermal runaway at the cell and electrical levels, rather than on use of such chemicals. The CPSC should prohibit the use of harmful flame retardant chemicals in the plastic battery enclosures of lithium-ion batteries in order to prevent unnecessary consumer exposure to harmful chemicals.

⁴ Environmental Science and Technology, "High Potential Harm, Questionable Fire-Safety Benefit: Why Are Flame Retardants in Lithium-Ion Battery Enclosures?" (Jan. 28, 2025) (online at: [www.pubs.acs.org/esthag/article-pdf/59/5/2344/40954642/es4c10630.pdf](https://pubs.acs.org/esthag/article-pdf/59/5/2344/40954642/es4c10630.pdf)).

⁵Emerging Contaminants, "Flammability standards for furniture, building insulation and electronics: Benefit and risk," (2020) (online at: <https://www.sciencedirect.com/science/article/pii/S2405665020300160?via%3Dihub>)

⁶ Environmental Science and Technology, "High Potential Harm, Questionable Fire-Safety Benefit: Why Are Flame Retardants in Lithium-Ion Battery Enclosures?" (Jan. 28, 2025) (online at: [www.pubs.acs.org/esthag/article-pdf/59/5/2344/40954642/es4c10630.pdf](https://pubs.acs.org/esthag/article-pdf/59/5/2344/40954642/es4c10630.pdf)).

Additional Areas for Consideration

CR also offers the following items for consideration by the CPSC as it works through the proposed standard and other issues related to micromobility products generally.

Conversion Kits

With regard to conversion kits, the CPSC should carefully evaluate its approach to ensure that unsafe products and components are not inadvertently legitimized. While the proposed standard establishes a definition and safety requirements for conversion kit components, retrofitting a rechargeable battery and a motor kit onto a non-powered bicycle can create a myriad of safety hazards. Non-powered bicycle frames are not typically engineered to handle the added weight and torque of electric-powered speeds, which may put stress on the frame and fork. Non-powered bike brakes are also not generally designed to handle the added weight and power associated with conversion kits and can lead to the bike having significantly longer stopping distances when compared to a purpose-built eBike.

We are also concerned that various types of conversion kits, which do not align with the CPSC's proposed definition, may evade safety standards. For example, CR is aware of products on the market, sometimes referred to as "bike boosters," that attach to a bike's seat post and rear wheel. The device, powered by an electric motor, drives a roller that presses directly against the thread of the rear tire. Using this friction, the spinning roller transfers power to the wheel thereby propelling the bicycle forward and providing electric assistance. We are also aware of conversion kits for scooters, which the NPR does not address. The Commission should consider what safety requirements may be appropriate for these subjects.

Because federal bicycle safety standards under 16 CFR Part 1512 apply only at manufacture or first sale, they offer no protection with respect to modifications someone might make to a bike at home. By establishing a compliance pathway for conversion kits without addressing their intended use mechanically, the CPSC risks encouraging potentially unsafe modifications. As such, the Commission should consider, at minimum, including warning labels on all kits alerting consumers to the risks of hazards like frame stress and brake failure while also evaluating whether power or speed caps on standalone kits might help to keep consumers from unwittingly putting themselves at risk.

Coordination with the National Highway Traffic Safety Administration (NHTSA)

CR appreciates that the proposed rule establishes a broad scope covering the electric systems of all consumer micromobility products under CPSC jurisdiction. However, as these products continue to evolve, CR recommends that the CPSC coordinate with NHTSA to eliminate any regulatory gray areas that arise. Consistent with our May 2024 comments to the CPSC on its advance notice of proposed rulemaking regarding the mechanical safety of eBikes, any throttle-driven on-road vehicle capable of exceeding 20 mph under motor power alone should be classified as a motor vehicle subject to NHTSA regulation and enforcement. Coordination here would help to close any gaps that may exist and ensure that higher-speed micromobility products are not left unaddressed.

Ensuring Compliance and Future Scope Clarification

It is foreseeable that some manufacturers and importers may attempt to evade compliance with the proposed rule by falsely categorizing and labeling devices. The CPSC should enforce the rule broadly to ensure that any device that could reasonably be identified as a micromobility product, regardless of how it is marketed, complies with proposed mandatory safety standards. Additionally, the CPSC should consider whether any products within the scope of UL 2850, *Outline of Investigation for Vehicle Systems of Electric Scooters and Motorcycles*, should be categorized as micromobility devices under CPSC’s jurisdiction and thereby subject to the mandatory safety standard that is the subject of this proceeding.

Proposed Effective Date, and Stockpiling Provision

Consumer Reports supports the Commission’s proposed 180-day effective date following publication of the final rule. While a shorter transition window could deliver public safety benefits sooner, we recognize that manufacturers require reasonable lead time to incorporate CPSC’s required modifications to the applicable UL standards and complete necessary third-party testing. However, given the well-documented safety hazards of devices that do not comply with the applicable UL standards, we strongly urge the CPSC not to extend the effective date beyond the proposed 180 days.

We also urge the CPSC to reduce the proposed anti-stockpiling rate of 120 percent of the baseline volume during the proposed 180-day transition period before a final rule takes effect. In December 2022, the agency called on manufacturers, importers, distributors and retailers of micromobility devices to review their product lines and ensure compliance with the applicable UL safety standards.⁷ However, nearly four years later, the Commission has preliminarily determined that micromobility products as a whole still do not substantially comply with the voluntary standards.⁸ Therefore, we are concerned that if the stockpiling rate is not reduced, companies may continue to manufacture and sell potentially hazardous products before the rule goes into effect, leaving consumers at greater risk for injury and death.

Alternatives to the Proposed Rule and Regulatory Analysis

While we agree with the Commission’s preliminary determination that none of the considered alternatives would eliminate or adequately reduce the risk of injury and that the societal benefits bear a reasonable relationship to the economic costs, certain benefits may not be fully accounted for. Specifically, the analysis could do more to fully capture the risk posed to people who do not own micromobility devices but who nonetheless are in close proximity to the devices, such as neighbors and emergency responders, who may not have a direct role in

⁷ CPSC, Letter to manufacturers urging compliance with safety standards for battery-powered products to reduce the risk of injury and death (Dec. 19, 2022) (online at: www.cpsc.gov/s3fs-public/Important%20Safety%20Information%20Concerning%20Micromobility%20Devices.pdf).

⁸ CPSC, Notice of Proposed Rulemaking, “Safety Standard for Lithium-Ion Batteries Used in Micromobility Products and Electrical Systems of Micromobility Products Containing Such Batteries – A. Overview of the Proposed Rule” (June 24, 2026) (online at: www.govinfo.gov/content/pkg/FR-2026-06-24/pdf/2026-12749.pdf).

purchasing or operating the device. For example, the battery of a micromobility device that is charged and stored in multi-family housing would pose a hazard to the broader building community. A single thermal runaway event can rapidly fill shared hallways with difficult to extinguish fires, create toxic smoke, block exit routes, and damage neighboring units, directly endangering those who never chose to bring this product into their homes. Incorporating these risks into the assessment would reinforce the societal value of establishing strong, mandatory standards.

Conclusion

CR appreciates the opportunity to comment on the proposed safety standard for lithium-ion batteries used in micromobility products. Establishing enforceable strong, mandatory standards will deliver necessary safety protections for consumers who use and live alongside these increasingly popular devices. We look forward to the CPSC working toward creating a safer marketplace for these products.

Respectfully submitted,

Gabe Knight
Senior Policy Analyst
Safety

Cooper Lohr
Senior Policy Analyst
Transportation and Safety