

# Micromobility Devices on Multiuse Trails

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**rails-to-trails**  
conservancy



**Transportation in communities across America is changing** with the advent of many small and light personal-mobility options, which typically run on electric motors, such as electric-assist bicycles (e-bikes), e-scooters (scooters) and hoverboards. Rails-to-Trails Conservancy (RTC) offers this perspective to assist communities, trail managers and policy makers in making decisions about how best to manage these devices on nonmotorized multiuse trails.

Considering the fast-paced evolution of new mobility options, RTC has defined a criteria-driven approach to managing new technologies to prevent unsafe or stressful conditions while creating inclusive places. As the use of micromobility devices on trails is considered, RTC's recommendations seek to promote greater trail use, including increased diversity of trail users as well as safe and pleasant trail experiences by preventing and managing trail user conflicts—objectives that at times may be in tension and require balancing by local jurisdictions.



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## The State of Micromobility

Currently, a range of micromobility technologies are in use as both personally owned and shared devices in many communities nationwide. These devices are evolving quickly, and their introduction to the marketplace is swift—often with limited information about how and where the devices can or should be used. While RTC seeks to offer guidance to communities, trail managers and policy makers about these devices that will be flexible and evolve alongside the market, it is important to understand the context of the technologies that currently exist.

Current micromobility devices of note include e-bikes, scooters, e-skateboards (including longboards), self-balancing devices, and e-rollerblades and shoes.

**E-bikes** are the most-established form of micromobility and provide the leading edge of policy development. RTC supports model e-bike legislation to enable a broader cross-section of society to get outside and active, or to bicycle further and over tougher terrain.<sup>1</sup> Pedal assist e-bikes help to overcome limitations of ability and age, attracting more people to use trails more often. They also can facilitate greater utilitarian bicycling, such as grocery shopping or ferrying children.

Many states<sup>2</sup> have passed model e-bike legislation<sup>3</sup> creating a three-tiered e-bike classification system intended to differentiate between models with varying speed capabilities or otherwise regulate e-bikes as bicycles.

- **Class 1:** Pedal assist, under 20 mph
- **Class 2:** Throttle on demand, under 20 mph
- **Class 3:** Speed pedelec (pedal assist, under 28 mph, has speedometer)

The default in many states is that Class 1 and Class 2 may operate on trails, and Class 3 may not. Local jurisdictions may override the default for classes 1, 2 and 3. A minority of states treat all e-bikes as motorized vehicles.<sup>4</sup>

**Scooters** are a fast growing form of micromobility.

Companies offering bike and scooter sharing are rapidly shifting in favor of scooters in response to consumer demand. Most states and cities have not addressed where or how these devices should be used. Of those who have, the rules are not consistent and may even contradict across jurisdictions. More research is needed to understand the impact of scooters on public health, including physical activity, and travel mode choice.

**Self-balancing devices** include Segways, hoverboards and unicycles. Segways were introduced in 2001, and regulations in 36 states are relatively permissive and consistent, allowing use on sidewalks or trails, though these regulations may distinguish between downtowns and suburbs.<sup>5</sup> Hoverboards are two-wheeled boards, like a Segway without a handle, and generally operate at speeds ranging from 6 to 15 mph.

<sup>1</sup>"E-Bikes on the Trail." [https://www.railstotrails.org/resourcehandler.ashx?name=e-bikes-on-the-trail&id=11762&fileName=RTC\\_EBikePolicy\\_10.25.17.pdf](https://www.railstotrails.org/resourcehandler.ashx?name=e-bikes-on-the-trail&id=11762&fileName=RTC_EBikePolicy_10.25.17.pdf).

<sup>2</sup>"E-Bike Regulations." <https://peopleforbikes.org/our-work/e-bikes/>.

<sup>3</sup>"Model Electric Bicycle Law with Classes." <https://peopleforbikes.org/wp-content/uploads/2018/06/Model-eBike-Legislation-06282018.pdf>.

<sup>4</sup>"E-Bike Regulations." <https://peopleforbikes.org/our-work/e-bikes/>.

<sup>5</sup>"Become familiar with the regulations in your state." <http://www.segway.com/support/regulatory-information>.

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## The Case for Inclusion

A typical multiuse trail serves pedestrians, bicyclists and other nonmotorized users. Compared to sidewalks and bike lanes, this variability of uses and the culture of mutual accommodation offer opportunities to peaceably diversify the community of users. However, adding new, electric-powered devices into this mix could generate conflict if their characteristics or the way that they are used are not compatible with current uses.

Micromobility is likely to be a growing factor in urban mobility. In the United States, over half of all trips are 3 miles or less<sup>6</sup>—trips that are ideal for micromobility use. Micromobility devices are expected to improve, persist and likely contribute to mitigating urban traffic congestion. In 2018, shared micromobility trips more than doubled from the previous year to 84 million trips.<sup>7</sup> Proliferation and use of these technologies could grow enormously to the extent that they provide cheaper, faster and more convenient ways to make short trips.

RTC's drive to attract a broad cross section of society to get outside and active is fundamental to our work to ensure that trails are essential to communities. Rail-trails provide an accessible outdoor experience, featuring gentle grades and a safe user experience, without interference from car traffic.

Broadening of the micromobility market could expand the constituency for trails and other bicycle facilities. RTC supports e-bike use on trails, to the extent that those e-bikes fall into classes deemed appropriate for trail use following the legislative guidelines

mentioned above. RTC's perspective is that e-bikes ensure that biking is as inclusive as possible, especially in the context of aging adults and the needs of people living with disabilities. Scooters, hoverboards and powered skateboards are increasingly popular and appear to be drawing a younger, more diverse demographic, which could help to increase trail use and diversify trail users. The distance profile for scooters (1–2 miles) is shorter than bikes (2–4 miles), and many scooter users are not bicyclists.

Nevertheless, we are in a transition period; mobility providers, local governments, trail managers and the public are all learning how micromobility devices fit into communities. Currently, there's a lack of infrastructure designed with the suite of new devices in mind. Most people currently assume that they may use these devices virtually anywhere, but that is not sustainable given safety concerns. Infrastructure that can accommodate new users without endangering or inconveniencing existing users will be of increased value, in turn encouraging greater investment in creating and maintaining these resources.

Initial introduction of new technologies at scale can be chaotic. Responses appropriate to local context need to be devised for basic questions such as where to operate, how to behave and where to park such devices. The trails community—users and managers alike, policy makers and the public—together will need to learn and adjust expectations over time as pilot studies, research and overall experience advances.

<sup>6</sup>Federal Highway Administration. "2017 National Household Travel Survey."

<sup>7</sup>Engel, Alexander. "84 Million Trips Taken on Shared Bikes and Scooters Across the U.S. in 2018." April 14, 2019. <https://nacto.org/2019/04/17/84-million-trips-on-shared-bikes-and-scooters/>.



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## Managing Shared Mobility on Trails: A Criteria-Driven Approach

While the reasons to accommodate micromobility technology on trails are many, new devices have raised substantial concerns about safe and pleasant interactions on trails based on speed, weight, size and behavior. Further, technologies will continue to evolve rapidly, and it will not be practical to make judgments entirely on a case-by-case basis in response to new devices or technological features as they are introduced to the market. This fluidity and juxtaposition of opportunity and risk are the foundation for RTC's criteria-driven approach to managing micromobility on trails.

RTC's interest is in creating and preserving safe and pleasant (low-stress) trail experiences that welcome a diverse community of trail users. This cues up five key criteria for policy makers and trail managers to use in deciding which devices to accommodate on multiuse trails or how to manage their presence. In considering these criteria, the comparability of new devices to bicycles is a valuable benchmark for compatibility on multiuse trails.

**1. Speed:** Speed is fundamental to safety and stress, making it the single most important factor in determining trail compatibility. Speed influences both the likelihood of crashes and the degree of harm when they happen.<sup>8</sup> It is sensible to define a dividing line of speed above which devices could be banned or regulated. Some small scooters are limited to standard urban bicycle speeds (10–15 mph) and should be accepted from the standpoint of safety and comparability. By contrast, devices outfitted (or retrofitted) with powerful batteries that can go well beyond fast road-bicycling speeds (20–25+ mph) pose a safety risk that could warrant disallowing operation on trails. The five fastest scooters currently on the market are capable of 30–50+ mph. E-bike legislation that has been passed in 19 states thus far creates a default of allowing on trails bikes that are limited to 20 mph (Class 1) while disallowing those that are limited to 28 mph (Class 3). Local jurisdictions may override the default. RTC supports the e-bike policy and is open to extending the model approach to additional devices that are otherwise clearly comparable when evaluated against RTC's five key criteria.

**2. Noise:** People enjoy nonmotorized multiuse trails in part for the opportunity to be in a quiet place, to reduce stress and enjoy nature. The noise from internal combustion engines—such as those used in ATVs or motorcycles—is fundamentally incompatible with the desired trail experience. Current electric micromobility devices are quiet, and RTC is not aware of any user conflicts based on this factor. Absent introduction of a future technology that falls in between internal combustion engines and electric in terms of decibels, aside from snowmobiles where permitted, RTC recommends maintaining a simple prohibition on the use of internal combustion engines on nonmotorized multiuse trails.

**3. Pollution:** As with noise, internal combustion engines are not compatible with nonmotorized trail uses because of the health impacts and unpleasant smell of fossil fuel emissions. A numerical standard is not necessary unless future technologies create gray areas between unacceptable internal combustion engines and acceptable electric motors.

**4. Mass:** Speed and mass combine to determine the strength of an impact. Together these criteria determine the basic physics of safety risk. While weight is in that sense fundamental to safety, it is of lesser concern than speed because speed also increases the risk of crashes and stress for slower trail users. Scooters that are no heavier than a typical bicycle may be presumed not to pose a substantial new level of risk if traveling at a similar speed. To increase stability, newer shared scooters weigh considerably more than the previous generation. A 40-pound scooter weighs more than a road or mountain bike but is on par with fully outfitted city or utility bikes (35–50 pounds), and weighs less than some dual-suspension or fat tire bikes (40–60 pounds), adult tricycles (45–73 pounds) and e-bikes (38–70 pounds). Excepting low-speed powered wheelchairs for persons with disabilities, which should continue to be allowed on all multiuse trails, RTC recommends that trail managers or policy makers facing significant concerns about user conflicts consider a device weight limit of 75 to 100 pounds on trails to limit safety risks associated with device mass and, in the case of soft-surface trails, prevent damage to trails. Such a rule could specify that gear and/or trailers are not subject to the weight limit. Choosing 100 pounds would match the current federal e-bike definition.<sup>9</sup>

**5. Width:** Where devices are introduced that are wider than the objects that trails were designed to accommodate, it may become unsafe and/or stressful for trail users to pass one another. Local judgments about the acceptability of wider devices may vary based on the width of a trail, surface type and condition, and the volume and type of users. RTC recommends that trail managers consider limiting device width, or adjusting trail width where desirable and feasible, to ensure that trail users may safely pass in either direction. Potential benchmarks for acceptable width of a device include standard wheelchair width (24–27 inches) or adult tricycle width (30–32 inches). Trail designers often look to the American Association of State Highway and Transportation Officials' (AASHTO's) design guidelines as the standard for multiuse trail widths. AASHTO recommends a minimum of 10 feet for multiuse trails; however, where heavy use is anticipated, a 12- to 14-foot width is recommended.<sup>10</sup>

<sup>8</sup>"Road Safety - Speed." [https://www.who.int/violence\\_injury\\_prevention/publications/road\\_traffic/world\\_report/speed\\_en.pdf](https://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/speed_en.pdf).

<sup>9</sup>"Framework for Considering Motorized Use on Nonmotorized Trails and Pedestrian Walkways under 23 U.S.C. [sect] 217." [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/)

<sup>10</sup>AASHTO Task Force on Geometric Design. "AASHTO Guide for the Development of Bicycle Facilities." American Association of State Highway and Transportation Officials, Washington, DC: 2012.



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## Blending the Criteria

Any one of these factors—speed, noise, pollution, mass and width—alone could create concerns about using a particular device type on multiuse trails, but often it will be beneficial to look across the criteria to weigh the overall characteristics of a micromobility device against these factors. Trails should be inclusive and well used, but it is also critical to maintain a low-stress trail environment for users who need or value the opportunity to take refuge from cars or other faster, larger vehicles.

In determining the validity of the criteria in making informed decisions about use of particular types of devices on nonmotorized multiuse trails, RTC analyzed several mobility devices across all five criteria, for example:

- **All-terrain vehicles** are incompatible with current nonmotorized trail uses against all five criteria—a clear case for a continued ban on nonmotorized trails.
- **Scooter (shared electric kick-scooter style)** are compatible with traditional trail uses provided that they remain no heavier than some utilitarian bicycles and their speed is limited to urban bicycle speed.
- **Sit-down scooters (electric)** pose variable compatibility on multiuse trails, dependent on speed, size, mass and local trail conditions. A large sit-down scooter that can travel 30 mph and is intended for street use is too fast, heavy and large for multiuse trails. A small model that is limited to 20 mph and designed for bike lanes could be compatible, depending on local trail conditions.

## Picking the Right Management Tools

An array of tools is available to manage risks posed by micromobility devices. Banning devices altogether is typically seen as an extreme response and is rarely used except to respond to serious, widespread problems inherent to a product. Regulations can allow for a more nuanced response to the use of micromobility devices on trails.

Prohibiting use of a device in certain places where it may be incompatible is more common. Conventional bicycles, for instance, are banned from crowded downtown sidewalks but not sidewalks along dangerous suburban arterials. The volume and type of trail users as well as trail design are critical context—best understood by local decision-makers—for determining how assertive managers must be to ensure a safe, low-stress trail experience. A paved urban trail used primarily for transit access and other utilitarian trips will likely find more reasons to accommodate scooters, as well as a greater need to regulate them for safety, than a rustic rural trail used primarily for recreation.

Scooters are currently used on busy sidewalks in many places, but policy makers increasingly are treating the practice as too dangerous for pedestrians. Scooters are more compatible with on-street bike facilities and, often, multiuse trails because there is an expectation that pedestrians will share that space with bicycles. If the inherent risk of a device is comparable to that of bicycles, there may be a presumption that its use on multiuse trails is appropriate, unless there are concerns beyond safety (e.g., noise).

Safety may be enhanced by providing warnings where trail conditions may provide challenges (e.g., uneven pavement). Further, behavioral norms or etiquette are a softer form of behavior management, but are often appropriate to trail user conflicts.

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## Considering Behavior

Some people are concerned that an inclusive approach to micromobility devices based on technical compatibility criteria will not work because users of new technology have been observed to behave in a dangerous, unpredictable manner. Indeed, scooters have been associated with an increase in emergency room visits. New devices may create at least initial uncertainty about how users can and will behave. However, uncertainty and user conflicts may wane as familiarity with the devices grows, users gain skill in operating them, and sharing service providers improve the safety of their products (e.g., increased wheel size) and invest in educating users regarding proper use.

However, misbehavior is largely distinct from whether a device should be allowed to be used on multiuse trails. Crowded, narrow multiuse trails have long wrestled with user conflicts. Trail etiquette, enforced informally by trail users and reinforced with signage where education is needed, is often the most appropriate response. Broader public-education efforts, such as RTC's Share the Trail campaign, also can help.<sup>11</sup>

Formal enforcement is possible, but rarely practical. For example, the Capital Crescent Trail in Washington, D.C., and Maryland, with approximately 1 million users each year,<sup>12</sup> has a legal speed limit of 15 mph to help in managing conflicts between road cyclists and slower users, but enforcement is essentially left to other trail users. The rule and signage give trail users standing to encourage safe speeds. Legal enforcement also could generate concern among groups that have experienced discriminatory enforcement practices.

## Trail Design Solutions

RTC sees potential for trail design solutions to be important elements in addressing how best to accommodate micromobility devices on trails—especially where new uses become common, trail corridors allow room and budgets can accommodate. For example, widening and separation of uses physically or with paint are among the tactics that may be used. Design solutions may also help with concerns about parking and storage of devices.

## Who Decides

Federal, state and local governments all will play a role in shaping the future of micromobility.

Certain federal policies reserve multiuse trails for nonmotorized use. If federal Transportation Enhancements funds were used to build a trail, as is very common, use of “motor vehicles” on the trail is prohibited by law. Exceptions are made in federal law for electric wheelchairs to facilitate access for persons with disabilities, and snowmobiles on the rationale that they are used at times when bicycle use is very rare. The only exception for a micromobility device on trails addressed by the federal government has been electric pedal-assist bicycles (speed up to 20 mph, weight under 100 pounds).

Congress opened the door to exempt e-bikes from the motorized prohibition and the Federal Highway Administration (FHWA) has decided that e-bikes may be allowed on federally funded trails if state and local regulations permit.<sup>13</sup> Scooters, on the other hand, are technically subject to the motorized prohibition for federally funded trails, and FHWA is unlikely to further address this unless Congress acts.

Many states are moving forward with model e-bike legislation to create a framework for regulating where they may be used. Some states have begun to address scooters.

Local governments are best placed to judge how local trail conditions might influence which devices or activities can co-exist with existing trail uses. Volume of use, trail width, surface conditions and balance of utilitarian versus recreational users are examples of significant factors to consider. Localities may opt to restrict motorized access regardless of whether federal funds were used, but they cannot override outright federal or state prohibitions on their use. However, state e-bike legislation merely creates a presumption and expressly enables local governments to reverse those defaults based on local conditions.

Some local governments are using pilots to determine how best to manage micromobility. RTC will monitor outcomes of these pilots and research findings to learn more about this dynamic field and adjust our recommendations over time to reflect evolving best practices.



[railstotrails.org](http://railstotrails.org) | [@railstotrails](https://twitter.com/railstotrails)

<sup>11</sup>Matyas, Suzanne. "Golden Rules: Six Things You Need to Know for Trail Season." Trailblog, June 13, 2017.

<http://www.railstotrails.org/trailblog/2017/june/13/golden-rules-six-things-you-need-to-know-for-trail-season/>.

<sup>12</sup>"Capital Crescent Trail/Georgetown Branch Trail Survey Report." [https://www.montgomeryparks.org/uploads/docs/CCTrail\\_Survey\\_2007web.pdf](https://www.montgomeryparks.org/uploads/docs/CCTrail_Survey_2007web.pdf).

<sup>13</sup>"Framework for Considering Motorized Use on Nonmotorized Trails and Pedestrian Walkways under 23 U.S.C. [sect] 217." [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/)