CLIMBING GRADES

The increased weight of an electric mountain bicycle increases the tire/dirt contact area and, therefore, traction. Whereas humans quickly reach a point where their strength is insufficient to power up a climb, a cyclist on an electric mountain bicycle can climb steeper grades.

At a certain point, however, the power provided by an electric mountain bicycle could overcome the adhesive forces of the soil and cause the rear wheel to spin out. A steep segment of trail that was previously not climbable may now see soil displacement because of the combination of power and traction. Soil displacement varies depending on local soil conditions but may be particularly evident on steep uphill turns where it is easier to break the traction of the tire because of the turning action.
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In many instances, the combination of increased power and traction afforded by an electric mountain bicycle will decrease the amount of soil displacement because it is easier to maintain traction. At a certain point, though, the back tire might spin. If the rider simultaneously exerts power at the crank, which is likely as there is a sudden decrease in resistance, the motor on the electric mountain bicycle will deliver additional power to the rear tire, potentially exacerbating the soil displacement.

It is difficult to foresee where this will occur, and it may not occur at all given soil conditions and levels of use. If it does manifest itself, it will be evident by new areas of soil displacement, higher on steep sections of trails and closer to the crest of climbing turns. Small, targeted maintenance may then be needed.

Steep trail segments likely already see erosion, in which case they should be rerouted onto a sustainable alignment. This will reduce environmental impacts regardless of the user types present.