



people**for**bikes

SUMMARY

USE DESIGNATION OF CLASS 1 E-BIKE IMPACTS Within the Pines to Mines Trail Project in Tahoe National Forest

PROJECT INTRODUCTION

The Tahoe National Forest (TNF) [Pines to Mines Trail Project](#) is a multi-use, native-surface recreational trail system connecting Nevada City and Truckee, California. The project will provide new recreation opportunities open to equestrian, pedestrian, bicycle, and Class 1 electric bicycle (e-bike) use on National Forest System lands. The new trail system would include approximately 72 miles of natural surface trails.

Among other improvements, this project will:

- Designate approximately 52 miles of existing trail including segments of the Pioneer Trail (FS 09E11), Spaulding Lake Trail (FS 12E40), Grouse Ridge Trail (FS 13E28), Donner Lake Rim Trail (FS 15E75), and Hole in the Ground Trail (FS 14E25) as part of the Pines to Mines trail system
- Construct approximately 22 miles of new multi-use, native-surface trail to complete final trail system connections
- Designate the use of Class 1 electric mountain bikes (eMTBs) on new and existing trail segments within the Pines to Mines trail system that lie on National Forest System lands or for which the TNF maintains management responsibility under existing easement or right of way
- Assess maintenance requirements, changes in use, or user impacts that could affect safety, require additional infrastructure needs, or show any evidence of user displacement
- Update trail management objectives (TMOs) to include Class 1 eMTBs as an additional managed use while maintaining the current non-motorized designed use objectives

NOTEWORTHY FINDINGS FROM THE PINES TO MINES TRAIL PROJECT DECISION NOTICE + FONSI

In 2022, the U.S. Forest Service finalized policy and management direction for authorizing e-bike use on trails. The process is identified in the updated Forest Service Manual (FSM 7715.5) and specifies the consideration and documentation of several factors including whether trails are currently managed for or allow bicycle use, to what extent the effects of e-bike use would be comparable to existing bicycle use, and what classes of e-bike would be

appropriate for the trail being considered. With this guidance, TNF staff reviewed research in current scientific literature, data collected by Forest Service personnel and interested volunteers, and local knowledge provided by subject matter experts and multiple resource specialists.

Management direction in the Forest Plan prohibits mountain bike use only where bicycle use is prohibited by policy or where major resource damage or user conflicts are occurring or are likely to occur (LRMP, USDA, 1990, P. V-52). Mountain bikes are allowed essentially everywhere in the forest, except a few interpretive pedestrian trails, trails within designated wilderness areas, and on the Pacific Crest National Scenic Trail. Bicycle use is permitted on all the trails proposed for inclusion in the Pines to Mines trail system.

Class 1 Electric Bicycle Designation on Natural Surface Trails

Based on the research and analysis reviewed and presented in the environmental analysis, staff concluded that there are no prohibitive issues in the consideration of Class 1 electric mountain bike (eMTB) use on the Pines to Mines trail system. Their findings include:

- **Class 1 eMTBs are comparable to modern traditional mountain bikes and can be virtually indistinguishable. Class 1 eMTBs utilize the same wheel hubs, tire sizes and treads, drive trains, gearing and braking systems, shifting mechanisms, suspension, and handlebars.**
- **While the scope of the current literature is limited, the best available research shows very little difference between the traditional mountain bikes and Class 1 eMTBs in terms of impacts on natural resources like erosion, soil displacement, sedimentation, or significant contributions in sediment delivery to sensitive watersheds. The same findings apply to the relative effects of noise, effects to botanical resources, and the effects on wildlife (E-Bike Analysis, TNF, 2023).**

SPEED + SAFETY

Only two references (Hall et al., 2019, and Mitterwallner et al., 2021) present data for comparative speeds between eMTBs and traditional mountain bikes on non-paved surfaces. Both studies conclude that eMTBs achieve faster speeds on average, though the differences are not significant, ranging between 1.5 and 4.5 mph. The overall speeds recorded in these studies are also not excessive, ranging between 8 and 12 mph in the Hall study and 7.5 and 14 mph in the Mitterwallner study.

Additionally, staff also considered data collected directly on the trails being considered in the project proposal area. This data showed almost identical speeds on average for Class 1 eMTBs and traditional mountain bikes (Recreation and Trails Report, Brokaw, 2023), with advanced to expert riders on traditional mountain bikes producing the fastest top speeds in all directions and on all trail gradients.

Furthermore, the design, character, and technical difficulty of much of the existing system limits achievable speeds for all users. These factors, coupled with trail design features to reduce speed and mitigation measures like improving sight lines, led TNF staff to conclude that differences in speed are not a prohibitive issue in the consideration of Class 1 eMTB use on the Pines to Mines trail system.

LAW ENFORCEMENT & MONITORING

Concerns around law enforcement and trail monitoring were raised during the public comment period. These concerns were reviewed by TNF staff, during both the administrative review and objection process, and to address these concerns, the TNF committed to several actions to enforce and monitor the Pines to Mines trail system with the new designation:

- Enforcement of existing prohibitions against unauthorized motor vehicle use (36 CFR 261.13). All Pines to Mines system trails, in addition to existing designations authorizing pedestrian, equestrian, and bicycle use, will be clearly posted as “Open to Class 1 E-Bikes Only.” Existing non-motorized trails that intersect or are adjacent to the new system will be posted as non-motorized only, “E-Bikes prohibited”. The Pacific Crest Trail will be clearly posted as equestrian and pedestrian use only.
- Educating Law Enforcement Officers (LEOs), Forest Protection Officers (FPOs), and field-going recreation staff to recognize the difference between Class 1 E-Bikes and other classes of electric bicycles. LEOs and FPOs will be directed to enforce authorized motor vehicle use designations (36 CFR 261.13)
- Enforcement of existing prohibitions against careless or reckless behavior that could impact safety and or endanger persons or property (36 CFR 261.15(g))
- Enforcement of existing prohibitions against behavior or activities that could damage or disturb the land, wildlife, or vegetative resources (36 CFR 261.15(h))
- Implementation of the Travel Management Rule (36 CFR 212) including analysis of violation trends to identify problem areas, incorporation of adaptive management strategies utilizing education and engineering, regular and recurring enforcement presence on roads, trails, and in areas, development of responsible public use attitudes through consistent public outreach, and clearly marked route and use designations.
- Engaging volunteers, partner groups, and stakeholders in collaborative monitoring efforts to adequately assess current and changing trail use conditions, understand evolving industry standards, and provide input for informed and responsible management decision-making going forward.

CONFLICT + DISPLACEMENT OF EXISTING USER GROUPS

The potential for user conflicts or the displacement of existing user groups was also considered as part of the environmental analysis, with TNF staff concluding that these were not prohibitive issues in the consideration of Class 1 eMTB use on the Pines to Mines trail system.

The research and analysis reviewed and presented in the environmental analysis and reports brought staff to the conclusion that Class 1 eMTB use can be incorporated seamlessly into the Pines to Mines trail system, where many existing trail segments accommodate considerable traditional mountain bike use and Class 1 eMTB use currently.

Existing uses informed their decision with respect to the potential for existing users or user groups to be displaced by a designation to allow Class 1 eMTB use. An accounting of user densities across much of the busiest portions of the proposed trail system in the summer of 2023 presents an accurate picture of current use and users. The data, described in detail in the project Recreation and Trails Report (Brokaw, 2023) showed use on the western end of the Pioneer Trail to be made up almost entirely by traditional mountain bikers and Class 1

eMTB users, while on the Spaulding Lake and Grouse Ridge Trails the users were almost entirely pedestrian. The most equestrian use on the Pioneer Trail was recorded from the Overlook Equestrian Staging Area, but considerable equestrian use was observed from the Gold Country Trails Council Equestrian Trailhead at Conservation Camp Road, though users starting at this location chose to frequent other area trails not proposed for inclusion in the Pines to Mines trail system. Staff expects the areas popular with mountain bikes will remain so and that Class 1 eMTBs will continue to frequent them. In contrast, other areas popular with pedestrian and equestrian users will continue to be popular with those user groups.

Education and awareness are key components for reducing conflicts between users and mitigating the potential for users and or user groups to be displaced from trails or trail segments they currently enjoy. **The effects of Class 1 eMTB use are commensurate with the current traditional mountain bike use on existing trails concerning almost all metrics (Brokaw, 2023). Conflicts that could occur are likely similar to those currently occurring between the existing uses and/or user groups.** TNF recreation staff report that the majority of users recreating on public land are likely to abide by rules of use when they are clearly informed as to what those rules are. Posted standards of etiquette, rights of way applicable to all user groups, guidelines for responsible behavior on trails, and other interpretive material available and or posted at trailheads or district offices can provide the public with the tools necessary to recreate safely, enjoyably, and cooperatively.

ACCESS, EQUITY, AND INCLUSION

A Class 1 eMTB allows some outdoor enthusiasts to start a new recreation activity to access and enjoy National Forest lands and others to continue enjoying outdoor recreation. The health benefits of exercise, including riding a pedal-assist bicycle, are supported by research and numerous studies. TNF staff noted that they are proponents of encouraging the public to engage in sustainable recreation, exercise, and enjoy public lands, and that Class 1 eMTBs are a tool to help users engage in those pursuits.

WILDLIFE

Aquatic Wildlife

Sierra Nevada Yellow-Legged Frog (SNYLF)

The eastern portion of the Spaulding Lake Trail lies within U.S. Fish and Wildlife Service designated Critical Habitat for the Sierra Nevada Yellow-Legged Frog (SNYLF), however additional Class 1 eMTB use would not affect or negatively impact any primary constituent elements of suitable SNYLF habitat. Traditional mountain bikes represent an existing authorized use on the Spaulding Lake Trail. Effects on trails are not considered to be significantly different between traditional mountain bikes and Class 1 eMTBs (Dudek, 2023). Non-significant impacts to trails from traditional mountain bike use relative to other use types in terms of tread wear, soil movement, erosion, and contribution to sediment delivery have been documented (Wilson and Seney 1994). Additional studies have shown similar results when comparing traditional mountain bikes with Class 1 eMTBs (IMBA 2015). Finally, a review of the literature, consideration of current user trends, and USFS observations of use characteristics during the 2019 season when Class 1 eMTBs were allowed on all non-motorized trails in the forest did not find significant differences between the two vehicle classes with

respect to relative speeds (Langford et al., 2015; Brokaw, 2023) and user behavior (Langford et al., 2015). No impacts to SNYLF or their habitat are expected to result from the proposed new designation to allow for use by Class 1 eMTBs on the Spaulding Lake Trail. Furthermore, the character of the Spaulding Lake Trail and its technical difficulty for bicycle riding limits the relative proportion of mountain bike users on the trail currently and there is no reason to expect that trend to change with the inclusion of Class 1 eMTBs as an authorized use.

The entirety of the Hole in the Ground Trail lies within USFWS designated Critical Habitat for SNYLF, however, Class 1 eMTB use would not additionally affect or negatively impact the species. Traditional mountain bikes represent almost all of the current use on the popular Hole in the Ground Trail. Annual monitoring of the most significant and stable populations of SNYLF in Round Valley and Lower Castle Creek has recorded no adverse effects to the species or its habitat from current mountain bike use specifically at the Lower Castle Creek/Hole in the Ground trail crossing. Effects are not significantly associated with traditional mountain bike use relative to other existing uses (Wilson and Seney 1994) and Class 1 eMTBs, as discussed above, represent similar effects (IMBA, 2015; Langford et al., 2015; Brokaw, 2023). No impacts to SNYLF are expected to result from the proposed new designation to allow for additional use by Class 1 eMTBs on the Hole in the Ground Trail.

Terrestrial Wildlife

Western Bumble Bee

No direct or indirect effects on Western Bumble Bees would occur from new designations to allow wheeled motorized vehicle use, open to Class 1 eMTB only, on five existing USFS trails. All of these trails are currently popular multi-use recreation facilities. Impacts to the trail, trail corridor, and surrounding environment based on existing multiple uses would remain consistent. The addition of Class 1 eMTBs as an allowable use would not additionally or negatively impact Western Bumble Bees.

California Spotted Owl (CSO)

CSO habitat can be found throughout the project footprint, specifically in the western portions of the proposed action area. Some direct and indirect effects may occur currently under the existing multiple-use conditions of the Pioneer Trail; however, no additional or negative impacts are expected from a new designation to allow wheeled motorized vehicle use, open to Class 1 eMTBs only, on the Pioneer Trail nor are additional or negative effects expected with the same designation on the other four existing Forest Service System trails. The effects of traditional mountain bikes on native surface trails have been shown to be nominal relative to the other existing uses (Wilson and Seney, 1994) and similar in a wide range of characteristics to Class 1 eMTBs (IMBA, 2015; Langford et al., 2015; Brokaw, 2023) and the effects of Class 1 eMTB use on CSO and or their preferred habitat would be commensurate with current conditions. There would be no change to the amount of existing available, suitable CSO habitat, no significant ground-disturbing activities are planned, and existing habitat characteristics would remain unchanged.

Though mountain biking as a recreational activity is growing in popularity, use patterns are not expected to change significantly, and thus potential increases in use are not expected to cause significant environmental impacts that could affect California Spotted Owls. Overall use

in the area should be somewhat dispersed with the addition of 22 miles of new trails. The existing trails would be expected to continue to attract the types and densities of use they currently receive, with locations popular for hiking, like the Spaulding Lake and Grouse Ridge Trails, continuing to support a majority of pedestrian use while western portions of the Pioneer trail, which currently support a high density of mountain bike use, would see some additional Class 1 eMTB use. Thus, effects currently occurring along the entire system would continue to occur with only moderate differences.

Northern Goshawk

Expectations for the potential impacts of increased use as a result of a designation to authorize Class 1 eMTBs as an allowable activity on the Pines to Mines trail system are the same as those described above for California Spotted Owls. Effects currently occurring along the entire system would continue to occur with only moderate differences and potential increases in use are not expected to cause significant environmental impacts which could affect the Northern Goshawk.

Pallid Bat, Townsends Western Big-Eared Bat, and Fringed Myotis

Use designation to allow wheeled motorized vehicle use, open to Class 1 eMTBs only, on existing and newly constructed trails is not expected to result in additional or negative impacts. Future expected use would also be almost entirely during daylight hours. There may be a limited loss of snags, which hold value as roosting sites for bats, due to future management for user safety concerns. The loss of some potential roosting sites is not expected to negatively impact the viability of any bat species within the planning area on the TNF, nor is it likely to lead to a trend toward federal listing for any of the three bat species.

NOISE + QUIET RECREATION IMPACTS

The research and analysis reviewed and presented in the environmental analysis and reports found that the addition of Class 1 eMTBs in the proposed project area is expected to cause no effects on quiet recreation.

The addition of Class 1 eMTBs on the existing trails would not significantly change existing conditions. Class 1 eMTBs do not have substantially different noise characteristics than traditional mountain bikes. Tire noise is the primary noise generated by Class 1 eMTBs, which is the same as the primary noise generated by traditional mountain bikes. Thus, the addition of Class 1 eMTBs to the existing trails included in the Pines to Mines trail system would not contribute to any measurable increase in noise disturbance (E-Bike Report, Dudek, 2023).

Conflicts among different uses would be expected to improve or be reduced. Criteria considered in the proposed designation of trails (36 CFR 212.55) for wheeled motorized vehicle use, open to Class 1 eMTBs only, include project-specific measures designed to mitigate potential conflicts (See Minimization Criteria Spreadsheets, Appendices B through G). As part of the proposed new use designations on existing trails, the proposed action includes the provision of new, clear, and well-placed signage at staging and other access locations to provide specific guidance with rules and regulations limiting motorized use to Class 1 eMTBs only. Standards of etiquette, rights of way, guidelines for respectful use, and behavior on multiple-use trails will be defined in detail. Additionally, information specific to minimizing conflicts between different user groups would be placed at staging locations popular with all

user groups. Improved way-finding signage would reduce confusion on trails, educational outreach would inform responsible use, and improved design, including careful attention to increased lines of sight, would add to safety and enjoyment for all users.

Class 1 eMTBs are similar to traditional mountain bikes concerning several key characteristics. These include components (Recreation and Trails Report, Brokaw, 2023), comparative speeds on native surface trails (Langford et al., 2015, Hall et al., 2019, Brokaw, 2023), relative health benefits (Hall et al., 2019), impacts to trail (IMBA, 2015), and comparative appearance.

Currently, USFS allows Class 1 eMTB use on four native-surface trails in the TNF that were previously designated for non-motorized use only. USFS has not observed additional or adverse impacts on these trails nor did USFS observe any significant increase in conflicts as a result. While there was a general increase in the use of Class 1 eMTBs on these trails, USFS observed an overall increase in bike use on all trails across all classes. This increase in use, however, when observed at a landscape scale, did not significantly alter patterns of use, nor increase impacts to public resources and recreation. The differences with respect to impacts were not discernible at a local site-specific scale.

SOIL + HYDROLOGY

The proposal to designate five existing trails to allow for wheeled motorized vehicle use, open to Class 1 eMTBs only, is not expected to result in any significant effects on soils or hydrology. Class 1 eMTBs are not considered to be a significantly different use than multiple uses currently impacting the trail which include traditional mountain bikes. Specifically, impacts on trails in terms of tread wear, soil movement, erosion, and contribution to sediment delivery have been shown to be similar between traditional mountain bikes and Class 1 eMTBs (Wilson and Seney, 1994; Weaver and Dale, 1978; IMBA, 2015). No additional or negative impacts are expected.

The Environmental Assessment concluded that the proposal to designate a newly constructed trail to allow for wheeled motorized vehicle use, open to Class 1 eMTBs only, will not additionally or negatively impact hydrology or soils.

PUBLIC HEALTH OR SAFETY

According to the Pines to Mines Environmental Assessment and Decision Notice, Class 1 eMTBs simply do not represent a significantly different use than traditional mountain bikes.

- Long-standing research shows that mountain bike impacts on native-surface trails are comparable to existing non-motorized uses and that they produce less sediment yields than pedestrian and equestrian use (Wilson and Seney, 1994).
- Early research on trail impacts from recreational use showed conclusively that impacts associated with produced force, measured in pounds per square inch, are significantly greater from equestrian and motorcycle use than impacts associated with the force produced by bicycles. Relative impacts to trails of Class 1 eMTBs are similar to traditional mountain bikes (IMBA, 2015).
- An analysis of comparative speed data compiled on the existing trails proposed for inclusion in the Pines to Mines showed relative speeds among the top riders to be

almost identical. In contrast, among novice to intermediate riders, the differences showed Class 1 eMTBs to be nominally faster (3-5 mph) when riding uphill but resulted in traditional mountain bikes producing speeds equal to or faster than Class 1 eMTBs on flat or downhill terrain (Brokaw, 2023).

The analysis determines that allowing Class 1 eMTBs on trails and or trail sections that currently host significant mountain biking traffic is unlikely to negatively affect public health or safety in these areas. Allowing Class 1 eMTBs on trails or trail sections that currently allow mountain bike use but which do not attract a high density of mountain bike users is unlikely to alter current patterns of use or significantly increase the density of that use. These trails tend to be rocky, technically difficult, difficult to access, and generally attractive to a minority of the user group. TNF staff believes it is unlikely that Class 1 eMTBs authorized as a new allowable user class in these areas will negatively affect public health or safety.

The conclusion is that designation to allow wheeled motorized vehicle use, open to Class 1 eMTBs only, on newly constructed trails would not additionally or negatively impact public health and safety. Class 1 eMTBs have been shown to represent a similar use as traditional mountain bikes based on several relevant metrics including noise, speeds, components, and impacts on trails. Additionally, design standards have been developed specifically to promote shared use that is safe, sustainable, and enjoyable for all public user groups. Staff did note that project measures will be taken that include improvements on existing trails to better conform with current multiple-use trail design standards as well as additional wayfinding signage, improved educational outreach, additional trail use guidelines, rights of way, and etiquette standards, will help mitigate the potential for adverse public health or safety outcomes.