May 14, 2024

Office of the Secretary
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
Electric Bicycles; Advance Notice of Proposed Rulemaking;
Request for Comments and Information
Docket No. CPSC-2024-0008

Consumer Reports (CR), the independent, nonprofit member organization,[1] welcomes the opportunity to submit comments to the Consumer Product Safety Commission (CPSC) regarding the risk of injury associated with the mechanical hazards of electric bicycles. We also welcome the opportunity to comment on whether current requirements under 16 CFR Part 1512 are adequate to address the safety of electric bicycles with respect to their mechanical hazards.

In 2023, electric bicycle (e-bike) sales were 238 percent higher than they were in 2019, according to Circana, a market research company.[2] According to a February 2024 Consumer Reports nationally representative survey of 2,035 U.S. adults, 11 percent of Americans have ridden an e-bike over the past year.[3] CR has periodically, for years, tested and rated bicycles for performance. We currently evaluate Class 1 and Class 2 electric bikes. Our e-bike evaluations consider a number of factors including range, acceleration, and overall usability.[4] Regardless of which type of bicycle they ride, consumers should be able to have confidence that their bike has

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[1] Founded in 1936, Consumer Reports (CR) is an independent, nonprofit, and nonpartisan organization that works with consumers to create a fair and just marketplace. Known for its rigorous testing and ratings of products, CR advocates for laws and company practices that put consumers first. CR is dedicated to amplifying the voices of consumers to promote safety, digital rights, financial fairness, and sustainability. The organization surveys millions of Americans every year, reports extensively on the challenges and opportunities for today's consumers, and provides ad-free content and tools to 6 million members across the U.S.

[2] Benjamin Preston, CR, "Is an Electric Bike Right for You?" (April 18, 2024) (online at: www.consumerreports.org/electric-bikes/is-an-e-bike-right-for-you-electric-bike-buying-guide-a2136838953).

[3] Consumer Reports nationally representative American Experiences Survey (PDF) of 2,035 US adults, Feb. 2024 (online at: article.images.consumerreports.org/image/upload/v1710449643/prod/content/dam/surveys/Consumer_Reports_AES_February_2024.pdf).

[4] CR, "Electric Bike Buying Guide" (updated April 17, 2024) (online at: www.consumerreports.org/health/electric-bikes/buying-guide).

been tested rigorously for safety. From style, to material, to brakes and beyond, bicycles have evolved dramatically since federal safety regulations first took effect. Now, decades later, it is critical for the agency to update its standards to reflect advances in technology. In the following sections, we share CR's comments on information related to the mechanical hazards of e-bikes that has been requested by the agency.

"Bicycle" Definition and Jurisdiction

Currently, the CPSC definition for "bicycle" covers products that are "[a] two-wheeled vehicle having a rear drive wheel that is solely human-powered" or "[a] two- or three-wheeled vehicle with fully operable pedals and an electric motor of less than 750 watts (1 h.p.), 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."[5] This definition encompasses e-bikes through those products that the bicycle industry considers Class 2. CR recommends that the agency expand its bicycle definition to include Class 3 e-bikes, which have been defined by the industry, numerous states, and the U.S. Department of the Interior as "[an] electric bicycle equipped with a motor that provides assistance only when the rider is pedaling, and that ceases to provide assistance when the bicycle reaches the speed of 28 miles per hour."[6] Expanding the current definition accordingly would provide clarity to consumers and the bicycle industry as to which federal agency has jurisdiction over product safety with respect to Class 3 e-bikes. Doing so would also enable the CPSC to more efficiently oversee any potential hazards related to these products.

If a two- or three-wheeled vehicle with fully operable pedals and an electric motor, when ridden on a paved level surface by an operator who weighs 170 pounds, has the potential to exceed 20 mph when powered solely by a motor, such a product should not be considered, or regulated as, an e-bike. Rather, consistent with previous determinations made by the National Highway Traffic Safety Administration (NHTSA) on self-propelled devices,[7] such a device should be considered a motor vehicle, and subject to applicable Federal Motor Vehicle Safety Standards (FMVSS).

Alignment with Existing Standards and State Laws

When considering existing bicycle standards for mechanical and structural requirements such as those by ASTM International and the International Organization for Standardization (ISO), as well as prescribed tests and testing procedures, the CPSC should incorporate the strongest elements of the voluntary standards and include modifications where necessary to address safety gaps. It is critical for the CPSC to implement mandatory standards for e-bikes that reflect how e-bikes are marketed, who buys them, and their various purposes. Although the advance notice of proposed rulemaking (ANPRM) notes that international standards, such as

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[5] 16 CFR § 1512.2(a).

[6] *See,* e.g., 50 CFR § 27.31(m).

[7] NHTSA, Interpretation ID: 07-007541as (April 17, 2008) (online at: www.nhtsa.gov/interpretations/07-007541as#_ftnref3).

those by the ISO,[8] may not cover e-bikes that can be exclusively propelled by an electric motor, or those with a maximum motor-assisted speed over 15.5 mph, these standards can still serve as a helpful resource. ISO standards offer detailed guidelines for the strength and durability of frames, forks, and other structural components of e-bikes that could be adapted to cover the broader range of e-bike designs and capabilities seen in the U.S. market.

To address the gap between low- and high-speed e-bikes, we also recommend the CPSC examine how the European Union regulates high-speed e-bikes. EU regulations differentiate between lower-speed electrically pedal assisted cycles (EPACs) and higher-speed pedelecs, imposing stricter controls on the latter due to their increased capabilities. EPAC regulations align with ISO standards in that they are limited to a motor power of 250 watts and assistance up to 25 km/h (approximately 15.5 mph).[9] Speed pedelecs, which are limited to assistance up to 45 km/h (approximately 28 mph), are regulated similarly to motor vehicles, requiring type approval, mandatory insurance, and licensing.[10] While we are not advocating for the U.S. to adopt each of these European requirements, this type of tiered regulatory approach could inform the CPSC's efforts to create an effective and comprehensive regulatory framework.

Furthermore, to promote consistency and effectiveness in safety standards across the United States, we recommend that the CPSC evaluate existing state laws on e-bike standards. Many states use a three-class system[11] which categorizes e-bikes based on their motor assistance levels: Class 1 e-bikes provide motor assistance only while the rider is pedaling, up to 20 mph; Class 2 e-bikes offer motor assistance up to 20 mph and can operate with pedal-assist or with electrical propulsion alone via throttle control; and Class 3 e-bikes provide motor assistance only while the rider is pedaling but can go up to 28 mph.

However, state laws can differ significantly. For example, Alaska simply treats e-bikes as "motor-driven cycles" and requires licensure.[12] The CPSC should also account for multiple-mode e-bikes – bicycles capable of switching between Class 1, Class 2, and Class 3 modes – in any new standards. Moreover, when devices marketed as e-bikes do not meet regulatory standards, it is important for the agency to help ensure consumers receive clear and accurate information regarding the product's capabilities and legal classification, enabling them to make safe and informed decisions. Utah recently passed a first-of-its-kind bill (HB 85) that clarifies the state's definition of an "electric assisted bicycle," defines "multiple-mode" e-bikes, and more clearly defines electric vehicles outside of the scope of the three-class system.[13] The bill also imposes labeling requirements for multiple-mode e-bikes and mandates that vehicles that do not meet the criteria of an "electric-assisted bicycle" are marketed as such. By considering the varying

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[8] ISO 4210-10:2020.

[9] European Union EUR-Lex, Regulation (EU) No 168/2013 (Jan. 15, 2013) (online at: eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32013R0168)

[10] *Id.*

[11] PeopleForBikes, "Electric Bicycle Law Basics" (July 2023) (online at: www.peopleforbikes.cdn.prismic.io/peopleforbikes/26118e07-5b1b-4159-92eb-5bd5d684f9b2_E-Bike-Law-Primer_July+2023.pdf)

[12] Alaska Stat. § 28.90.990.

[13] State of Utah, H.B. 85 "Electric Bike Amendments" (online at: le.utah.gov/~2024/bills/hbillenr/HB0085.pdf).

approaches to state regulations, the CPSC can better tailor its regulatory framework to address the nuanced characteristics and safety requirements of e-bikes nationwide.

Safety and Mechanical Considerations

As noted in the ANPRM, the increase in incidents and severity of injuries related to e-bikes highlights the need for updated safety standards that address the unique characteristics of these products. The current 16 CFR Part 1512 does not adequately address the higher speeds, increased weights, and mechanical complexity of e-bikes. Research indicates that e-bikes are associated with more severe injuries, including those requiring hospital admission, when compared to traditional bicycles,[14] likely due to their increased speed and mass. Enhanced braking requirements for e-bikes, including the ability to come to a complete stop within a specified distance, are essential to prevent harm to the rider, and other road users. This could include requiring that e-bikes come equipped with a brake-motor interlock system as a standard feature. A brake-motor interlock system, which directly links the braking action with the motor's power system, ensures that motor assistance is cut off immediately once the brakes are applied. This can prevent instances of unintended acceleration, reduce stopping distances, and help the rider maintain control during sudden stops. Currently, not all e-bikes are equipped with brake-motor interlock, and many models rely on more traditional braking systems found in conventional bicycles. According to CR's bicycle testing experts, these systems, when used in e-bikes, can lead to longer stopping distances or even diminished control if a motor continues to provide assistance once brakes are applied.

The frame and fork of e-bikes should be subject to more rigorous testing to ensure they can withstand the additional stress caused by higher speeds and weights. It is important to mandate separate tests to demonstrate that frames and forks can withstand repeated stress over time, impacts from obstacles and rough terrain, and greater loads, particularly for e-bikes designed to carry additional cargo. E-bikes should also be equipped with enhanced lighting and reflective materials to improve visibility, given their use at higher speeds and often in mixed traffic environments. In addition to extending existing requirements for reflectors on traditional bicycles and low-speed e-bikes in the current 16 CFR 1512 to Class 3 e-bikes by expanding the bicycle definition, CPSC could also consider requiring comprehensive reflective material coverage on the rear and sides of e-bikes[15] to enhance visibility from all angles, lighting systems (front and rear) that activate automatically in low-light conditions, and lights in the rear that activate upon the application of brakes.

Children's Electric Bikes and Electric Balance Bikes

We encourage the CPSC to collect incident data and analyze hazard patterns related to children's e-bikes and electric balance bikes. If the agency determines it is necessary to initiate a

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[14] DiMaggio, C. J., Bukur, M., Wall, S. P., Frangos, S. G., & Wen, A. Y. (Year). Injuries associated with electric-powered bikes and scooters: analysis of US consumer product data. Injury Prevention, 26(6), 524. Available at: doi.org/10.1136/injuryprev-2019-043418.

[15] 16 CFR 1512 mandates reflectors be positioned on the pedals, front, rear, and wheels of bicycles. Going beyond these point-specific reflectors by requiring that larger areas of an e-bike's frame be covered by reflectors could provide continuous visibility from multiple viewing angles.

separate rulemaking to help protect children from the risks associated with these products, we would welcome the opportunity to submit comments for the agency's consideration. Balance bikes, which typically have no pedals, chains, or gears, are designed to be propelled by a child's feet pushing off the ground; in the case of electric balance bikes, this action activates motor assistance. Currently, there are children's electric balance bikes available in the marketplace that may not achieve an appropriate balance between the product's marketed age and its top-end speed. There are electric balance bikes, advertised as "perfect for" three to five-year-olds that can reach speeds up to 13.5 mph.[16] CR also found electric balance bikes, advertised as "perfect for" children as young as two that can reach speeds of up to 9 mph.[17] In any future rulemaking, we encourage the agency to consider requiring a reasonable relationship between a product's age grading and its top speed.

Enhanced Data Collection and Analysis

CR strongly urges the CPSC to continue its data collection and analysis of e-bike-related deaths and injuries as crucial components of developing effective e-bike safety regulations. The ANPRM references CPSC's awareness of increasing trends in injuries and fatalities associated with e-bike usage, which underscores the urgent need for wide-ranging and detailed data. We recommend the establishment of more robust systems for tracking and analyzing e-bike-related incidents. This would involve not only capturing data from emergency departments, but also integrating reports from law enforcement, consumer, and industry sources. Improved data collection should focus on the specifics of e-bike incidents, including the types of e-bikes involved, the nature of the incidents, and the contributing factors such as environmental conditions and user behavior. Such detailed data will enable the CPSC to tailor its regulatory initiatives more effectively, ensuring they directly address the most significant risks associated with e-bike use. Transparent sharing of this data with the public and stakeholders would also help to facilitate broader understanding and cooperation in enhancing e-bike safety standards.

Augmenting E-Bike Speed Through Hacking

When developing new standards, the CPSC should evaluate the potential for e-bike speed limiters (sometimes referred to as speed governors) to be manipulated or bypassed, which could significantly increase the risk of incident or injury. A speed limiter is a system integrated into an e-bike to control and cap the maximum speed that the motor can assist the rider. Its primary function is to ensure the e-bike complies with factory-set speed restrictions, such as those required by law. Numerous online resources, some of which are promoted or provided by dealers and e-bike manufacturers themselves, offer detailed instructions to consumers on how to "hack" the speed limiters on their e-bikes, thereby overriding factory-set speed limits.[18] Parts manufacturers have even begun selling devices that trick an e-bike's speed sensor, allowing for

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[16] *See,* e.g., The Bike Shoppe, "STACYC Stability Cycle: Ride Sooner, Have More Fun" (online at: www.thebikeshoppe.com/articles/stacyc-pg1474.htm#:~:text=3%20speeds%3A%205%2C%207.5%2C%20%26%2013.5mph,-Wheel%20size%3A%2016).

[17] *See,* e.g., Hiboy, "Hiboy BK1 Electric Balance Bike for Kids" (online at: www.hiboy.com/products/hiboy-bk1-electric-balance-bike-for-kids).

[18] *See,* e.g., KBO Bikes, "How to Lift the Speed Limit of Your KBO Ebike | KBO Bike," (Jan. 10, 2022) (online at: www.kbobike.com/blogs/news/how-to-lift-the-speed-limit-of-your-kbo-ebike).

higher speed limits.[19] This not only raises significant safety concerns but also legal and insurance-related issues, as the modified e-bikes may no longer comply with established regulations or standard safety certifications. The CPSC should consider these factors and explore the development of regulations that govern the tamper-resistance of electronic speed settings and establish clear rules for manufacturers regarding the customization capabilities of their e-bike products. Ensuring that e-bikes cannot be easily modified to exceed set speed limits is crucial for maintaining public safety and trust in these increasingly popular vehicles.

Conclusion

Consumer Reports appreciates the CPSC's initiative to explore enhancements to the safety standards of e-bikes through this ANPRM. We support the agency's proactive steps to reevaluate the definition of "bicycle" and focus on mechanical hazards to prevent injuries and enhance safety for e-bike users and others sharing their environment. We look forward to continued collaboration with the CPSC on this issue.

Respectfully submitted,

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[19] *See,* e.g., SPEEDi e-bike speed limit increaser (online at: www.nlscomponents.com/collections/speedi).