

**CITY OF BOULDER
INFORMATION ITEM
MEMORANDUM**

To: Downtown Management Commission (September 9, 2013)
Open Space Board of Trustees (September 11, 2013)
University Hill Commercial Area Management Commission (Sept. 18, 2013)
Parks and Recreation Advisory Board (Sept. 23, 2013)

From: Tracy Winfree, Director of Public Works for Transportation
Michael Gardner-Sweeney, Transportation Planning and Operations Coordinator
Kathleen Bracke, GO Boulder Program Manager
Molly Winter, Executive Director of Downtown, University Hill and Parking Services
Dean Paschell, Communication & Public Process Manager, Open Space and Mountain Parks
Jeff Haley, Parks Planner, Parks and Recreation Department
Marni Ratzel, Senior Transportation Planner

Date: September 4, 2013

Subject: Electric-assisted Bicycle potential pilot project on multi-use paths

EXECUTIVE SUMMARY

Currently, within the city of Boulder, electric-assist bicycles or “e-bikes” are allowed to operate on the road and use bike lanes but prohibited from multi-use paths and sidewalks. As directed by council, the City of Boulder is considering a potential demonstration pilot project to test e-bike use on multi-use paths maintained to a transportation standard. The pilot would evaluate behavior of e-bike users to determine whether these vehicles can co-exist with current uses on these multi-use paths. The pilot would not include use on facilities that are pedestrian only or intended to preserve the natural environment. Specifically, e-bike use would continue to be prohibited on sidewalks or Open Space and Mountain Park (OSMP) trails.

The Transportation Division is proceeding with a public process that is scheduled to provide a proposal for City Council consideration in October 2013. The Transportation Advisory Board (TAB) will consider a staff recommendation at their meeting on September 23rd and then forward their recommendation to City Council. A first and second reading of proposed ordinance(s) regarding the e-bike demonstration pilot project is scheduled for the October 1 and October 22 Council meetings, respectively.

This memorandum provides affected City boards with information on the options under consideration for the potential e-bikes demonstration pilot project and public process forums for the community to provide input. At Board meetings scheduled in September, the Board staff liaison will ask for feedback on the potential options. Board input from September meetings will be incorporated into the staff memorandums to City Council.

BACKGROUND

The City of Boulder is in the process of updating the Transportation Master Plan (TMP). The 2013 TMP update builds on a strong foundation of success through policy refinement, using a collaborative approach and addressing the current and future transportation needs of the community while integrating with the city's broader sustainability planning initiatives.

As part of the TMP update, the Transportation Division is introducing new strategies to increase bicycle and pedestrian mode share. Throughout the summer and fall, the TMP update's "Complete Streets Bike and Pedestrian Living Laboratory" will provide test facilities and pilot programs to better understand the community's transportation choices and identify potential opportunities, barriers, and ultimately strategies to encourage more people to walk and bike. E-bikes are one bicycle innovation under review by the City of Boulder as part of the living laboratory. For more information regarding the Transportation Master Plan update and the living laboratory, visit www.bouldertmp.net and select "Complete Streets" or "Living Laboratory".

An e-bike is essentially a bicycle that can be propelled by both human power and electric-assist power. It is designed for people interested in completing trips by bike but concerned about their physical ability to ride longer distances or climb steeper hills. The electric range, speed, and cost of an e-bike are moderate. **Attachment A** provides photos of some e-bikes and an FAQ about e-bikes.

Integrating a comprehensive program of the 5 E's

The City of Boulder's approach to support bicycling and walking is to achieve a comprehensive program that includes Engineering, Encouragement, Education, Enforcement and Evaluation initiatives. As part of the TMP update, staff is refining strategies to address concerns raised by community members for congestion and conflicts on the bicycling system today.

Independent of a pilot project to test e-bike use on paths, staff will be taking action to encourage cyclists to ride at appropriate speeds on the path system. This action will include the installation of 15 mph speed limit signs at some path locations and will be supported by an outreach campaign to raise public awareness on user rights and responsibilities as well as the rules of the path, including 15 mile per hour speed limit and walk right/pass left. Field observations to record unsafe behavior including speeding and other safety concerns along the path system will be conducted. Formal police enforcement activities also may be scheduled as resources allow and based on the findings of the field observations.

If approved by Council, the proposed e-bikes pilot project for the off-street multi-use paths (non-OSMP) will be an opportunity to enhance this comprehensive approach, including additional efforts for education and enforcement. Results will be evaluated as part of the living laboratory analysis. This evaluation would include field observations to track user behavior and guide formal police enforcement activities. Based on results and as resources allow, targeted enforcement efforts may be conducted to record time spent and observations of safety concerns by various users including e-bikes, regular bikes, pedestrians and others as well as issuance of summonses / warning.

Current Regulations

Colorado State Law defines an e-bike as a two or three wheeled vehicle with pedals and equipped with an electric motor not exceeding 750 watts of power with a top motor-powered speed of 20 mph. In Colorado, e-bikes may be operated on the road and within bicycle lanes. E-bikes are prohibited from using their motors on bike and pedestrian paths, unless allowed by local ordinance.

The city of Boulder definition currently differs from State Law by defining an e-bike by further limiting the motor capacity of an e-bike to no more than 400 watts of continuous input power. E-bikes are allowed to use bike lanes. As a motor vehicle, e-bikes are currently prohibited from using multi-use paths and sidewalks and OSMP trails.

A map of multi-use paths that are on OSMP fee property is shown in **Attachment B**. These are hard surface facilities maintained to a transportation standard and integrated into the urban fabric of the greenway system. How to handle these facilities during the pilot program will need to be addressed.

Policy changes under consideration

As directed by City Council, staff is developing a proposal to allow e-bike use on multi-use paths (non-OSMP). The City definition of an e-bike also is under review. Below are options being considered for defining and regulating e-bikes in the City of Boulder. Staff will identify a recommended option to the Transportation Advisory Board at its meeting on September 23, 2013.

Options for defining an e-bike

Option 1: No change to the existing e-bike Definition (BRC 7-1-1 Definitions):

"Electric assisted bicycle" means a bicycle with a battery powered electric motor with a capacity of no more than four hundred watts continuous input power rating which assists the person pedaling and which is not capable of propelling the bicycle and rider at more than twenty miles per hour on level pavement.

Option 2: Amend e-bike definition to conform with Colorado State Law* CRS 42-1-102(28.5):

"Electrical assisted bicycle" means a vehicle having two tandem wheels or two parallel wheels and one forward wheel, fully operable pedals, an electric motor not exceeding seven hundred fifty watts of power, and a top motor-powered speed of twenty miles per hour.

**Denver and Fort Collins also uses this definition.*

Options for regulating an e-bike

Option 1: Clarify the existing law regulating e-bikes. E-bikes may operate on the roadway and within designated on-street bike lanes but are prohibited from using the motor on multi-use paths, trails and sidewalks.

Option 2: Adopt an ordinance to test e-bike use on multi-use paths for a demonstration period of one year. This ordinance would sunset 12 months after it commences. E-bike use on the following would continue to be prohibited:

- OSMP trails, including those that currently allow bikes
- Sidewalks, except those designated as multi-use paths

This option would allow the city to evaluate the impacts of allowing e-bike riders to operate the motor while bicycling on multi-use paths. The pilot project would include comprehensive program that encompasses the five E's of engineering, encouragement, education, enforcement and evaluation. Signs to inform path users of the pilot project and the current 15 mph speed limit would be installed at select locations along the pathway system to educate users. The Boulder Police Department would schedule and track targeted enforcement efforts at select locations along the path system during the pilot project. Automatic in-pavement loop detectors will track bike volume. Manual counts would be conducted to collect volume data by user type (pedestrian, bike, e-bike, other). Additionally, an online survey and intercept surveys of multi-use path users would be conducted to gather input on the pilot program and use of e-bikes on multi-use paths.

Option 3: Adopt ordinance to test e-bike use on multi-use paths, except for a segment of the Boulder Creek Path, for a demonstration period of one year. This ordinance would sunset 12 months after it commences. E-bike use on the following would continue to be prohibited:

- OSMP trails, including those that currently allow bikes
- Sidewalks, except those designated as multi-use paths
- The Boulder Creek Path between Eben G. Fine Park and Scott Carpenter Park

Public input on the potential pilot program to test e-bike use on multi-use paths has expressed a concern for impacts to the pedestrian experience and safety. This option would restrict the use of the motor on an e-bike along the Boulder Creek Path from the western city limit (west of Eben G. Fine Park) to 30th Street (Scott Carpenter Park). As the spine of the greenway system, this segment of the Boulder Creek Path is a well publicized tourist destination and serves as a linear park along the Boulder Creek riparian corridor. In addition to the comprehensive program outlined in Option 2, additional strategies would likely be required to regulate the use of e-bikes as non-motorized vehicles along the prohibited segment of the Boulder Creek path.

Public Process

Considering a trial period to test the use of e-bikes on off-street multi-use pathways has raised Council interest due to community support expressed through a petition and testimony provided to the Council. About 10 or 15 community members attended the City Council meeting on Tuesday, May 21 to speak in support of changing city policy to allow e-bikes on paths. In response, the Transportation division has spearheaded an internal review of e-bike regulations. An interdepartmental team comprised of Parks & Recreation, Open Space and Mountain Parks, the City Attorney's office, Boulder Police Department and Transportation as well as Downtown University Hill Management & Parking Services is involved in the review.

On Wednesday, Aug. 7, Transportation Division staff convened a public meeting to present details about the potential e-bikes pilot project and provide an opportunity for community input. More than 30 community members attended and expressed differing opinions about advancing a pilot project. This meeting was the initial forum to introduce the idea. Throughout August and

September, staff will continue to seek public comment to inform a recommendation for the potential pilot project and changes to the definition of an e-bike.

As detailed in **Attachment C**, the public process includes several forums for community input, including public meetings, an online survey, Web and social media, and intercept surveys of multi-use path users. Staff also is working to schedule opportunities in August and September for community members to learn more about and test ride e-bikes, including the city-sponsored Boulder Green Streets event on Sunday, Sept. 22. Community members also are encouraged to attend the Transportation Advisory Board public hearing scheduled for September 23, 2013 as well as the Council meetings where the e-bike policy changes will be considered. These are scheduled for October 1 for a first reading of ordinance language and October 22 for a second reading of ordinance language and a public hearing.

Some of the concerns expressed to date include congestion on the paths along with the ability to adequately define technology for appropriate power/speed capability. Those in opposition expressed that electric assisted bicycles would adversely impact pedestrian safety and the quality of life on Boulder's multi-use trails as well as increase conflicts and congestion along the system. Some suggested that the multi-use path system needs to separate bicyclists from walkers. Increased awareness through an education and outreach campaign followed up with targeted enforcement all was expressed as vital components to consider.

Staff also is researching experience in other communities that have allowed or, in some cases, not allowed e-bikes from using similar off-street, multi-use paths similar to Boulder's off-street pathway/greenways network.

NEXT STEPS

On Monday Sept. 23, 2013, the Transportation Advisory Board will convene a public hearing and consider a recommendation regarding the City Council meeting in October on the E-bikes Pilot Demonstration Project.

In preparation for this meeting, the Transportation Division is drafting a staff memorandum to the TAB that will include a DRAFT City Council memorandum for the October 1 meeting. This DRAFT memorandum will present a staff recommendation on potential amendments to e-bike regulations and draft ordinance(s) for their consideration. The TAB packet for the September meeting will be posted by 5 p.m. on Friday Sept. 13. Materials may be viewed at:

<https://bouldercolorado.gov/boards-commissions/transportation-advisory-board-current-agenda>

On Tuesday, Oct, 1 2013, the City Council will take action on an introduction, first reading and consideration of a motion on proposed amendments to ordinance(s) regulating e-bikes in the city of Boulder based on the staff recommendation and TAB recommendation from the meeting on Sept. 23.

On Tuesday, Oct. 22, 2013, the City Council will convene a public hearing on a second reading and consideration of a motion on proposed amendments to ordinance(s) regulating e-bikes in the city of Boulder based on the staff recommendation and TAB recommendation from the meeting on Sept. 23.

Agenda packets for Council Meetings are posted by 3:30 p.m. on the Friday prior to each council meeting. Materials may be viewed at:

<https://bouldercolorado.gov/city-council/city-council-meetings>

For more information, please contact Senior Transportation Planner Marni Ratzel at ratzelm@bouldercolorado.gov or 303-441-4138.

Attachment C: About E-bikes – photos and FAQs

Attachment B: Greenway/Transportation system path on OSMP free property

Attachment C: E-bike public process forums

About e-bikes

An electric-assisted bicycle is most often powered by a lithium battery and controlled by a console that tracks speed and offers different power options. These power options include a human power only and several ranges of power assist options (Pedelec). Some models also offer a throttle option that does not require the rider to pedal in order to propel the bicycle. The distance a rider can travel on an e-bike before charging the battery is estimated to be 15 to 60 miles, depending on the size of the motor and battery as well as the power option selected by the rider when traveling. An e-bike generally weighs between 35 and 55 lbs. The cost of an e-bike generally ranges from \$1,500 to several thousand dollars.

A regular bicycle can be transformed into an e-bike by installing a conversion kit comprised of an electric motor and battery. BionX, a Canadian company reputed to be a leading manufacturer of e-bike conversion systems, sells kits that range in price from \$1,100 to \$2,100.

Questions & Answers

Source: <http://www.hybrid-cycles.com/faqs.php>

How fast can electric bikes go?

On motor power alone, our electric bikes can travel up to 20 mph, depending on the weight of the rider and the difficulty of the terrain. Downhill and/or with the rider pedaling, higher speeds may be achieved.

How far can an electric bike go on a single charge?

Different models have different ranges. Hybrid Cycles offers several models that can travel up to 25 miles on a single charge in pedal-assist mode, while others can travel up to 40 miles on a single charge in pedal-assist mode. These ranges assume a 150-pound rider traveling on flat ground and may vary based on rider and terrain.

How do the different modes work?

Hybrid electric bicycles use batteries to power a quiet, efficient electric motor. In pedal-assist mode (electric-motor-assist mode), the bike senses the torque applied while pedaling, and the motor kicks in as needed to help the rider, making it easier to pedal up hills or on long rides. In throttle mode (electric motor power mode), the motor does all the work and the rider need not pedal at all. In manual mode (traditional mode), the rider shuts off the motor completely and pedals the bike just like a conventional bicycle.

The throttle / electric motor power mode requires the least exertion and provides the most speed on flat terrain, while the pedal-assist / electric-motor-assist mode provides the furthest range on a single charge.

How do you charge the battery?

Simply plug the charger into any standard wall outlet and insert the battery into the charger.

How long does it take to charge the battery completely?

Charge times vary depending on the charge depletion, the manufacturer, model, and battery type. The initial charge should take between 6-12 hours. A fully depleted SLA battery takes between 6-8 hours to charge, while NiMH & Li Ion batteries take between 4-6 hours. Electric bikes cost very little to charge.

What is the battery life?

With normal usage and proper maintenance, the battery should last 800 charge cycles.

How often should I charge the battery?

For longest life, charge the battery after each ride (or daily, if you ride more than once a day). If your bike is out of use for a long period of time, you should charge the battery at least once every three weeks.

Does the battery recharge while riding?

On most bikes, no. The [Easy Motion Neo bikes](#) employs a regenerative braking system, which recharges the battery while you are coasting or braking. While this does extend the power-assist range somewhat, you will still need to plug in the battery for a full charge.

Do I always need to pedal?

No. Throttle mode requires no pedaling at all. Pedal-assist mode requires pedaling, but provides more power for climbing.

What sort of maintenance does an electric bike require?

Care for your hybrid bicycle as you would any other high-end bicycle. Keep it clean and dry, keep your battery charged, and take it into a bike shop periodically for tune-ups.

Are electric bicycles considered bikes, or are they motor vehicles?

Electric bikes are considered bikes (not motor vehicles), under federal law, unless your state or local entity has passed a law otherwise. Normal bicycle laws apply. Be sure to check your state and local laws for any recent changes.

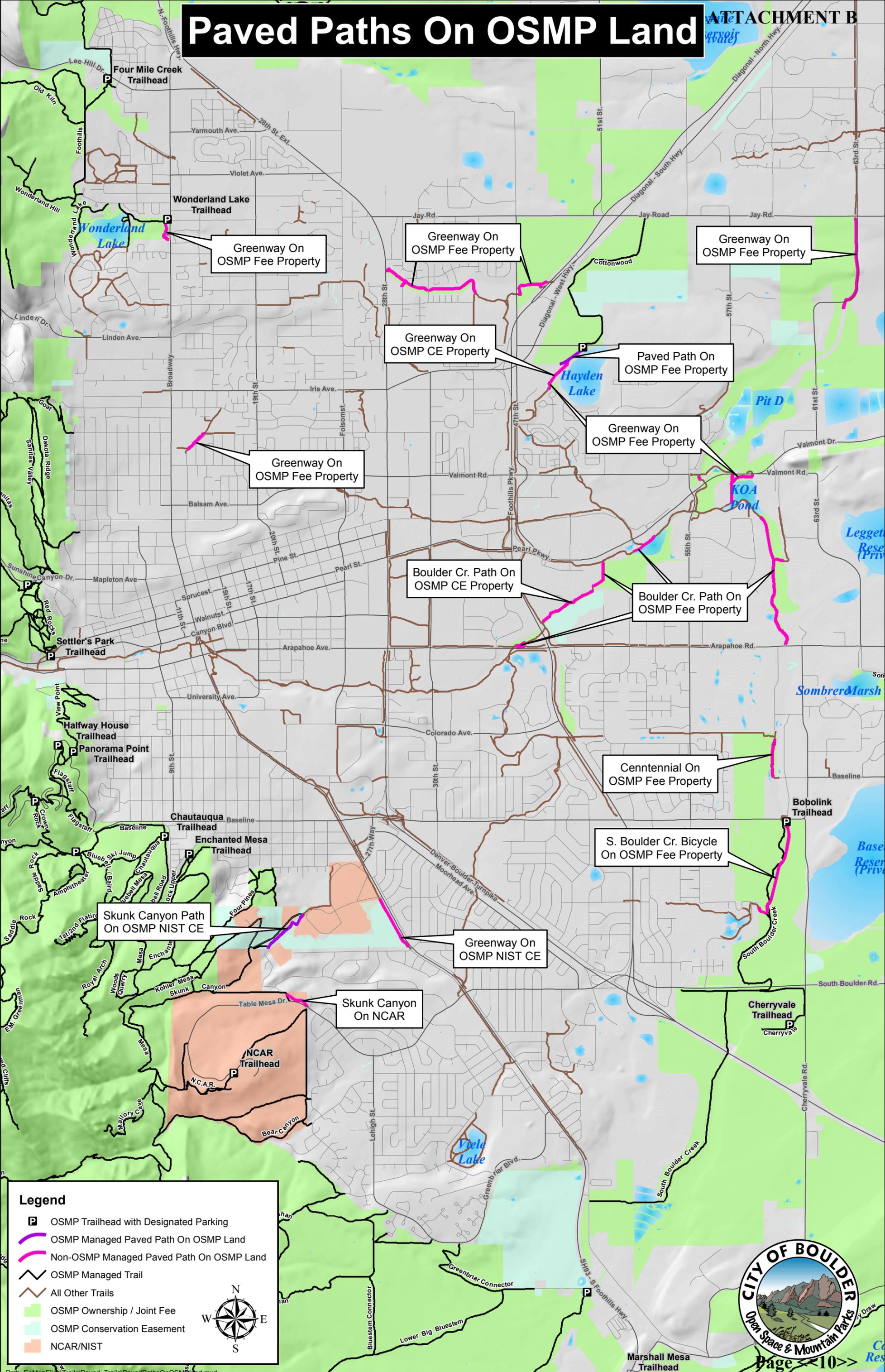
Do electric bikes require a license or registration?

The rules vary from state to state. Check with your local DMV for information about electric bikes for your state. Rider age minimums and helmet laws also apply to electric bikes in some states.

Some models of electric-assisted bicycles

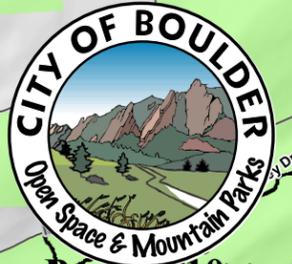
| | |
|---|---|
|  | <p>Emotion Diamond</p> <ul style="list-style-type: none"> • 36V / 8Ah battery • 250 Watt mid-drive motor • Range up to 62 miles per charge • 8 Speed • Pedelec • Motor assist up to 20 mph • 46 lbs • Retail: \$2950 <p><i>Source: petesbikes.com</i></p> |
|  | <p>Pedego 2013 City Commuter Classic</p> <ul style="list-style-type: none"> • 36/10, 36/15 or 48Watt/10Ah • 400/500 Watt rear Hub Motor • Range up to 28 miles per charge • 7 speed • Pedelec/Throttle • Motor assist up to 20 mph • 40 lbs • Retail: \$2395+ <p><i>Source: smallplanetvehicles.com</i></p> |
|  | <p>Yukon Navigator</p> <ul style="list-style-type: none"> • 24V 10Ah battery • 250 Watt rear Hub Motor • Range up to 28 miles per charge • Single Speed • Pedelec • Motor assist up to 15 mph • 77 lbs • Retail: \$500+ <p><i>Source: bing.com & Amazon.com</i></p> |
|  | <p>Currie IZIP E3C</p> <ul style="list-style-type: none"> • 36V 11.4Ah lithium icon battery • 500 Watt rear Hub Motor • Range up to 30+ miles per charge • 27 Speed • Pedelec/Throttle • Motor assist up to 20 mph • 50 lbs • Retail: \$2499+ <p><i>Source: bing.com & REI.com</i></p> |

Paved Paths On OSMP Land



Legend

- OSMP Trailhead with Designated Parking
- OSMP Managed Paved Path On OSMP Land
- Non-OSMP Managed Paved Path On OSMP Land
- OSMP Managed Trail
- All Other Trails
- OSMP Ownership / Joint Fee
- OSMP Conservation Easement
- NCAR/NIST



Path: E:\MapFiles\Trails\Paved_Trails\PavedPathsOnOSMPLand.mxd

E-bike Project Public Process

The public process includes several forums for community input.

[E-bike Policy Review Project web page](#) – provides information on this effort and will be updated with information on upcoming public meetings. www.boulderTMP.net, E-bike Policy Review

[Electric-Assist Bike Survey](#) – this survey asks questions about your opinion on the potential demonstration project and seeks input on suggestions for how to address concerns you or others may have with testing e-bike use on multi-use paths. www.boulderTMP.net, E-bike Survey

[Inspire Boulder \(MindMixer\)](#) is an idea collaboration website that allows community members to share and discuss ideas about city projects, issues and programs. Click on the **View Topics** link under **Transportation** to interact with others and provide input on the Living Laboratory demonstration projects, including the potential changes to regulations regarding e-bikes.

[E-bike test ride events](#) - Staff has scheduled two opportunities in September for community members to learn more about and test ride e-bikes. Details of these events are:

- On Wednesday, Sept. 4, from 4 to 5 p.m. at the County Clerk and Recorder building located at 1750 33rd Street. A public meeting will follow from 5 to 7 p.m.
- On Sunday, Sept. 22, from 10 a.m. to 4 p.m. at the city-sponsored *Boulder Green Streets* event. Visit the *Connected Mobility Zone* at 13th Street and Alpine.

[Public Meetings](#) – Public input is being sought at two public meetings.

- On Wed. August 7, a public meeting was held from 4 to 6 p.m. at the Boulder Public Library, Boulder Creek room located at 1001 Arapahoe Avenue. At this meeting Transportation staff presented the potential e-bike pilot project concept and gather public input.
- On Wednesday, Sept. 4 a public meeting will be held from 5 to 7 p.m. at the County Clerk and Recorder Building located at 1750 33rd Street. This purpose of this meeting present an update on the options being considered for the E-bike policy and provide community members an opportunity to provide input on these options.

[Intercept surveys](#) – Staff is conducting a survey of users traveling along multi-use paths. Users will be stopped and asked to answer a questions about their familiarity with e-bikes and opinion of the potential pilot project to test e-bike use on multi-use paths.

Community members also are encouraged to attend the Transportation Advisory Board (TAB) public hearing in September as well as the Council meetings where the e-bike policy changes will be considered, in October. Details of these meetings are included below.

- On Monday, Sept. 22, at 6 p.m., the TAB will convene a meeting in the Council Chambers located at 1777 Broadway. The E-bike item is on the TAB agenda and

includes a public hearing and TAB consideration of a recommendation regarding the City Council meeting in October on the E-bikes Pilot Demonstration Project.

You have the opportunity to speak to the Board to express your opinions about city issues. To help accommodate everyone, please arrive a few minutes before the meeting time of 6 p.m. to sign up in-person to speak. Each speaker will be given three minutes to speak. Please limit your time to city issues. Be clear, concise, and constructive. For additional guidance, please review the [Speaking at Council Meetings](#) rules.

- On Tuesday, Oct. 1 at 6 p.m., and on Tuesday Oct. 22, at 6 p.m. the **City Council** will convene a meeting in the Council Chambers located at 1777 Broadway. The E-bike item is on the Council agenda for a first reading of the proposed amendments to ordinance(s) at the Oct. 1 meeting and for a second reading which includes a public hearing at the Oct. 22 meeting. Council will consider a recommendation from the TAB regarding the E-bikes Pilot Demonstration Project.

You have the opportunity to speak to the Council to express your opinions about city issues. To help accommodate everyone, please review the [Speaking at Council Meetings](#) rules for guidance on how to sign up to speak and additional information.

[Sign Up for the TMP Community Feedback Panel](#) - This is an initiative of the TMP and an opportunity to be queried on TMP-related issues, receive updates including meeting announcements, and volunteer for various events associated with the TMP update. By design, most of the inquiries submitted to the TMP Community Feedback Panel will be online. But, Panel members also will be recruited for focus groups and other in-person groups, especially where we need to reach a specific demographic group, like in-commuters and interested but concerned cyclists. Panel members complete a profile with information about themselves and their travel patterns so that outreach and queries to the Panel can reach specific target audiences. Inquiries will be planned throughout the year as the TMP work continues and evolves. Over 400 people have signed up for the Panel as of July.

Transportation Master Plan (TMP) Update Process

The City of Boulder is in the process of updating the Transportation Master Plan (TMP). The 2012-13 TMP update builds on a strong foundation of success through policy refinement, using a collaborative approach and addresses the current and future transportation needs of the community while integrating the city's broader community and sustainability planning efforts.

E-bikes are one bicycle innovation under review by the City of Boulder as part of the TMP update's "living laboratory." The city is looking for public feedback to better understand transportation choices and identify strategies that encourage more people in our community to walk and bike.

For more information on the TMP Update and Living Laboratory project, please visit the project web page at www.BoulderTMP.net. You also may contact Marni Ratzel, Senior Transportation Planner with GO Boulder and the project manager for the TMP Bike Innovations, including e-bike policy review at ratzelm@bouldercolorado.gov or 303-441-4138 to ask questions, provide input of discuss details of the e-bike policy review.