



**MEMORANDUM OF RECOMMENDATION**  
**BICYCLE ADVISORY COMMITTEE**

**DATE:** April 13, 2018  
**TO:** Transportation Board  
**FROM:** Luke Caldwell, Bicycle Advisory Committee (BAC) chair, on behalf of the BAC  
**SUBJECT:** Allowing electric-assist bicycles on paved trails

Recommendation:

The Bicycle Advisory Committee supports a pilot study to assess the use of Class 1 and Class 2 electric-assist bicycles on paved trails in Fort Collins. The BAC further recommends staff determine the parameters of this pilot study, including but not limited to:

- Determine the appropriate trails and duration for this pilot study
- Develop and ultimately implement a comprehensive evaluation and education plan that includes public outreach and measures success
- Review current City guidelines/rules applicable to the use of the trail system to determine if changes are necessary

Discussion:

Allowing electric-assist bicycles on paved trails has the potential to enhance transportation and recreation activities while maintaining a safe environment for all users. Current law only allows people with disabilities to use these bicycles on our paved trails (unless the motors are turned off). Our paved trail system is a vital component of our multi-modal transportation infrastructure that provides safe, efficient means to travel around the city for recreation, commuting, or other purposes. There is a broad range of trail users from horse riders to bicyclists to pedestrians. We recognize the importance of maintaining an enjoyable experience for all users without adversely impacting others. Allowing electric-assist bicycles on our paved trails may help meet City goals, such as the Climate Action Plan. This type of bicycle can reduce automobile use by enabling longer bicycle commutes (Dill and Rose 2012)<sup>1</sup>, encourages a healthier community through more physical activity, and increases accessibility for seniors and less physically capable members of our community.

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<sup>1</sup> Dill, J., & Rose, G. Electric Bikes and Transportation Policy: Insights from Early Adopters, *Transportation Research Record: Journal of the Transportation Research Board*, No. 2314, Transportation Research Board of the National Academies, Washington, D.C., 2012, pp. 1–6.

The BAC submitted a fact-based white paper regarding electric-assist bicycles to the Transportation Board in September 2017. We then solicited feedback, heard concerns, and answered questions regarding this white paper from the Natural Resources Advisory Board, Commission on Disability, Senior Advisory Board, Land Conservation Stewardship Board, Air Quality Board, and Parks & Recreation Board. All consulted boards and the one commission supported a pilot study while expressing speed-related safety concerns and concerns about compatibility with other trail users.

The BAC agrees safety is paramount, and these concerns are our primary reason for supporting a pilot study rather than a permanent change. However, existing data from other cities does not support the perception that electric-assist bicycles create additional safety issues. No studies were found in our research that demonstrated electric-assist bicycles decrease public safety. Our research found no documented cases of crashes involving these bicycles that resulted in death or serious injury in the U.S. The City of Boulder has allowed electric-assist bicycles on their paved trails for four years with no collisions or personal harm documented. In Colorado, electric-assist bicycles have been approved for paved trail use in Boulder, Colorado Springs, Superior, Larimer County, Loveland, Grand Junction, and Louisville. One-year trail system pilot studies have started in Glenwood Springs, Durango, and Jefferson County Open Space. Many of these communities implemented a trial period or pilot study following the change to state law in August 2017, demonstrating rapid uptake across the state.

Evidence suggests electric-assist riders move and behave similarly to traditional bicycle users. A study (Langford et. al., 2015)<sup>2</sup> in Nashville, TN, from 2011-2014 found electric-assist bicycle riders exhibit nearly identical safety behavior as traditional bike riders. While riding on streets, electric-assist bicycle riders went, on average, 1.8 mph faster than those on traditional bikes but went 1 mph slower than those riders on trails. In the opinion of the BAC, this demonstrates that the majority of electric-assist bicycle users respect rules and exhibit common courtesy to others just as the majority of all trail users do. The average electric-assist bicycle user is between 45-65 years old, and these users are likely not purchasing them for speed, but instead for ease of recreation, commuting, and general transportation (Peopleforbikes.org).<sup>3</sup> Another study (Plazier et. al., 2017)<sup>4</sup> found that when electric-assist bicycles were used as a substitute for motorized commuting, study participants were willing to accept longer bicycle commuting times. Electric-assist bicycles provide a dependable option for people limited by mobility, fitness, or disability, as well as those whose commutes are in the 5-20 mile range.

The challenges Fort Collins faces regarding transportation and accessibility are the same that all cities face: traffic congestion, air quality, climate change impacts, increasing housing costs, decreasing housing availability, physical inactivity and obesity, and the economic burdens of car ownership. These challenges will only continue to grow as Fort Collins' population increases. Allowing electric-assist bicycles on our paved trails will help address these issues by reducing

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<sup>2</sup> Langford, B.C., Chen, J., & Cherry, C.R. Risky riding: Naturalistic methods comparing safety behavior from conventional bicycle riders and electric bike riders, *Accident Analysis & Prevention*, Vol. 82, 2015, pp. 220-226.

<sup>3</sup> Peopleforbikes.org, April 11, 2018.

<sup>4</sup> Plazier, P.A., Weitkamp, G., & van den Berg, A.E. "Cycling was never so easy!" An analysis of e-bike commuters' motives, travel behaviour and experiences using GPS-tracking and interviews, *Journal of Transport Geography*, Vol. 65, 2017, pp. 25-34.

barriers to cycling such as distance, age, and ability, while providing a convenient transportation option. Fort Collins should also continue to invest in and improve upon our paved trail system and bike lanes to better serve the high use of these transportation systems by our community. We believe these emission- and noise-free bicycles could play an important role in the City's development of a sustainable transportation system. Their use and sales are rapidly climbing in the U.S., and we support their use for recreation and transportation in ways that don't diminish the experiences of other users. Baby boomers and seniors are living longer and maintaining more active lifestyles than ever before, and people are looking for less fossil-fuel-reliant yet efficient means to move around, creating a demand for this type of vehicle.

The BAC recommends the Transportation Board support and advocate for the adoption of a pilot study for the use of Class 1 and 2 electric-assist bicycles on Fort Collins' paved trail network. If City Council were to consider a pilot study, we strongly support expanded educational outreach, including providing educational materials to retailers, and increased signage along trails. Clear guidelines for the use of City trails can promote a safe and enjoyable experience for all trail users. We recognize portions of the trail system are not suitable for speeds attainable by both electric-assist and regular bicycles. Staff should determine the appropriate trails to include in the pilot study as well as the duration of the study and a comprehensive evaluation strategy. Staff should also develop and implement a public education program that includes public outreach. Additionally, the BAC recommends city staff reach out to communities with established electric-assist bicycle trail policies to gain a better understanding of what is working and what challenges have arisen. Subsequently, staff should be directed to identify metrics that Fort Collins should use to assess the success of any pilot study. Finally, if electric-assist bicycles are permitted on paved trails, clear definitions will be important so that other electric vehicles (e.g. electric scooters, skateboards, or other devices) are not inadvertently permitted.

cc: Darin Atteberry  
Tessa Greigor

Dear Members of the Transportation Board,

On May 17, 2017 I spoke to you as Chair of the Bicycle Advisory Committee (BAC) about creating an informative, fact-based paper on electric-assist bicycles as this might become an issue again for the City. The BAC felt this paper would improve the quality of the discussions that may arise due to changes in state law. I am excited to now present this white paper to you and I hope that you will find it beneficial. Our intent was to pool together current information on regulations, historical context in Fort Collins, and suitability for paved trails.

The purpose of this paper is to provide a common platform for discussions regarding electric-assist bicycles. Recent state legislation and the revision of the Transportation Master Plan make this an opportune time to assess whether the status of these bicycles should be reconsidered on paved trails in Fort Collins. Five Appendices accompany this paper that contain important information and, in some of them, perspectives from city staff. We encourage you to read these as they provide insight into how electric-assist bicycles are viewed by some City departments.

As we worked through the existing literature and the solicited responses from City staff, we came to the conclusion that trail capacity for our rapidly growing city is a critical issue that needs to be addressed. We feel this issue should be discussed and may need to be dealt with in the Transportation Master Plan. All evidence indicates that our popular trail system is quickly becoming inadequate for the use it is receiving and as trails become more popular, the stresses on the trail system will only increase. We are concerned that these stresses, coupled with the treatment of trails as recreational amenities rather than transportation corridors, may not allow for adequate funding for maintenance and improvements thus degrading this asset to our community. We expect use of the trail system will only grow as our population expands and the trails are connected to Loveland, Timnath/Windsor, and Greeley. The funding mechanism to build the hard trail system has primarily been GOCO money while maintenance and repair is through BFO offers to the general fund. We are concerned that there is no mechanism to improve the hard trail system to meet the demands of population growth and greater transportation use. We raise these issues in our Questions and Future Directions section as they are outside of the scope of this paper. We believe the time for addressing the needs of our trail system is best done now rather than when issues get worse.

The BAC would appreciate hearing from the Transportation Board regarding the utility of this paper as well as next steps in its development. We would be happy to work on additional research on specific issues or questions posed in the paper, especially to help develop a recommendation to City Council regarding the use of electric-assisted bicycles in Fort Collins.

Respectfully submitted,

Luke Caldwell  
Chair, Bicycle Advisory Committee

## Consideration of Electric-assist Bicycles on Fort Collins Paved Trail System

### Opening Statement

Recent legislation at the State level coincides with ongoing revisions to the Fort Collins Transportation Master Plan and provides an opportunity to revisit whether certain electric-assist bicycles (e-bikes) should be allowed the same access on Fort Collins paved trail system as normal bicycles. This information has been compiled by a sub-committee of the Bicycle Advisory Committee (BAC) and supported by a unanimous consent of the BAC on August 28, 2017. The purpose of this paper is to provide background information to serve as a basis for discussions regarding electric-assist bicycles on paved trails in Fort Collins.

### Recent State Legislation

On April 4, 2017, Colorado [House Bill 17-1151](#), "Concerning the Regulation of Electric-assist Bicycles," was passed into law; it slightly redefines electric-assist bicycles and further establishes two main points:

- 1) It provides clear and distinct definitions for three classes of electric-assist bicycles [see definitions below]; and
- 2) It specifically allows the operation of Class 1 or Class 2 electric-assist bicycles on bike or pedestrian paths unless local authorities restrict such use. Class 3 electric-assist bicycles are barred from such paths unless allowed by local authorities. As before, local municipalities are given broad authority to regulate the use of electric-assist bicycles within their jurisdictions.

Additionally, this bill makes it clear that electric-assist bicycles are not legally considered to be motor vehicles by the State; Federal law also does not consider these bicycles as motor vehicles. As of January 1, 2018, the State is requiring that electric-assist bicycles have a label affixed that states the class, top assisted speed, and motor wattage of the bicycle.

### Definitions of Electric-assist Bicycle Classes by House Bill 17-1151:

All classes of electric-assist bicycles have an electric motor that does not exceed 750 watts (1 horse power).

**Class 1:** An electric-assist bicycle equipped with a motor that provides assistance only when the rider is pedaling and that ceases to provide assistance when the bicycle reaches a speed of 20 miles per hour. The motor must also disengage when a rider is not pedaling.

**Class 2:** An electric-assist bicycle equipped with a motor that provides assistance regardless of whether the rider is pedaling but ceases to provide assistance when the bicycle reaches a speed of 20 miles per hour or when the brakes are applied.

**Class 3:** An electric-assist bicycle equipped with a motor that provides assistance only when the rider is pedaling and that ceases to provide assistance when the bicycle reaches a speed of 28 miles per hour. For this class, the motor must also disengage when a rider is not pedaling. Additionally, Class 3 electric-assist bicycles must have a speedometer and cannot be operated by a person under 16 years of

age. Operators or riders under 18 years of age must wear an approved bicycle helmet and secure it with a fastened chinstrap.

### **Current Federal Law (as of August 2017)**

Electric-assist bicycles have been defined and regulated at the Federal level since 2002 under [Public Law 107-319](#). This law requires electric-assist bicycles to be designed, built, and safety-tested like traditional bicycles. Their manufacture and first sale (but not their use) are regulated by the Consumer Product Safety Commission, and they must comply with bicycle safety standards (16 C.F.R. Part 1512). Under this Federal law, an electric-assist bicycle is referred to as a “low-speed electric bicycle.” This is defined as “a two- or three-wheeled vehicle with fully operable pedals and an electric motor of less than 750 watts (1 horsepower), 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.” Electric-assist bicycles that meet this definition are explicitly considered non-motorized vehicles.

### **Current City of Fort Collins Law (as of August 2017)**

The City of Fort Collins Traffic Code Part 20, Sec. 2002.11 defines an electric-assist bicycle as a “vehicle having two (2) tandem wheels or two (2) parallel wheels and one (1) forward wheel, fully operable pedals, an electric motor not exceeding seven hundred fifty (750) watts of power and a top motor-powered speed of twenty (20) miles per hour.” This definition is the same as the previous State of Colorado definition and may need to be changed if we wish to make it consistent with the State of Colorado’s revised description of the three classes of electric-assist bicycles. In contrast to State and Federal law, Fort Collins traffic code does not explicitly make a distinction between electric-assist bicycles and motor vehicles. It defines a motor vehicle as “any self-propelled vehicle that is designed primarily for travel on the public highways and that is generally and commonly used to transport persons and property over the public highways, ...” The code specifically excludes “low-power scooters, wheelchairs or vehicles moved solely by human power” from being considered motor vehicles, but it does not mention electric-assist bicycles.

The City of Fort Collins currently allows electric-assist bicycles on the trails for people with disabilities (under the Americans with Disability Act). Electric-assist bicycles may also be operated on the trails as long as the electric motor is not used (Traffic Code Part 21, Section 2106.3). As far as we know, Larimer County and other regional municipalities, at this time, do not allow these bicycles on trails. However, Larimer County is actively considering allowing class 1 electric-assist bicycles on paved trails (personal communication).

### **History of the Previous Electric-assist Bicycle Discussion**

In 2010 and 2011, Fort Collins considered allowing the use of electric-assist bicycles on City trails for a trial period. This proposed ordinance was supported by city staff,

was taken to Boards and Commissions for their consideration, and public opinion was solicited. The results were mixed.

Recommendations from the Boards included:

- Allowing electric-assist bikes on trails (BAC, Transportation Board)
- A one-year trial on the Spring Creek and Mason Trails only (Air Quality Advisory Board)
- A trial period of up to three years in length on all trails (Natural Resources Advisory Board, Parks and Recreation Board)
- Non-support for electric-assist bikes on trails:
  - The Land Conservation and Stewardship Board could not support electric-assist bikes on trails without seeing more information on how the public views the issue and a comprehensive analysis of the impacts. The Board noted that people with mobility disabilities are already allowed to use electric-assist bicycles on the trails and that they are also allowed in street bike lanes.
  - The Senior Advisory Board did not see any compelling reason to allow electric-assist bicycles on trails and expressed concern about safety and conflicts with other trail users.

Some Board members suggested that, if electric-assist bicycles were going to be allowed on trails, this should be coupled with a requirement to license them; the establishment and posting of speed limits on trails; and allowing electric-assist trailers on trails as well.

A public survey was completed with 202 submitted comments. Opinions were split, with 49% preferring to continue to prohibit electric-assist bicycles from trails, 47% favoring their use there, and 4% stating no preference. Those favoring electric-assist bicycles did not believe there was a significant difference between electric-assist bikes and regular bicycles, considered them to be a useful option for commuters and the elderly, and thought that they would be safe if operated properly. Concerns included safety, speed, acceleration, conflicts with other trails users, impacts to natural areas and wildlife, noise issues, lack of capacity for enforcement, how the situation would evolve as electric-assist bicycle technology improved, a belief that trails are primarily for recreation, and a fear that allowing electric-assist bicycles on trails would open the door to the use of other motorized forms of transport (i.e., mopeds, electric skateboards, etc.).

On November 15, 2011, the Fort Collins City Council conducted a 1<sup>st</sup> reading of an ordinance that would establish a one-year trial period for electric-assist bicycles on paved trails, which was supported by City staff. However, during this first reading, City Council voted to amend Ordinance No. 167, 2011, and eliminated the provisions pertaining to implementation of a one-year trial period to allow electric-assist bicycles on City trails (Minutes, Fort Collins City Council Meeting, November 15, 2011).



## **Fort Collins Trail Infrastructure, Rules, and Enforcement**

Natural Areas, Parks, and Park Planning and Development are the three departments that design, oversee, and manage the trail systems in Fort Collins. Neither the Parks Department nor Natural Areas staff currently supports the use of electric-assist bicycles on unpaved or paved trails due to safety and aesthetic concerns. See Appendix A for their responses to our questions regarding current paved trail infrastructure and the suitability of electric-assist bicycles on paved trails.

The paved trail system does not have a speed limit and no municipal code regulation references a speed limit on trails. However, under Sec. 23-193(d)(18) for Natural Areas and Sec. 23-203 (a)(14) for Parks, it is unlawful to ride a bicycle, horse, skateboard, or other means of conveyance in a reckless or unsafe manner. Both staff and the public (through the public survey) have raised concerns about the difficulty of enforcing such rules. Even if City Council approved a speed limit for trails, rangers would be unable to enforce the regulation, as speed limits fall under Traffic Code, which requires a police officer to write up violations; rangers do not have Traffic Code enforcement capacity, nor do they have the authority to conduct a traffic stop on the paved trail system. However, they can issue citations for code violations. There is concern that if electric-assist riders were acting in unsafe or reckless ways, the rangers, who do not use electric-assist bicycles, may be unable to catch them. Any reckless behavior by riders of electric-assist bicycles would be of particular concern for youth using the paved trail system (see Appendix B written by the Safe Routes to School program).

## **Potential Environmental Impacts and Demand for Electric-assist Bicycles**

There is considerable uncertainty regarding whether electric-assist bicycles would primarily be used for commuting, recreation, or both activities. Therefore, Fort Collins does not have the data needed to assess the potential environmental impacts (source: Lindsay Ex, Climate Program Manager, City of Fort Collins). Seniors are one potential user group for whom electric-assist bikes could increase accessibility of the paved trail system. The City estimates the percentage of the population that is 65+ may increase from about 8% in 2010 to about 19% by 2030, and then drop between 2030 and 2060 to about 11% (City Plan 2011).

Overall, sales of electric-assist bicycles are expected to grow over the foreseeable future. Sales in North America were expected to reach about 152,000 in 2016, according to research firm Navigant Research. This is a fraction of the 33 million sold in Asia or the 1.6 million expected in Western Europe, as both continents embraced the technology much earlier than the U.S. and have seen steep increases in sales.

## **Other Communities**

City staff from FC Moves has reached out to several communities that allow electric-assist bicycles on trails to help provide a realistic vision of whether the concerns of these bikes on trails are borne out (Appendix C). Electric-assist bikes are still in low

use in these municipalities. For Boulder, CO these bicycles have not been involved with any reported or documented crashes since they were allowed on trails beginning in 2013. In Santa Cruz, CA and Madison, WI officials commented that perceptions of electric-assist bicycle riders being reckless, or riding at unsafe speeds are higher than what is observed although enforcement on multiuse trails created challenges.

While few empirical studies have been conducted on electric-assist bikes a summary report of these studies from Portland State University highlighted that electric-assist bicycles were ridden ~2 mph faster on roads than non-assist bicycles but ~1 mph slower on trails (NITC Technical Report, Appendix D). Additionally, a 2017 study conducted by Jefferson County, CO Open Space found that an electric-assist bike demonstration significantly increased acceptance for electric-assist bicycles on trails, while also reducing perceived uncertainty of their suitability for use on trails (Appendix E).

### **Questions and Future Directions**

This paper has been created to provide a fact-driven overview of electric-assist bicycles, their current legal definitions, and potential suitability for paved trails. The following questions arose from this exercise and deserve further discussion. These issues may need to be addressed in the Transportation Master Plan.

#### 1. Trail system: mission and capacity:

- Parks and Natural Areas Departments note that the City's paved trails were designed as a recreational amenity and not a transportation corridor (Appendix A). However, use of trails for commuting is in line with the City's environmental and health goals. Treatment of trails as part of the recreational, rather than transportation, infrastructure may limit the ability to appropriately fund maintenance and improvements of the paved trail system.
- Fort Collins' 35-mile paved trail system is a popular community asset. Its capacity should be examined given expected increases in use due to an expanded trail system, upcoming connections to other municipalities, and population increases.
- Is there a need for speed limits on the bike paths, and any concomitant changes to enforcement capabilities?

#### 2. Electric-assist bicycles: legal definitions, regulations, and enforcement

- The designation of electric-assisted bicycles as a motorized vehicle in Fort Collins's code is in contrast to state and federal law. It seems prudent to discuss whether the current designation is appropriate and whether consistency with state and federal designations is beneficial.
- Any changes to Fort Collins municipal code should consider the following:
  - Most definitions of electric-assist bicycles specify a top assisted speed of 20 mph, which would exclude Class III Colorado electric-assist bicycles. If electric-assist bicycles were going to be allowed on Fort Collins trails, what

classes should be allowed? If not, would the City be able to enforce any distinctions? Could some other requirement (e.g., licensing or a sticker of some kind) help make Class III electric-assist bicycles easily identifiable?

- Given efforts to link bicycle and pedestrian trails in Colorado, how important is it that electric-assist bicycle regulations be consistent across jurisdictions (e.g., city, county, State)?
- Are there other types of vehicles that could be inadvertently made legal on trails under the State's definition of electric-assist bicycles? If so, City code could be written to exclude these types of vehicles.
- Conversion kits that transform regular bicycles into electric-assist bikes are commercially available. These converted bikes may possibly make up a sizeable proportion of electric-assist bicycles as they are less expensive and their status should be made explicit. In addition, if typical electric-assist bicycles are allowed on trails, the status of motor-battery hubs, encapsulated recumbent bikes and electric-assist trailers should be clearly stated.
- Are there other electric recreational and transportation devices whose use on paved trails should be discussed (e.g., skateboards, hover boards, roller skates, roller blades)?
- Bicycles are currently allowed on paved trails, unpaved trails, and sidewalks. Legal use of electric-assist bicycles should designate clear limits to their use.

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1. Memo from Parks, Park Planning & Development and Natural Areas re: E-bike use on Trails, June 2017
2. Issues to Consider re: E-bikes on Trails, City Safe Routes to School Coordinator
3. Summary of E-bike Research - City staff
4. Final Report - Evaluation of an Electric Bike Pilot Project at Three employment Campuses in Portland (NITC, February 2017)
5. Summary of Jefferson County E-bike Study Findings to Date, July 2017