
Micromobility White Paper



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Disclaimer

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Introduction

This white paper provides a roadmap of the legal landscape for micromobility products (bicycles, electric bicycles, scooters, mopeds and hoverboards) which overlays the technical issues explored beginning at the U.S. Consumer Product Safety Commission's September 15, 2020 Micromobility Product Forum on technical and engineering aspects for safety of micromobility products.

Rideshare bicycles and scooters have become increasingly ubiquitous in cities across the United States over the past few years. While many rideshare bicycles are conventional, others feature motorized pedal-assist technology and are commonly referred to as "electric bicycles" or "e-bikes." As for scooters, electric versions are offered to consumers by rapidly growing micromobility companies. Competition in the industry driving innovation, resulting in rapid changes in style and type of micromobility products. Given the increasing popularity and expansion of these vehicles across the country, it is important to understand the regulatory landscape that ensures the safety of these products.

Overview of the Current Regulatory Landscape

Product Safety Regulations for Bicycles

Bicycles were one of the first products to be regulated by the U.S. Consumer Product Safety Commission (CPSC) after Congress established the Commission to regulate the safety of consumer products at the federal level. In 1978, the CPSC promulgated its first rules regulating traditional human powered bicycles (16 CFR part 1512) with the goal of establishing requirements for their assembly, braking, and structural integrity.

The federal safety standard sets forth detailed mechanical requirements along with those for a bicycle's many component parts and systems including steering, brakes, pedals, drive chain, protective guards, tires, wheels (and hubs), front fork, frame assembly, seats, and even reflectors. The standard also addresses operation and safety instructions to be provided to consumers and requisite labeling that provides consumers with certain identifying information and manufactures and private labelers with traceability information. If a bicycle fails any of these requirements, it is a banned product under the Federal Hazardous Substances Act (FHSA).

Product Safety Regulations for Electric Bicycles

It was not until 25 years after the promulgation of the first bicycle rules, in 2003, that the CPSC, pursuant to an act of Congress, updated the federal safety standard for bicycles to include low-speed electric bicycles. At that time the CPSC's definition of bicycle was amended to include "a two- or three-wheeled vehicle with fully operable pedals and an electric motor of less than 750 watts (1 hp), whose maximum speed on a paved level surface, when powered solely by such a motor while ridden by an operator who weighs 170 pounds, is less than 20 mph (i.e., a low-speed electric bicycle)." This definition is significant because it allows electric bicycles to travel faster than 20 mph when that bicycle is powered by both a motor and human (through pedals).

Electric bicycles, including most of those used for ridesharing purposes, are regulated by the CPSC and must comply with the mandatory federal safety standard for bicycles at 16 CFR part 1512, described above, or are otherwise banned products.

Electric bicycles are also frequently regulated at the state level. Over half of the states have promulgated some form of safety related regulation regarding the operation, registration, and/or licensing of electric bicycles. These state rules differ meaningfully from the federal safety standard.

Product Safety Regulations for Electric Scooters

Like rideshare bicycles, electric scooters have taken the streets of American cities by storm. However, unlike bicycles, electric scooters are not separately regulated consumer products. In other words, while scooters can still be defective and create a substantial product hazard to consumers under the Consumer Product Safety Act (CPSA), and therefore, be subject to a corrective action, there is no mandatory federal safety standard that specifically addresses scooters. Electric scooters, at least those with a top speed less than 20 mph, are also exempt from the definition of “motor vehicles,” and therefore, are not required to comply with Federal Motor Vehicle Safety Standards (FMVSS) enforced by the National Highway Traffic Safety Administration (NHTSA).¹

In the absence of distinct federal regulation of electric scooters, a patchwork of voluntary safety standards, as well as state and local laws and regulations have emerged to ensure the safety of these products. The most prominent voluntary safety standard for electric scooters is ANSI/CAN/UL 2272—Standard for Safety for Electrical Systems for Personal E-Mobility Devices. This standard, initially designed and intended for hoverboards (also referred to as “self-balancing” electric scooters), tests and evaluates the electrical drive train system, battery system, and charger system of electric scooters—in other words, the standard seeks to address electrical and fire safety given the presence of lithium-ion batteries. The standard, however, does not address all operational or mechanical safety aspects of riding an electric scooter.

At the end of 2019, the American Society for Testing and Materials (ASTM) announced that its Consumer Products Subcommittee on Powered Scooters and Skateboards (F15.58) would bring stakeholders together to discuss and develop a proposed standard on electric-powered scooters that would establish performance requirements and corresponding test methods to minimize common potential hazards associated with electric scooters. CPSC staff, and at least one Commissioner at the agency, has joined subcommittee teleconferences related to this standard’s development. Time will tell whether such a consensus standard comes to fruition.

On March 28, 2023, a bipartisan bill was introduced in the both chambers of the U.S. Congress—SB 1008 and HB 1797—to require the CPSC to promulgate a consumer product safety standard with respect to rechargeable lithium-ion batteries used in micromobility devices, and for other purposes.² The bill sets forth what would be called the “Setting Consumer Standards for Lithium-Ion Batteries Act.” While the bill initially died in chambers, on December 17, 2024, it was placed back on the Senate calendar for further consideration. The mission of the bill is for the CPSC to issue a consumer product safety standard for rechargeable lithium-ion batteries used in micromobility devices to protect against the risk of fires. The standard shall cover the types of rechargeable lithium-ion batteries and the types of micromobility devices that the CPSC deems within its jurisdiction, as reasonably necessary to protect against the risk of fires caused by rechargeable lithium-ion batteries.

Perhaps motivated by SB 1008 and Congress’ desire for the CPSC to take action, on January 8, 2025, the CPSC introduced a Draft Proposed Rule to Establish a Safety Standard for Lithium-Ion Batteries Used in Micromobility Products and Electrical Systems of Micromobility Products Containing Such Batteries (Draft

¹ A jurisdictional legal analysis is found in Section 2.

² While this white paper provides certain distinctions between eBikes, and eScooters, note that the pending Congressional Bill and CPSC proposed rule discussed below applies to “micromobility devices,” which includes: eBikes, eScooters, self-balancing scooters (such as Hoverboards; eSBscooters), eSkateboards, eUnicycles, and hybrids of these products within CPSC’s jurisdiction.

NPR). If passed, the Safety Standard will be codified at 16 C.F.R. part 1265. The Draft NPR proposes to address what the CPSC deems to be the unreasonable risk of death and injury associated with lithium-ion batteries used in micromobility product electrical systems, user replaceable battery packs sold separately from a micromobility product, aftermarket battery chargers sold separately from a micromobility product, and components for eBike conversion kits, due to hazards such as electric shock, fires, explosions, expulsion of gas or flames, burns, overheating, and smoke inhalation.

For the purposes of the Draft NPR, a “micromobility product” includes the following lithium-ion battery-powered vehicles, where “e” represents “electric”: eBikes, eScooters, self-balancing scooters (such as Hoverboards; eSBscooters), eSkateboards, eUnicycles, and hybrids of these micromobility products within CPSC’s jurisdiction. The CPSC proposes to regulate lithium-ion batteries used in micromobility products and the electrical systems of micromobility products containing such batteries, including all components that make up an electrical system, such as lithium-ion batteries, battery management systems (BMS), chargers, and any other electrical component addressed in the applicable voluntary standard, collectively, “micromobility electrical systems.” The Draft NPR will regulate both OEM (standard equipment) and replacement lithium-ion batteries.

The CPSC finds that, overall, the performance requirements in UL 2849-20 (Standard for Safety for Electrical Systems for eBikes), UL 2272-24 (Standard for Safety for Electrical Systems for Personal E-Mobility Devices), and UL 2271-23 (Standard for Safety for Batteries for Use in Light Electric Vehicle (LEV) Applications) are inadequate to eliminate or adequately reduce the unreasonable risks of injury, because the performance requirements do not address all identified hazards associated with lithium-ion batteries and micromobility product electrical systems. Accordingly, the Draft NPR proposes certain modifications to performance requirements designed to reduce those hazards, which include adding tamper-resistant battery enclosure requirements and post-discharge test requirements (to UL 2849-20 and UL 2271-23): and adding a reverse polarity test to all three UL sections. The CPSC also proposes that labelling requirement be revised (enhanced) to improve messaging about potential hazards.

State Product Safety Regulations for Electric Bicycles and Electric Scooters

The legal framework surrounding electric bicycles (e-bikes) and electric scooters (e-scooters) continues to evolve across the United States, with both federal and state laws defining their classification, operation, and market requirements. The recent legal updates primarily focus on safety standards, classification, and responsibilities for manufacturers, sellers, and consumers. Because of the increased popularity of micromobility options, it is necessary to examine the legal trends for these options separately.

1. State Classification of E-Bikes

Under the CPSA, the federal government defines an e-bike as a bicycle equipped with a motor of no more than 750 watts and operable by pedals. However, state laws further classify e-bikes into three distinct categories:

- Class 1: Pedal-assist only, with a maximum speed of 20 mph.
- Class 2: Throttle-assisted, but also limited to 20 mph.
- Class 3: Pedal-assist only, with a higher maximum speed of 28 mph.

Each class is subject to varying operational rules, including helmet requirements, age restrictions, and access to bicycle lanes. Class 3 e-bikes are often restricted from multi-use trails and bike paths. Many states now require clear labeling on e-bikes to indicate classification, top assisted speed, and motor wattage.

Another example of the growth and breadth of issues around use of micromobility devices is a proposed framework for their use by the U.S. National Park Service (NPS) within the National Park System. This Proposed Rule was published in the *Federal Register* on January 16, 2025, and the comments deadline is March 17, 2025. NPS has recognized that powered micromobility devices are commonly being used on lands within the purview of NPS, and particularly in urban locations like Washington, DC. In the Proposed Rule, the NPS notes that while the CPSC regulates the safety of these devices, it does not regulate who may use them and where (within the National Park Service lands, or “System units”) they may be used, and this would prohibit their use in System units except in designated locations. This Proposed Rule would define powered micromobility devices separately from motor vehicles, bicycles, electric bicycles, and human powered coasting devices. A “powered micromobility device” would be defined as a human-operated, self-propelled device with a curb weight of less than 150 pounds and without an internal combustion engine. The proposed rule would permit NPS personnel to set speed limits, areas of use, and requisite conditions to permit use of powered micromobility devices in System units. While this NPS Proposed Rule does not impose obligations on manufacturers or retailers, it is emblematic of both the proliferating use of micromobility devices and the concerns around safety and potential hazards associated with their use. And to the extent a manufacturer may seek to promote use of its device in or at a System unit, or partner with a System unit, this Proposed Rule looks to at least limit use proliferation.

2. E-Scooter Regulations

Unlike e-bikes, electric scooters (e-scooters) are not federally regulated under the CPSA. Instead, they are governed by state and municipal laws, which generally limit their speed to 15–20 mph and restrict their use on sidewalks. Some states, including California and New York, have enacted specific helmet and age requirements for e-scooter riders under 18 years old.

A growing legal trend involves geofencing technology, which limits e-scooter speeds and operational areas in compliance with local laws. Additionally, new municipal ordinances are requiring shared e-scooter companies to implement stricter safety measures, such as automatic braking systems, parking zones, and ride-tracking mechanisms.

3. Manufacturer and Seller Compliance

Recent legislative updates place greater responsibility on manufacturers and retailers. States such as New York and California have passed laws requiring UL-certified batteries and charging systems to be sold within their jurisdictions.

For sellers, truth-in-labeling laws mandate that all e-bikes display their classification and speed limitations clearly. Some jurisdictions also impose warranty and safety recall obligations on retailers, aligning micromobility sales with the broader consumer protection framework.

4. Purchaser and Operator Responsibilities

For consumers, e-bike and e-scooter laws vary by state but generally require:

- Minimum age requirements (e.g., 16+ for Class 3 e-bikes and most e-scooters).
- Helmet laws for younger riders.

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- Prohibited modifications that increase motor wattage or maximum speed beyond statutory limits.

Additionally, insurance and registration requirements remain state-dependent, with some jurisdictions considering policies similar to motorcycle insurance for high-speed e-bike riders.

Questions of NHTSA versus CPSC Jurisdiction Over Certain Micromobility Products

NHTSA v CPSC—MPH

Micromobility products, such as e-bikes and scooters, fall at the intersection of jurisdiction between two distinct federal agencies: The CPSC and NHTSA. A top speed of 20 mph is the most reliable dividing line between agency jurisdiction over micromobility products: Generally speaking, products with a top speed of less than 20 mph are regulated by the CPSC, while vehicles that can reach speeds of 20 mph or more are under NHTSA's jurisdiction.

The CPSC is charged with protecting the public from unreasonable risks of injury or death associated with "consumer products." Broadly defined, "consumer products" include any product for use in or around residences, schools and in recreation. The CPSC's jurisdiction expressly excludes "motor vehicles."³

NHTSA, which is charged with ensuring safety on public road ways, has jurisdiction over "motor vehicles." "Motor vehicles" are "vehicle[s] driven or drawn by mechanical power manufactured primarily for use on public streets, roads, and highways, but does not include a vehicle operated only on a rail line."⁴

There is no hard-and-fast rule as to what constitutes a "motor vehicle" subject to NHTSA's jurisdiction. In determining whether a product is a "motor vehicle," NHTSA typically considers such factors as:

- The product's intended use;
- The product's use of the public roadways and how incidental or predominant that use tends to be;
- How the product is marketed;
- The kinds of dealers that sell the product;
- How or whether dealers may certify or register the product; and
- The product's speed.

With specific regard to certain "micromobility products," NHTSA issued a draft interpretation in 2005, setting forth its considerations for determining whether a two- and three-wheeled vehicle is a "motor vehicle" subject to its jurisdiction.⁵ NHTSA considers the following in determining whether a two-wheeled vehicle is a "motor vehicle":

³ 15 U.S.C. § 2052(a)(5).

⁴ 49 U.S.C. § 30102(a)(6).

⁵ 70 FR 34812; see also NHTSA Interpretation 08-002289 as, January 16, 2009 available at <https://www.nhtsa.gov/interpretations/08-002289as>.

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- Whether the vehicle is capable of exceeding 20 mph (according to the ISO 7116 method of measuring maximum speed).⁶
 - Whether the physical features of the vehicle indicate it is an “on-road” or “off-road” vehicle, including whether the vehicle has a VIN, mirrors, turn signal lamps, side marker lamps, and stop lamps.

As to the maximum speed, NHTSA’s interpretation deems this “largely determinative.” Though the draft interpretation never became final, by its own terms, industry may rely upon the draft with regard to vehicles that have a maximum speed capability less than 20 miles per hour. Since publishing this draft interpretation in 2005, NHTSA itself has continued to follow its guidelines.⁷

For its part, in April 2020, the CPSC released a report on micromobility products, and described its jurisdiction as those products not regulated by NHTSA:

CPSC has jurisdiction over consumer products, which include micromobility products that the National Highway Traffic Safety Administration (NHTSA) does not consider to be a ‘motor vehicle’ under its jurisdiction. NHTSA guidance advises that the following micromobility products are not considered ‘motor vehicles’: (1) scooters lacking seats that are operated in a stand-up mode; (2) scooters that are incapable of a top speed of 20 mph or greater; and (3) electric bicycles with operable pedals, and an electric motor of 750 watts or less, whose maximum speed on a paved level surface, when powered solely by such a motor while ridden by an operator who weighs 170 pounds, is less than 20 mph. Accordingly, these micromobility products fall within CPSC’s jurisdiction.⁸

As stated in both NHTSA’s 2005 draft interpretation and CPSC’s 2020 report, the CPSC has jurisdiction over low-speed bicycles. This is codified in the CPSC’s bicycle regulations.⁹ Pedal-assisted micromobility products, even if they can exceed 20 mph but are not capable of continued self-propulsion, fall within the CPSC’s jurisdiction.

NHTSA has also maintained its position that stand-up scooters are not “motor vehicles.”¹⁰ Neither agency, however, has specifically addressed the classification of electric stand-up scooters or other devices without seats that can also exceed 20 mph.

⁶ Regarding speed governors, NHTSA indicated that “[i]n certain instances,” it would look to the underlying speed capability of the vehicle in the absence of a governor in determining maximum speed (*i.e.*, it would consider the speed without the governor engaged). However, in other instances where “the governor was installed by the manufacturer and was not easily removable or defeatable,” the guidance indicates that NHTSA may consider the maximum speed with the governor engaged. *See* 70 FR 34812.

⁷ *See* National Highway Traffic and Safety Administration, Importation and Certification FAQs—Part II Group 2: Motorcycles and Scooters (stating that scooters that are incapable of a top speed of 20 mph or greater are not “motor vehicles”); *see also* NHTSA Interpretation 08-002289 as, January 16, 2009.

⁸ *See* CPSC, Safety Concerns Associated with Micromobility Products, at 6 (Apr. 8, 2020). Found at: [Please review Report on Micromobility Products](#).

⁹ 15 U.S.C. § 2085; 16 CFR § 1512.2(a)(2).

¹⁰ *See* National Highway Traffic and Safety Administration, Importation and Certification FAQs—Part II Group 2: Motorcycles and Scooters (stating that scooters “lacking seats that are operated in stand-up mode” are not “motor vehicles”).

Thus, while there are a number of factors that inform the dividing line between CPSC and NHTSA jurisdiction as to any individual micromobility product, whether the product can or cannot exceed a speed of 20 mph, as defined by ISO 7116, significantly influences which agency will govern.

NHTSA v CPSC—Off-Road and On-Road

Mopeds fall within NHTSA’s jurisdiction when they can go over 20 mph and are meant to be used primarily on roads. They are considered “motor-drive cycles,” which are a subset of motorcycles. In NHTSA’s world, a motorcycle is “a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground.”¹¹ A motor-drive cycle is “a motorcycle with a motor that produces 5–brake horsepower or less.”¹² Since these mopeds are regulated by NHTSA, they cannot be imported into or sold in the United States without complying with the applicable FMVSS.¹³

Since NHTSA is focused on vehicles meant for road use, the use of bicycle paths could arguably affect NHTSA’s jurisdiction over mopeds. While some uncertainty remains on this score, ultimately NHTSA is focused on speed and on on-road use. According to NHTSA’s published interpretations of its regulations, the agency “believe[s] that vehicles with speeds of over 20 mph are capable of on-road operation,” and therefore fall within their purview. NHTSA makes classifications for vehicles in interstate commerce. The classifications are meant to be as applicable in California as they are in Tennessee or Maine. Some cities may have ample bicycle lanes such that it would be reasonable for the bicycles to never be used on roads, but most do not. NHTSA’s classifications are not understood to change from location to location.

A key issue for NHTSA’s role in micromobility regulation is its limited, and otherwise debatable, jurisdiction over vehicles that are rented. NHTSA’s regulations are focused on manufacture and the first sale of products. Congress passed law granting NHTSA limited jurisdiction over rental cars, for instance. No so as yet for micromobility products. Thus, it is not clear whether a company that rents or leases moped is within NHTSA’s authority. CPSC regulations, on the other hand, squarely apply to rented or leased products.

Certification of Micromobility Products under NHTSA’s Jurisdiction

The National Traffic and Motor Vehicle Safety Act (Safety Act), NHTSA’s enabling statute, requires motor vehicles sold in the United States to be certified to comply with the applicable FMVSS.¹⁴ NHTSA does not provide the certification; the entity self-certifies the vehicle¹⁵ through independent testing and evaluation and then affixing a label to the vehicle which indicates compliance with applicable FMVSS. The Safety Act requires “the exercise of ‘reasonable care’ in issuing a certification of compliance with safety standards.”¹⁶

¹¹ 49 CFR § 571.3.

¹² *Id.*

¹³ 49 U.S.C. § 30112.

¹⁴ 49 USC § 30115; 49 CFR part 567.

¹⁵ See NHTSA, Manufacturer Handbook 5 (Aug. 25, 2020).

¹⁶ *Id.*

Mopeds, if considered a type of motorcycle because they can sustain speeds of 20 mph and up, should comply with the following¹⁷ standards:

- FMVSS 106 - Brake hoses
- FMVSS 108—Lamps, reflective devices and associated equipment FMVSS 111—Rear visibility
- FMVSS 116—Motor vehicle brake fluids
- FMVSS 119—New pneumatic tires for vehicles with GVWR>4536 kg & MC FMVSS 120—Tire selection and rims for vehicles with GVWR> 4536 kg & MC FMVSS 122—Motorcycle brake systems
- FMVSS 123—Motorcycle controls and displays FMVSS 205—Glazing materials (if used)

Vehicle certification labels should contain key information such as vehicle identification numbers (VINs), date of manufacture, and vehicle type classification.¹⁸ Motor vehicles within NHTSA’s purview should have a VIN.¹⁹ Importers “shall utilize the VIN assigned by the original manufacturer of the motor vehicle.”²⁰ Within 30 days of beginning manufacture, manufacturers must submit certain information to secure a 3-digit manufacturer code to be used in each VIN they produce.²¹

Importers are at times considered manufacturers for purposes of FMVSS.²² In some cases, importers may be responsible for the certification label if the motor vehicle is imported without it.²³ In general, importers need not recertify vehicles which have been properly certified by foreign manufacturers.

Manufacturers of mopeds qualifying as motor vehicles must also comply with NHTSA’s record-keeping requirements.²⁴

Post-Sale Compliance Obligations

CPSC Reporting Requirements under Section 15 of the CPSA

Entities involved in making and selling CPSC-regulated e-bikes, scooters and other micromobility consumer products have an obligation to monitor the safety of products after they have entered the market. Under CPSA Section 15, a manufacturer, importer, distributor, or retailer of a product subject to the CPSC’s jurisdiction, that is distributed in commerce, must notify CPSC “immediately” upon the receipt of information that “reasonably supports the conclusion that such product:

1. Fails to comply with an applicable consumer product safety rule or with a voluntary consumer product safety standard upon which the Commission has relied under section 9;

¹⁷ *Id.* at 60-63.

¹⁸ 49 CFR §§ 567.4 (e)-(g).

¹⁹ 49 CFR § 565.13(a).

²⁰ 49 CFR § 565.14(a).

²¹ 49 CFR § 566.6.

²² 49 USC § 30102(a)(6).

²³ *See* 49 CFR § 567.2(b).

²⁴ *See generally* NHTSA, Manufacturer Handbook 27 (Aug. 25, 2020).

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2. Fails to comply with any other rule, regulation, standard, or ban under [the CPSA] or any other Act enforced by the Commission;
 3. Contains a defect which could create a substantial product hazard ...; or
 4. Creates an unreasonable risk of serious injury or death.”²⁵

The term “immediately” means within 24 hours, although a firm may conduct a reasonably expeditious investigation, not normally exceeding 10 days, to evaluate its reporting obligations.²⁶ The only exception to the Section 15 reporting requirement is if the firm “has actual knowledge that the Commission has been adequately informed” of such defect, failure to comply, or risk.

A significant challenge faced by micromobility firms is in deciding when the reporting threshold has been met. Clearly, a violation of the CPSC bicycle standard requires reporting by a bicycle manufacturer, distributor, or retailer.²⁷ But the question of whether a company has obtained information which “reasonably supports the conclusion” that product “contains a defect which could create a substantial product hazard” can be more challenging.²⁸ Congress’s use of the words “reasonably supports the conclusion” and “could” opens up the reporting obligation in at least two important ways. First, reporting may be required where there is only a possibility that a defect²⁹ exists in a product.³⁰ While the CPSC cannot recall a product without proof of a defect, the reporting requirement applies more broadly. Second, the reporting requirement is triggered by a product’s potential harm; it does not require an actual injury-producing event, nor must a serious injury occur before a firm is legally required to report.³¹ Thus, if there is information to indicate that a product may contain a defect that could injure people, even if the risk of serious injury is in doubt, the company may be legally required to report to the CPSC.

²⁵ 15 U.S.C. § 2058.

²⁶ 16 CFR §§ 1115.14(d) and (e).

²⁷ The CPSC has asserted jurisdiction over rideshare operators as distributors of consumer products. CPSA Section 3(a)(1) defines consumer product to include any product for the “personal use . . . in recreation.” The definition of “distributor” broadly includes any party distributing products in commerce, including the introduction or delivery for introduction into commerce. The CPSA definition of “manufacturer” includes the “importer of record.” The importer of record for micromobility products would likely have a reporting obligation as the manufacturer as defined by the CPSC. Legislative history indicates products need not be sold, but only made available for use. H.R. Rep. No. 1153, 92d Cong. 2d Sess. 27 (1972). The CPSC has exercised jurisdiction over rentals, including recalls of rented propane cylinders, rototillers, concrete grinders, and paintball equipment. See, e.g., <https://www.cpsc.gov/Recalls/2015/Tippmann-Sports-Recalls-Paintball-Markers>.

²⁸ 15 U.S.C. § 2064(b)(3); 16 CFR § 1115.6(a).

²⁹ A defect is a “fault, flaw or irregularity that causes weakness, failure or inadequacy in form or function [as] the result of a manufacturing or production error, ...the design of and the materials used, ...the product’s contents, construction, finish, packaging, warnings or instructions...” 16 CFR § 1115.4.

³⁰ *United States v. Mirama Enterprises, Inc.*, 387 F.3d 983, 988 (9th Cir. 2004) (“It makes sense for Congress to have imposed fines for reporting failures even when a product turns out not to be defective. Information about a possible defect triggers the duty to report, which in turn allows the Commission either to conclude that no defect exists or to require appropriate corrective action.”). Congress’s decision to impose penalties for reporting violations without requiring proof of a product defect encourages companies to provide necessary information to the Commission.”), found at: <https://caselaw.findlaw.com/us-9th-circuit/1301873.html>.

³¹ 16 CFR § 1115.12(a); *United States v. Spectrum Brands, Inc.*, 2016 U.S. Dist. LEXIS 160411 (W.D. Wis. Nov. 17, 2016) (“[B]y its plain language, the Section 15(b) reporting obligation is triggered...not by a company becoming aware of an actual, serious injury involving its products, but rather its awareness of a substantial hazard or risk of serious injury. ...”) (emphasis added). As the Spectrum judge noted “a substantial product hazard” does not require a risk of serious injury” and that “a significant degree of exposure of the possibly defective product to the public, or the likelihood that it will cause injury, can give rise to a substantial product hazard regardless of whether there is a risk of serious injury.” *Id.* at *70. The Spectrum opinion makes it clear that “[C]ompanies are strongly encouraged not to wait to report until a potential defect causes a serious injury, but rather to report when they first appreciate that their product may contain a defect that could injure people, even when the risk of serious injury is in doubt.”) (emphasis added).

CPSC Reporting Requirements Under Section 37 of the CPSA

Section 37 of the CPSA requires reporting of three litigation settlements that occur in a statutorily prescribed two-year period if the lawsuit contains allegations that a product caused death or grievous injury. The current statutorily defined reporting period began on January 1, 2019 and runs until December 31, 2021. CPSA Section 37 was enacted to provide the CPSC additional visibility into the kinds of product-related injuries driving settlements in the litigation context.

For purposes of Section 37, the definition of “grievous injury” includes compound fractures, back and neck injuries, and other types of hazards discussed as trending in hospital emergency room visits at the CPSC’s Micromobility Form. The CPSC’s regulations specifically enumerate additional conditions included in the definition of grievous injury from “severe burns, including any third degree burn over ten percent of the body or more, or any second degree burn over thirty percent of the body or more” to permanent mutilation or disfigurement, specifically referencing “non-facial scarring that permanently restriction motion.” The regulations include a variety of other things including allegations of a “traumatically induced disease.”

The Section 37 reporting requirement covers “particular models” of products that have the same functional design. A “particular model” includes products “distinctive in functional design, construction, warnings or instructions related to safety, function, user population or other characteristics which could affect the product’s safety related performance.” Functional design refers to “those design features that directly affect the ability of the product to perform its intended use or function.” Given the CPSC’s focus and emphasis on brakes with respect to both scooters and bikes, these definitions for determining Section 37 reporting obligations should be carefully considered.

Section 37 ties the reporting requirement to the allegations made by the plaintiff in the complaint, not the actual injuries or medical records. The regulations specifically state that “the manufacturer’s opinion as to the validity of the allegation is irrelevant for reporting purposes.” By statute, the manufacturer, although compelled to report on the basis of the plaintiffs’ allegations, may specifically deny that the information reported supports the conclusion that the products caused the plaintiffs’ injuries. It can also dispute that the injury sustained by the plaintiff was grievous bodily injury as defined by the statute. Moreover, a Section 37 report is not an admission of liability and the CPSC is required to maintain such reports in strict confidence not to be disclosed under FOIA.

NHTSA Reporting Requirements

The Safety Act requires manufacturers of motor vehicle equipment to notify the Secretary of Transportation if it learns of defects or noncompliance in its motor vehicles or motor vehicle equipment.³² The Safety Act provides a two-part test for defect-related reporting: (1) is there a “defect” as defined by the statute; and (2) does the manufacturer conclude “in good faith” that such defect “is related to motor vehicle safety”? If an affirmative answer is reached on both questions, the manufacturer has an obligation to report the safety related defect notify the Secretary of Transportation by certified mail and, in addition, to notify “owners, purchasers and dealers” of the equipment.³³ NHTSA rules require that these reports be submitted to NHTSA “not more than 5 working days after a defect in a vehicle or item of equipment has

³² 49 U.S.C. § 30118(c)(1).

³³ *Id.* at § 30118(c).

been determined to be safety related, or a noncompliance with a motor vehicle safety standard has been determined to exist.”³⁴

As for noncompliance reporting, the Rule is straightforward: violation of a FMVSS requires reporting, and the same time expectations apply. NHTSA’s defect determinations can be researched because they are public, whereas CPSC defect determinations are not publicly available. But, similar to the CPSC regime, defect determinations and safety risks are considered on a case-by-case basis depending on the pattern of consumer complaints and information on root causes of accidents and other alleged vehicle failures. Brake issues, highlighted by the CPSC as a significant hazard, are equally important to NHTSA. In fact, motor vehicle brakes often have mandatory FMVSS requirements (as described above for mopeds).

Known Hazards

The key hazards announced by the CPSC at the Micromobility Forum based on their review of emergency room data included brake problems, unexpected power losses and fire hazards. Fire hazards were most closely associated with the use of lithium-ion batteries, although general electrical issues were also referenced.

Lithium-ion Batteries

Lithium-ion batteries power micromobility products including hoverboards, electric scooters and e-bicycles as well as many accessories being marketed for use such as commuter bicycle helmets with lights. Unfortunately, many companies have been forced to recall their products over thermal events involving those products’ lithium-ion batteries. In January 2025, the CPSC indicated they are aware of 24 deaths and 42 injuries initiated by lithium-ion batteries associated with micromobility product and more than 350 fire-related incidents associated with charging and riding e-bicycles, e-scooters, and hoverboards, leading to more than \$9 million in property damage.³⁵

Manufacturers can mitigate their risks of fire hazards with lithium-ion batteries by carefully choosing and vetting suppliers, ensuring that batteries meet expected global industry standards, and taking care to confirm that the batteries are properly integrated into products with appropriate battery management systems to mitigate the risk of thermal runaway. The latest revision of UL 2272 (Standard for Electrical Systems for Personal E-Mobility Devices) provides a good example of attention not just to the manufacturing and design of the battery but to all aspects of the product and manner in which the battery and motor operate together in the product. Emphasizing the effectiveness of UL 2272, the CPSC stated in its April 2020 report that, despite numerous fires in products that were not compliant with UL 2272 (including two fatalities), the CPSC was not aware of any substantial fires associated with products certified to the voluntary standard.

Despite best efforts, thermal issues do arise with lithium-ion batteries. Proper storage and handling practices can also mitigate the likelihood of thermal events. There is no mandated regulation for lithium-ion battery storage; just guidance and recommended best practices from various agencies. The following guidelines for battery storage were derived based on numerous sources, including but not limited to,

³⁴ 49 C.F.R. § 573.6(b).

³⁵ See CPSC, Draft Proposed Rule to Establish a Safety Standard for Lithium-Ion Batteries Used in Micromobility Products and Electrical Systems of Micromobility Products Containing Such Batteries, at pp. 176, 211-212 (Jan. 8, 2025). Found at: [Decisional-Package-Draft-Proposed-Rule-to-Establish-a-Safety-Standard-for-Lithium-Ion-Batteries-and-Micromobility-Products.pdf](#).

guidance from the Occupational Safety and Health Administration (the Occupational Safety and Health Administration) and the National Fire Protection Association (the National Fire Protection Agency):

- When storing, remove the battery from the equipment.
- Batteries should be segregated from other materials in a warehouse and stored in a non-combustible, well-ventilated structure with sufficient clearance between the walls and the battery stacks. There should be clearance between the batteries to allow air to circulate.
- Avoid extreme heat and freezing temperatures; avoid storage under direct sunlight or in front of a heating system, stove or other heat source.
- Keep lithium-ion batteries cool and dry during storage. Be sure not to expose the battery to condensation, excessive humidity or water.
- Lithium-ion must be stored in a charged state, ideally at 40 percent and between 30% and 50%.
- Batteries should be stacked in a manner as to prevent short circuits; avoid storing the batteries in the places exposed to static electricity.
- Batteries should not be opened, destroyed nor incinerated since they may leak or rupture and release in the environment the ingredients they contain.

Executing an effective product recall requires meticulous planning and navigating a plethora of thorny issues, including, but not limited to, reverse logistics. This is especially so when either the recalled or replacement product involves a product with a lithium-ion battery.

The transportation of recalled defective lithium-ion batteries presents a challenge, not only under the CPSC's regulations, but also under the U.S. Department of Transportation (DOT) regulations. In fact, the CPSC typically informs companies recalling products with these types of batteries that "a recall cannot be considered acceptable to CPSC staff if it does not comply with DOT regulations regarding transportation of hazardous materials." Therefore, some alignment of CPSC expectations and DOT requirements, specifically the Pipeline and Hazardous Materials Safety Administration, is typically necessary to ensure that all rules are followed and necessary permits are procured.

Companies recalling products with lithium-ion batteries will face challenges not presented in typical recalls. Lithium-ion batteries and lithium metal batteries are regulated as hazardous materials under United States and international transportation regulations and standards, whether shipped alone, packed with equipment, or contained in equipment. Defective lithium batteries are more likely to ignite during transportation, and may go into thermal runaway, generating intense heat.

Accordingly, DOT prohibits air shipment of lithium batteries identified as defective for safety reasons, as do international air transportation standards.

While DOT does authorize ground shipments of defective batteries, additional packaging requirements apply. In addition, such batteries do not qualify for the partial regulatory relief available for shipments

of small and medium lithium batteries,³⁶ and must be shipped as fully regulated hazardous materials. This means, among other things, that persons preparing shipments of defective small or medium lithium batteries for transportation or transporting such shipments must have received hazardous material transportation training. Also, many carriers charge a hazardous materials surcharge for fully regulated shipments. Other carriers, such as FedEx Ground, state that they will not accept defective batteries that pose a safety risk.

In order to eliminate some of these difficulties, several companies have developed special packaging specifically for the transportation of defective lithium batteries and have obtained special permits from DOT for this packaging. The special permits provide relief from some regulations for any shipment in these packagings. Companies will find however that these packagings are expensive and can contain no more than a small number of lithium batteries. A company may also develop its own packaging and obtain a special permit from DOT for its use.

The transportation of lithium batteries continues to garner significant attention, and regulations are unlikely to become more lenient. Companies facing a recall of defective lithium batteries need to consider transportation issues at the outset when developing a recall strategy. Attention also needs to be given to the plan for destruction of recalled batteries, which must be shared and approved by the CPSC when the recall falls within their jurisdiction, and may even be witnessed by agency personnel. Best practices for lithium battery destruction include:

- Dispose in accordance with the applicable regulations in country and state.
- Disposal should be performed by permitted, professional disposal firms knowledgeable in federal, state or local requirements of hazardous waste treatment and hazardous waste transportation.
- Incineration should never be performed by battery users, but eventually by trained professional in authorized facility with proper gas and fume treatment.
- Battery recycling should be done in authorized facility.

Advance planning and communication with the right regulatory bodies should smooth some of the potential pitfalls when conducting such a recall.

Recall Round Up

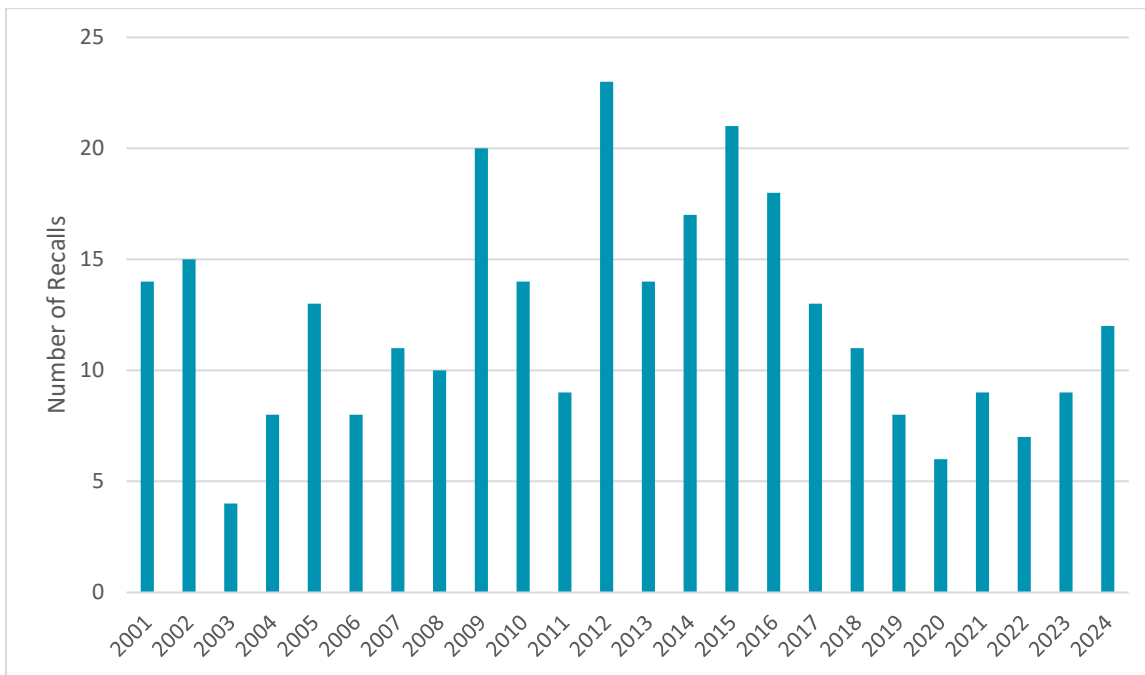
Recalls can be another source of information in assessing risks to be mitigated and anticipated in product stewardship. The following round-up of CPSC recalls of micromobility products provides insight into safety issues and hazards identified by the CPSC that need to be managed.

³⁶ Small lithium metal batteries have a lithium content of ≤ 1 gram (g) of lithium content per cell and ≤ 2 g per battery, and small lithium-ion batteries have a Watt-hour (Wh) rating of ≤ 20 Wh per cell and ≤ 100 Wh per battery. For medium batteries, these limits increase to 5 g lithium content per cell and 25 g per battery and 60 Wh per cell and 300 Wh per battery respectively.

Bicycle and Bicycle Part Recalls

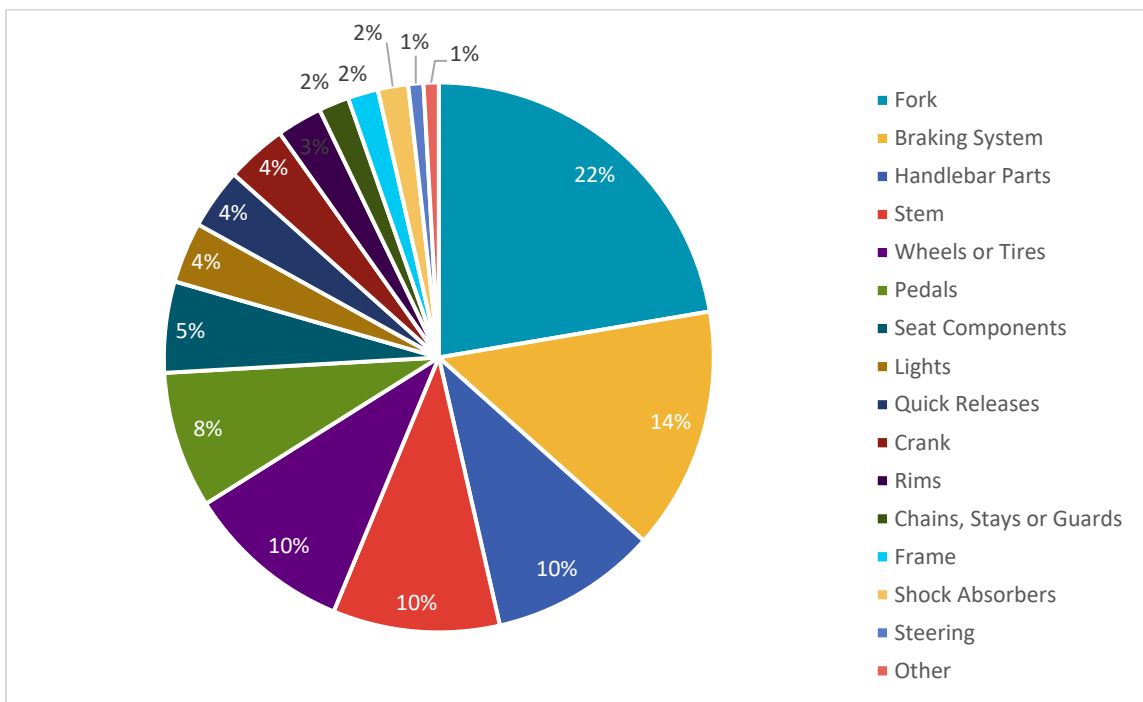
BICYCLE AND PART RECALLS OVER TIME: 2001-PRESENT

The CPSC has conducted 317 recalls of bicycles and bicycle parts since 2001.



CPSC recalls are generally for a specific component part of a bicycle, not the product as a whole, and dozens of different parts have been subject to CPSC-recalls over the years. The most common parts at issue include forks, braking system components, handlebar components, stems, and wheels/tires. Together, these five categories account for 66% of the 317 total recalls that have occurred since 2001. Consumers and retailers should carefully monitor these bicycle parts to ensure proper functioning before use or sale.

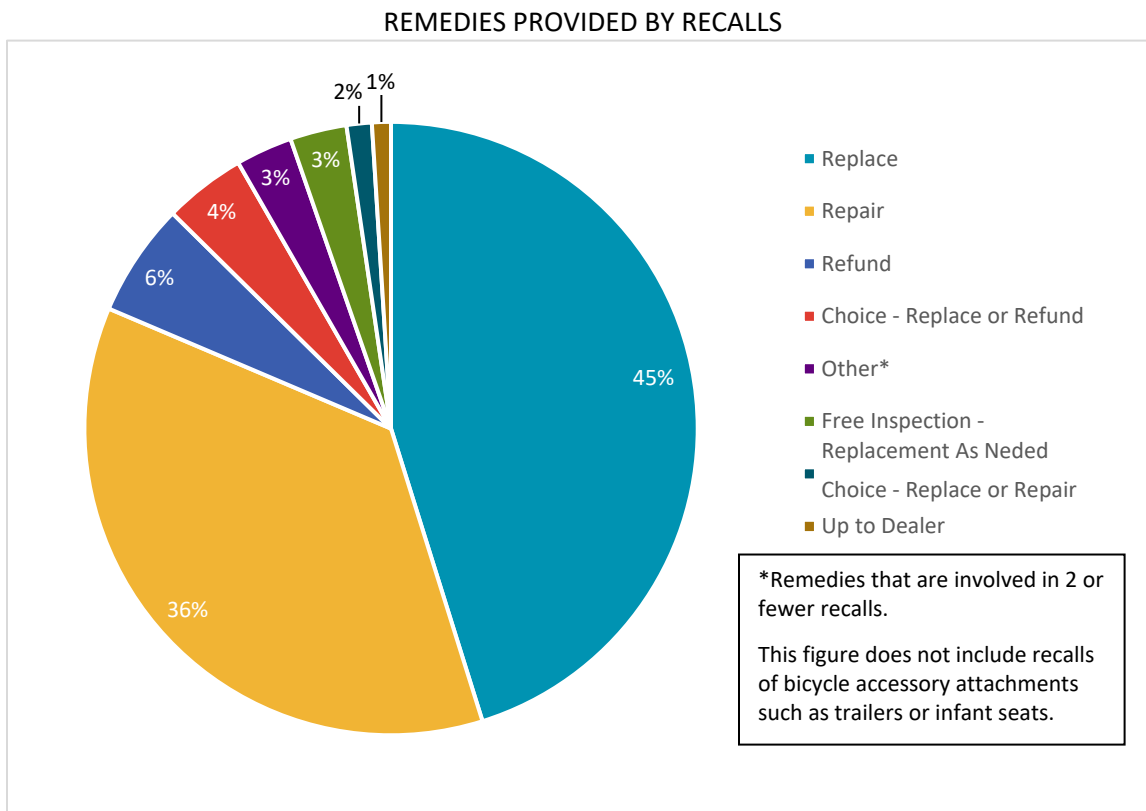
BICYCLE PARTS AT ISSUE IN RECALLS



Unsurprisingly, the recalls have been targeted towards preventing loss of control, falls, crashes, and injuries. Only three recalls have been conducted for a different reason—all three due to fire hazards posed by bicycle lights or the batteries in e-bikes and propulsion systems.

Although recalls of “general use” bicycles are common, recalls of children’s bicycles are not. Only thirteen recalls since 2001 have involved children’s bicycles (approximately 4%). The last recall of a children’s bicycle occurred in 2024 and most occurred prior to 2010.

The typical remedy for a bicycle-related recall is free replacement and installation of the part at issue, or entire bicycle, if necessary. Other common remedies include repair, refund, or store credit. In cases where the bicycle or part manufacturer has gone out of business, it has been left to the bicycle dealers to determine what remedy is available to consumers and the cost of that remedy.



In 2020, the CPSC published a Safety Alert regarding bicycle handlebars warning consumers to inspect their bicycle handlebars for sharp, exposed metal ends, which can pose a serious impalement hazard. At least six impalement deaths and 2,000 emergency room visits between 2000 and 2019 are linked to bicycle handlebars, according to the alert. Plastic or rubber grips on the ends of bicycle handlebars can prevent those injuries and the CPSC’s regulation requires handlebar ends to be capped or otherwise covered.

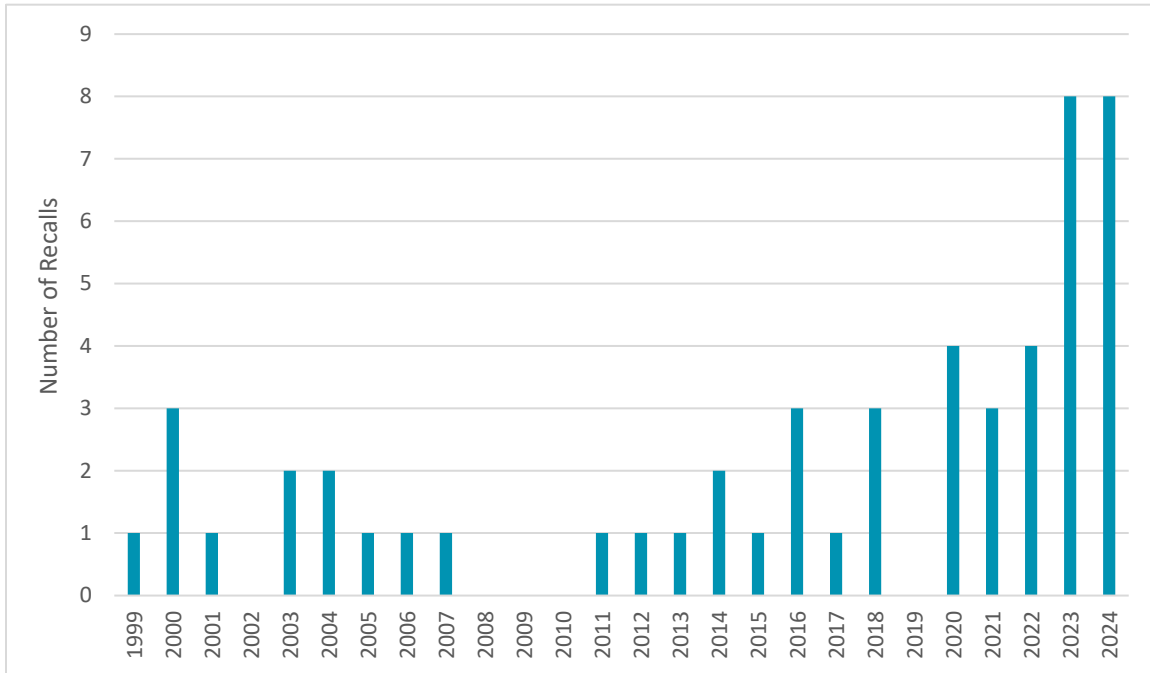
Bicycle Helmet Recalls

The CPSC mandates that all bicycle helmets manufactured or imported since March 17, 1995 meet the standard set forth in 16 CFR part 1203.1(c). This mandatory standard covers bicycle helmets and multipurpose helmets that can be used when riding a bicycle. The standard does not cover helmets marketed for exclusive use in another designated activity, such as baseball or skateboarding.³⁷

The CPSC has conducted 54 bicycle helmet recalls, with the first occurring in 1995 and the latest just a couple weeks ago. CPSC attention to helmets remains fairly steady over time, with at least one recall most years, and no significant enforcement “spikes” at any point.

³⁷ 16 CFR Part 1203.4(b).

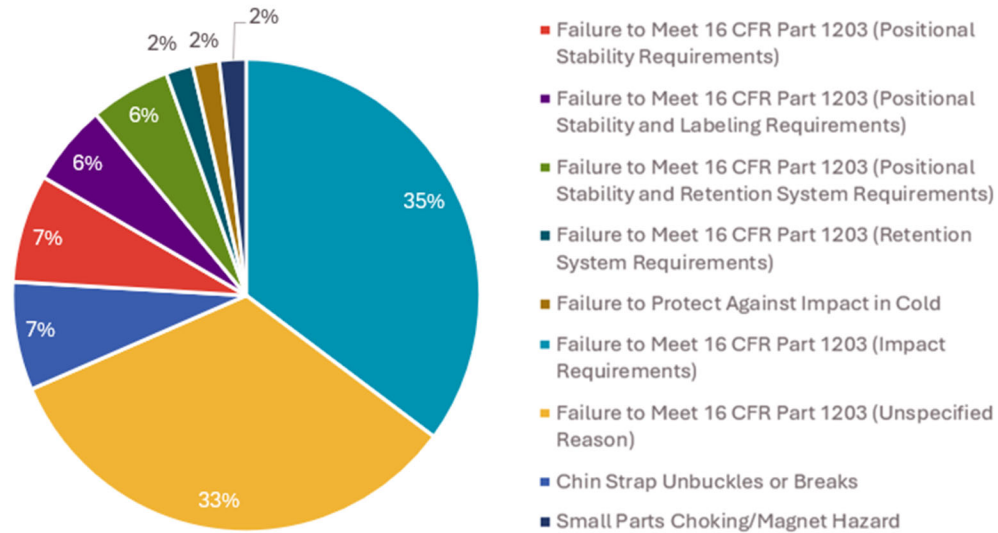
BICYCLE HELMET RECALLS: PAST 25 YEARS



According to the CPSC.gov recall announcements, 89% of all bicycle helmet recalls were conducted due to a failure to meet the requirements of the federal safety standard. Most of the recalled helmets failed to meet the impact requirements, though some recall announcements failed to specify why the helmets failed to meet the safety standard. Nearly 10% of the bicycle helmet recalls involved alleged defects with the helmet's chin strap. Two recalls were conducted because the chin strap buckle could release in an accident, one because the chin strap itself could fail, and another because the chin strap contained small plastic pieces and magnets that could come loose.

Most bicycle helmet recalls were conducted despite no reported incidents involving the product (94%). Unsurprisingly, all but one of the recalls were aimed at preventing head injuries. The remaining recall was conducted to prevent choking and magnet ingestion hazards posed by small plastic pieces and magnets that could come loose from the chin strap.

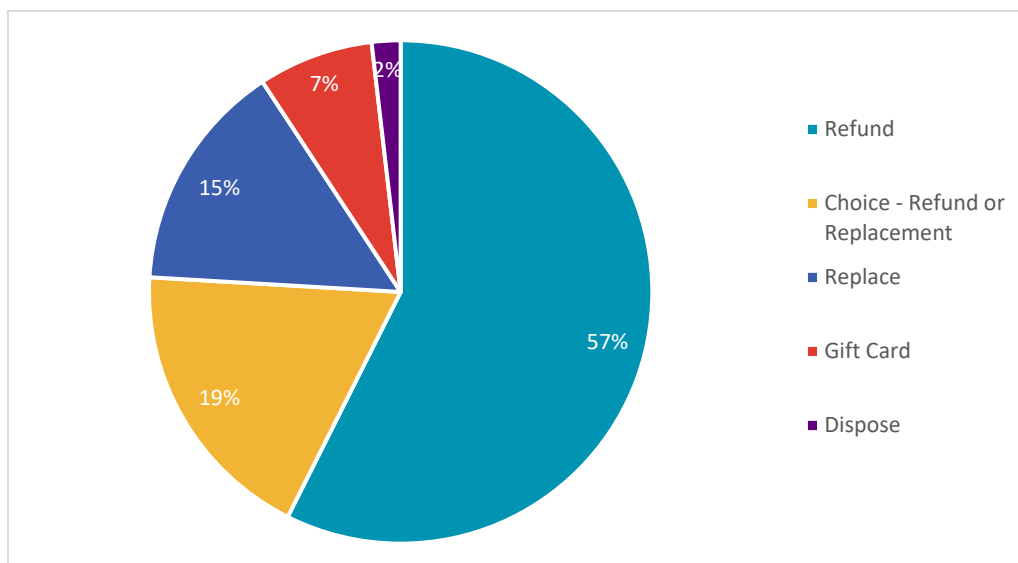
REASONS FOR BICYCLE HELMET RECALLS



In a prior Safety Alert, the CPSC has urged consumers to examine helmets carefully and to look for a label stating that the helmet conforms with the CPSC standard. Although bicycle helmets cannot prevent concussions, CPSC-compliant helmets can reduce the risk of head injuries during a fall. A bicycle helmet should have a snug but comfortable fit on the rider's head. Neither twisting nor pulling should be able to remove the helmet or loosen the buckle on the chin strap.

Consumers should also keep themselves up to date on helmet recalls and follow instructions for replacement or refund when necessary. A replacement helmet, or consumer choice between replacement and refund, are the typical remedies offered by recalling firms. Less often, the remedy may be limited to a refund or store gift card.

REMEDY OFFERED BY CPSC RECALL ANNOUNCEMENT



Electric and Gas-Powered Bicycle and Scooter Recalls

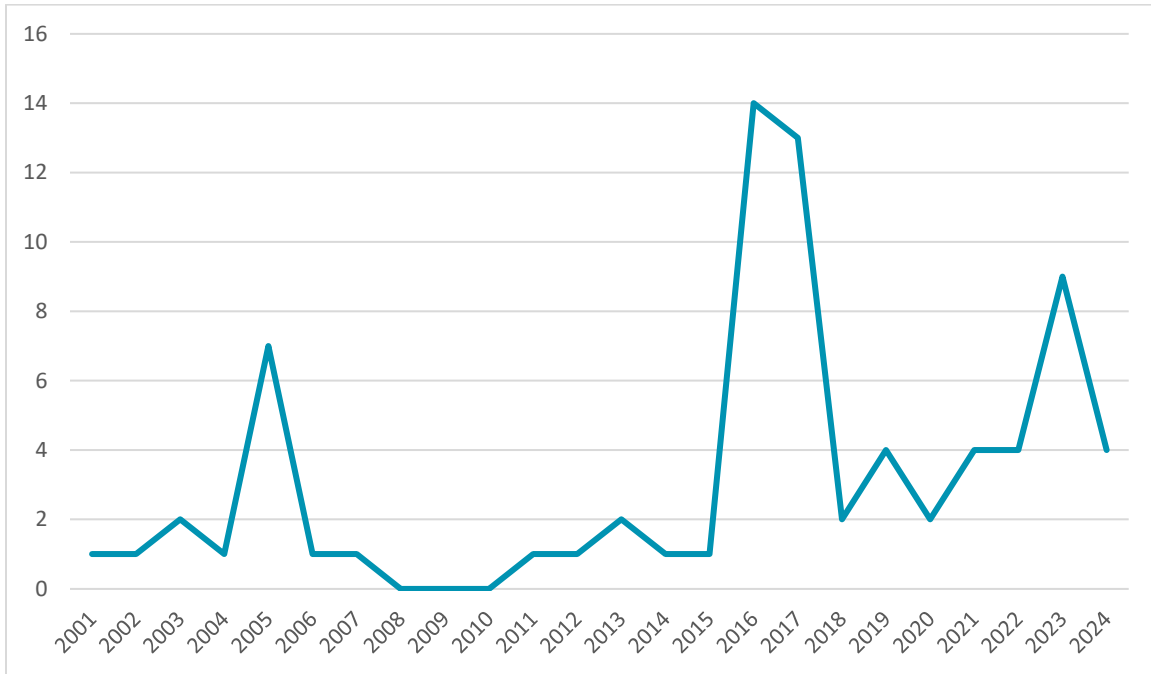
There has been an onslaught of electric scooters in United States cities as micromobility companies expand to meet consumer demand for more convenient transportation options. As with bicycles, electric scooters have become a go-to option for consumers who are seeking socially distant activities and modes of transportation.

The regulation landscape for powered scooters is still being charted. Although a federal safety standard which addresses electrical systems and lithium-ion batteries in personal e-mobility devices (ANSI/CAN/ UL 2272) exists, there is no corresponding safety standard for regulating the overall operational, mechanical, or electrical safety aspects of powered scooters. Additional standards may be promulgated in the near future, however. The American Society for Testing and Materials (ASTM) Consumer Products Subcommittee on Powered Scooters and Skateboards (F15.58) has begun developing a proposed standard intended to minimize the common hazards associated with use of commercial electric-powered scooters by adults.

Given the lack of a mandatory federal safety standard for powered scooters, it is unsurprising that recalls of powered scooters were infrequent in the first two decades that the products were on the market. The CPSC has conducted 69 total recalls of powered bicycles and/or scooters. Only 16 of the recalls occurred between 1996 and 2015. The small enforcement “spike” in 2005 corresponds with the CPSC’s efforts to track emergency-room visits related to powered scooters. At least 10,015 emergency room-treated injuries occurring between July 2003 and June 2004 were related to powered scooters. Recalls increased dramatically as hoverboards (also referred to as “self-balancing” electric scooters) were introduced to the market. Fourteen recalls of powered scooters were conducted in 2016 alone, closely followed by another 13 recalls in 2017.

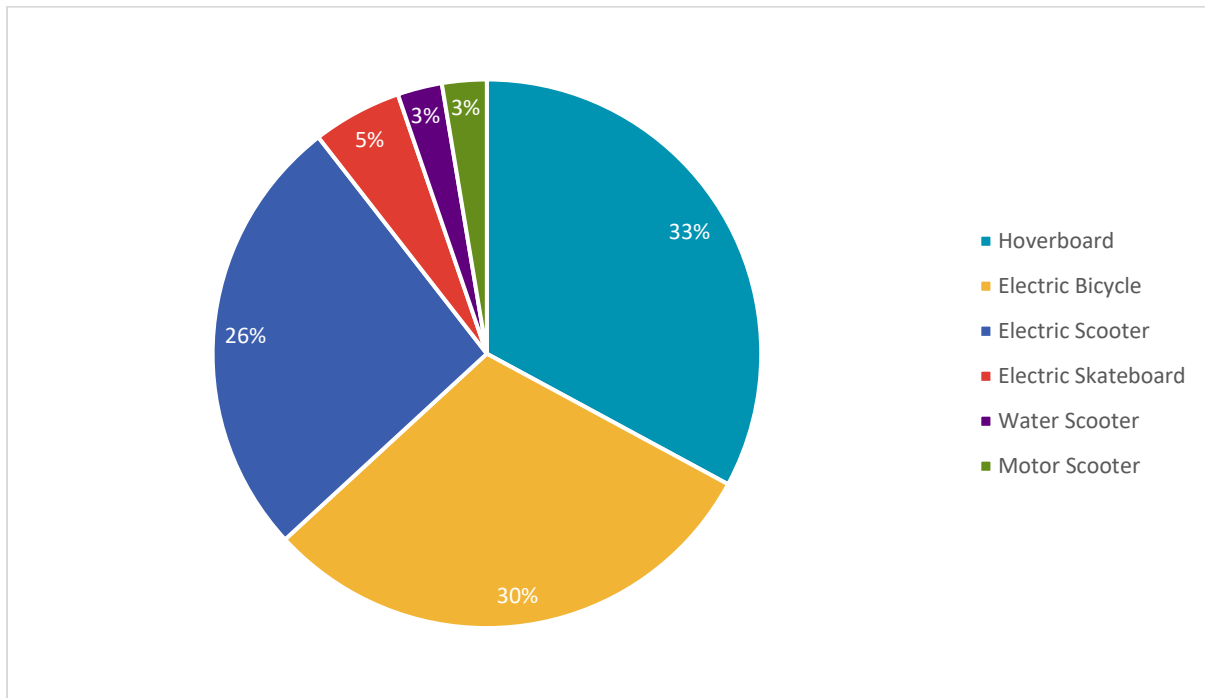
Recalls for traditional electric-powered scooters have been conducted for a wide variety of reasons, including: failure of the break caliper, improper wiring and wire insulation, and breakage of the weld that connects the handlebars to the scooter frame. Motor scooters, gas-powered scooter vehicles upon which a user sits, and water scooters have each been the subject of two recalls. The motor scooter recalls were conducted because the scooters would accelerate suddenly while in use. The water scooter recalls were conducted because hydrogen gas could build up in the battery compartments and cause the battery cover and battery package to forcefully expel from the scooter.

POWERED SCOOTER RECALLS TO DATE



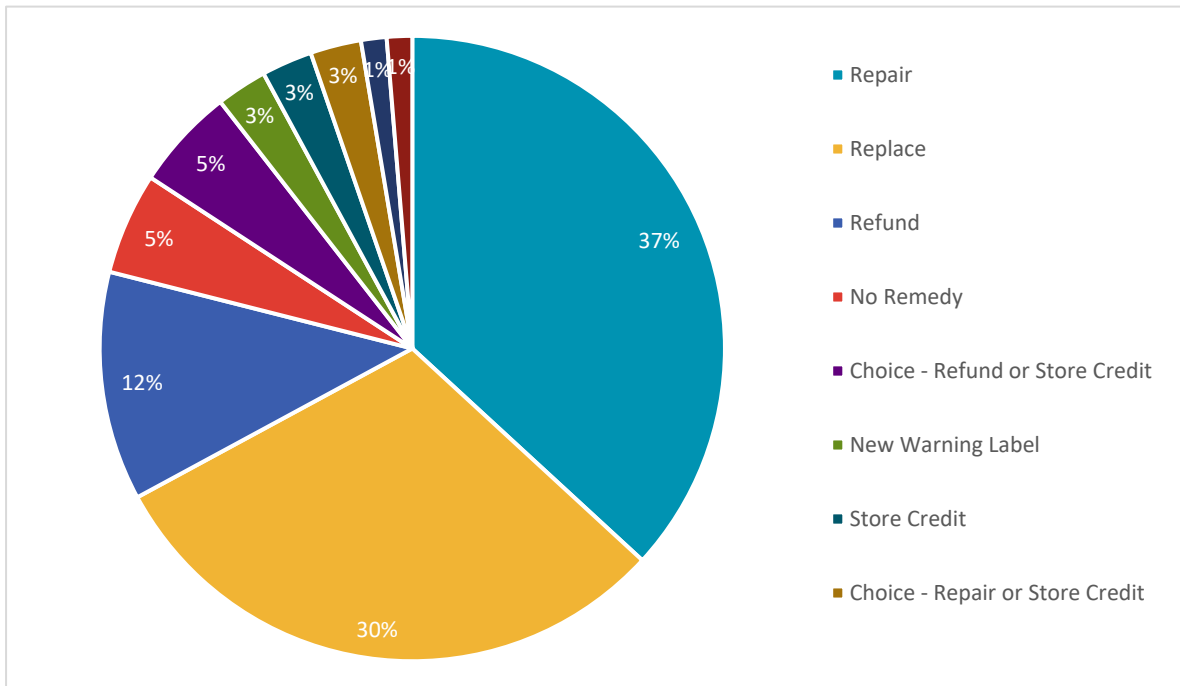
Hoverboards are the most frequently recalled type of scooter with 24 hoverboard recalls to date. All of these recalls were related to the vehicle's lithium-ion battery pack potentially overheating, posing a risk smoke, fire, or explosion. The CPSC Office of Compliance has previously stated that the Commission considers hoverboards that do not meet the applicable voluntary standards (UL 2272 and UN/DOT 38.3) to be defective products that may pose a substantial product hazard to consumers. All manufacturers, importers, distributors, and retailers of hoverboards (and other powered scooters) should review their product lines to ensure that their products comply with the voluntary standards.

TYPE OF ELECTRIC BICYCLE/SCOOTER RECALLED



Powered scooters, and hoverboards in particular, have become a popular choice for winter holiday gifts. Consumers should keep themselves up to date on powered scooter recalls as the holidays approach, and follow instructions for replacement or refund (and proper disposal methods) if necessary. Replacement, refund, and store credit are the typical remedies offered by recalling firms. Less often, the remedy may be limited to repair by a dealer or providing a repair kit to the consumer.

REMEDIES OFFERED BY CPSC RECALL ANNOUNCEMENTS



Conclusion and Key Takeaways

The hazards associated with micromobility products are getting considerable attention both at the CPSC, at NHTSA, and in academia. Researchers presenting at the CPSC’s Micromobility Forum demonstrated the considerable uptick in injury reports and the rise in micromobility injury surveillance studies ongoing to assess the risks. Given the CPSC’s broad mandate to regulate unreasonable risk of injury, CPSC staff are actively participating in numerous voluntary standards activities to address risks from the products including:

- ASTM F2641-08 (reapproved 2015). Standard consumer safety specification for recreational powered scooter and pocket bikes,
- ASTM F2642-08 (reapproved 2015) Standard consumer safety specification for safety instructions and labeling for recreational powered scooters and pocket bikes,
- ASTM F15.58 Draft Standard consumer safety specification for self-balancing scooters (hoverboards),
- ASTM F15.58 Draft Standard commercial electric-powered scooters for adults (commercial ride-sharing).
- UL 2272 Standard for electrical systems for personal e-mobility devices, and
- UL 2849 Standard for electrical systems for e-bikes.

CPSC staff have indicated the need to upgrade the standards given commercial use of some of these products in rideshare applications. Indeed, the CPSC Draft Proposed Rule to Establish a Safety Standard for Lithium-Ion Batteries Used in Micromobility Products evidences this intent to raise standards and obligations for manufacturers, importers, distributor and retailers. All those entities need to factor in these voluntary product standards in considering their overall product compliance framework.³⁸

The legal framework at the CPSC necessarily focuses suppliers on product design and manufacture in considering the risks associated with micromobility products and their legal obligations. However, as was pointed out at the CPSC’s Micromobility Forum, improving our urban infrastructure to accommodate micromobility as a new form of transit and educating scooter and bike riders and car drivers on issues such as who has the right of way may be equally important to reducing injuries—a goal shared by all stakeholders.

³⁸ Given global distribution models, other international standards for micromobility products should be considered as well; indeed, CPSC staff cited two such standards for e-bikes in their Micromobility Paper: EN 15194: EPAC—Electrically power-assisted cycles (2017), and ISO 4210-10 Safety standard for e-bikes (draft).

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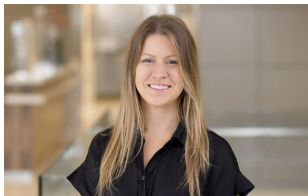
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