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First name: Rick

Last name: Margolin

Organization:

Title:

Comments: I am writing to strongly urge the U.S. Forest Service continue classifying electric mountain bikes (eMTB) as motorized vehicles and to continue restricting usage of eMTBs to motor-vehicle-only trails and roads. Blurring the lines between motorized and mechanized cycles by allowing eMTBs onto trails where mechanized bikes are permitted is opening a pandora's box that will be virtually impossible to close. A retreat from current rules will result in either full-fledged motorization of recreational trails, or widespread closures to all forms of bicycles.

Proposed rules attempting to limit how much power and speed eMTBs can generate are virtually impossible to enforce as eMTBs evolve to become visually similar to human-powered MTBs. Without enforcement of these limiters, trails will become fully motorized in a way that current rules serve to prevent. This will create wildly disparate speeds among user groups that have already led to conflict, and will exacerbate environmental impacts. Ultimately, the inability to distinguish an eMTB from a regular one will force land-manager's hands to either allow full trail motorization, or adopt blanket bans on all cycles, regardless of propulsion method.

Because the pace of eMTB technology is advancing so rapidly, enforcement of regulations designed to limit vehicle output are not practically possible. Advancing technology is also enabling eMTBs to go faster and farther on larger, heavier platforms. The inability to reign in vehicle output along with the rapidly advancing technology means we are going to have exponentially higher volumes of motorized vehicles on traditionally human-powered trails.

Enforcement of proposed rules is and will be problematic because eMTB technology is evolving to be visually indistinguishable from regular mountain bikes. Take, for example, the offerings from Specialized Bicycles. In 2017, the motor box on Specialized's eMTB was about 8.5" tall and wide. The box on this year's flagship model has shrunk to just 5.5", barely larger than the bottom bracket and suspension joints of a non-motorized mountain bike. This makes attempts to identify an eMTB through visual identification of the motor virtually impossible.

Another area where visual identification is no longer useful is the battery compartment. Bike companies are figuring out how to pack more battery power into smaller compartments and inside the bike. The first generation of eMTBs mounted the battery cases externally atop the downtube. In 2017, Specialized integrated the battery pack inside of the downtube, and others were quick to follow. Kona Cycles, for example, needed just two model years to move from external mounting to an integrated battery in a ~6" tall downtube, and then to an integrated downtube of just 4" tall. At that size, the downtube on Kona's eMTB is only millimeters larger than the downtubes on their non-motorized bikes. This effectively renders visual identification of an eMTB based on battery housing also an impossibility.

The visual blending of eMTBs with human-powered mountain bikes is problematic not just because it makes identification for enforcement difficult, but also because it is occurring at the same time that motor and battery outputs are increasing exponentially. Staying with Specialized as an example: in just the past four years, Specialized has more than doubled the power output of its Turbo Levo FSR from 250 watts in 2017 to 565 watts on its 2020 model. At the same time, their battery output has increased from 460 watt-hours to today's model with 700 watt-hours.

Increased motor outputs on trail bikes are concerning because they facilitate higher speeds of travel both uphill and downhill. The supplemental ability to get a bike uphill enables the bike to feature more componentry capable of smashing downhills: longer travel and heavier suspension, bigger tires, and beefier frames to handle more vibration and impacts. Historically, the amount of downhill technology a bike would feature was naturally limited

by the rider needing their own power to pedal the bike uphill. This acted as a constraint on downhill speeds that ultimately has kept trail conflict in check. By allowing bikes to be motorized those limiters are removed and riders become capable of carrying more downhill technology for greater speeds.

This also exacerbates environmental impacts. eMTBs are heavier, feature wider than normal tires (most human powered mountain bikes run tires that are generally 2.1" - 2.5" wide; standard offerings on new eMTBs are in the 2.8" - 3.0" wide range), and can travel farther with less effort. In addition, eMTB advocates tout the machine as attracting new riders to the sport. But do our forests really need more people at a time when maintenance budgets are tight and numerous jurisdictions are struggling with the impacts from over-crowding?

Without the ability to visually distinguish an eMTB from a human-powered bike there will be no practical means to enforce any rules limiting where eMTBs can go. At that point, regulators like the USFS will be faced with two options. Option 1 will be to allow eMTBs full access even though their power output and capabilities effectively become on par with motorcycles. When that happens there will no longer be an ability to segregate motorcycles from trails. Option 2: if eMTBs cannot be visually distinguished from human-powered bikes, and certain trails are selected to be free of eMTBs, then the only option to enforce such rules will be blanket bans on all bicycles.

There are those that claim the train has already left the station: that eMTBs have already become visually indistinguishable. Quick glances at mountain bike group pages on Facebook already affirm that riders find no difficulty taking eMTBs onto forest service trails where they are not allowed with impunity. They say it is too late, so we might as well drop all rules attempting to regulate. I do not subscribe to this notion, though. The last bulwark against the industry growing out of control is the quantity of access. Since the vast majority of mountain bike trails across the country are on USFS land, preserving rules keeping eMTBs classified as motor vehicles and relegated to motor-friendly trails is critical to limiting the market size and potential for eMTBs. If the market for eMTBs remains constrained, then the technical advances that will enable eMTBs to evade detection will be limited.

For generations we have recognized and respected the benefits of separating human-powered recreation from motorized recreation. Beyond some users' desire to increase their fun-factor, there are no apparent justifications for deviating from that long-standing, well-functioning system. In fact, the risks to abandoning that separation are great. At the end of the day we should continue regarding electric mountain bikes as motorized vehicles and regulate them in accordance with current rules on motorized vehicles on recreational trails.

Thank you for this opportunity to comment.