Electric Bicycles
City of Durango
Parks and Recreation Advisory Board
Natural Lands Preservation Advisory Board
and Multi Modal Advisory Board

Joint Public Meeting

Durango Community Recreation Center
September 19, 2016
Overview

- INTRODUCTION
  - How we got here
  - Durango policy
  - Public process

- RESEARCH HIGHLIGHTS
  - What is an e-bike?
  - E-bike classes
  - E-bike usage

- E-BIKE LAWS
  - Federal
  - State
  - Local
  - Electric-assist mountain bikes

- NEXT STEPS
How We Got Here

Ordinance Passed April 2016

Community Concerns Heard

Public Process to Revisit Ordinance

Photo: Cyclists on the Animas River Trail
• An electric assist or electric bicycle (e-bike) is defined by the City of Durango as a tandem wheeled cycle that has an electric motor
• E-bikes are defined as motorized, and as such, use is allowed on City property only where other motorized vehicles are allowed
• E-bikes are not allowed in the City Open Space, Parks or Trail systems
Bike Networks

Protected Lanes

Local Streets
(Slow Speeds, Low Volume)

Separated Pathways
• *Should* e-bikes be allowed on trails?
• What about as a personal mobility vehicle? For the mobility-impaired? Aging populations?
• What about trail *speeds* and safety?
1. Joint board meeting (tonight!)
2. City staff and the Advisory Boards will formulate a recommendation to Council
3. Council Study Session on ordinance in early 2017

Photo: A young cyclist on the Animas River Trail
What *is* an e-bike?

- Almost identical to a traditional bicycle in appearance
- Has a small electric motor and battery to provide motorized assistance (pedal-assist or throttle)
What is an e-bike?

Consumer Product Safety Commission e-bike definition:

“a two-or three-wheeled vehicle with fully operable pedals and an electric motor of less than 750 watts (1 h.p.), 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 miles per hour.”

Photo: Janet Wiley uses her pedal-assist bike to commute to and from work. Photo by Jennaye Derge, courtesy of Durango Telegraph.
Bicycle Product Suppliers Association devised 3 classes of e-bikes:

- **Class 1**: Pedal assist only, maximum assisted speed of 20 MPH
- **Class 2**: Throttle assist, maximum motor powered speed of 20 MPH
- **Class 3**: Pedal assist only, maximum assisted speed of 28 MPH
E-Bike Classes

Class 1 + 2
- Regulated like bicycles
- May be permitted on multi-use paths
- Local regulation allowed

Class 3
- Additional rules on use and equipment
- Local authorization required for path use
Technical Specs

1. CLASSIC E-BIKE WITH PEDAL ASSIST
   Wheels: 2 | Pedals: Fully operable; motor only runs when pedaled
   Speed at which motor power stops: 20 mph | Weight: 48 lbs

2. FOLDING E-BIKE WITH TWIST THROTTLE
   Wheels: 2 | Pedals: Fully operable; motor can be engaged with twist throttle
   Speed at which motor power stops: 15.5 mph | Weight: 40 lbs

3. CLASSIC E-BIKE WITH TWIST THROTTLE
   Wheels: 2 | Pedals: Fully operable; motor can be engaged with twist throttle
   Speed at which motor power stops: 20 mph | Weight: 52 lbs

4. SPECIALIZED TURBO
   Wheels: 2 | Pedals: Fully operable; motor only runs when pedaled
   Speed at which motor power stops: 28 mph | Weight: 50 lbs
5 ORGANIC TRANSIT ELF
Wheels: 3 | Pedals: Fully operable; motor can be engaged with thumb throttle
Speed at which motor power stops: 20 mph | Weight: 150 lbs

6 40-MPH E-BIKE
Wheels: 2 | Pedals: Fully operable; motor can be engaged with twist throttle
Speed at which motor power stops: 40 mph | Weight: 60 lbs

7 SCOOTER E-BIKE
Wheels: 2 | Pedals: Fully operable; motor can be engaged with twist throttle
Speed at which motor power stops: 20 mph | Weight: 165 lbs

8 50 MPH E-BIKE
Wheels: 2 | Pedals: Fully operable; motor can be engaged with twist throttle
Speed at which motor power stops: 50 mph | Weight: 116 lbs
Why E-Bikes?

Why do people use e-bikes?
Portland State Transportation Research and Education Center

U.S. cities face transportation challenges related to traffic congestion, injury and loss of life from road crashes, local air quality, climate change, obesity and physical inactivity, economic burdens, and international supplies of oil. Shifting people out of cars to other modes of transportation, such as bicycling, can help address these challenges. By overcoming barriers to cycling such as distance, age and disability, e-bikes can help more people cycle and help people cycle more.

60% of respondents indicated that one of the main reasons was because they live or work in a hilly area.

65% said replacing car trips was a main reason to get an e-bike.

73% rode an e-bike to a different destination than a standard bike.

55% of people rode bikes at least weekly before getting an e-bike...

People with disabilities rode e-bikes even though 59% had reduced ability to ride a standard bike.

67% said they need a shower after a standard bike trip but...

74% didn't need a shower after an e-bike trip.

What are the main advantages to riding an e-bike?

What are the main disadvantage to riding an e-bike?

Accessibility

E-bikes can provide options for commuting for a family to move from a two car household to one.
Health

- Caloric expenditure (similar to pedal bikes)
- Weight management
- Reduced mortality
- Less air pollution

Photo: Families enjoying the Animas River Trail
Comparison of e-bike and conventional from a naturalistic-cycling study in Sweden

Main conflicts for e-cyclists from a naturalistic-cycling study in Sweden

## Results:

<table>
<thead>
<tr>
<th>Travel Mode</th>
<th>Walking</th>
<th>R-Bike</th>
<th>E-bike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Power (watts)</td>
<td>N/A</td>
<td>59.21</td>
<td>55.01</td>
</tr>
<tr>
<td>(82.32)</td>
<td>(77.64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Rate (bpm)</td>
<td>115.19</td>
<td>122.48</td>
<td>119.79</td>
</tr>
<tr>
<td>(17.58)</td>
<td>(35.68)</td>
<td>(22.86)</td>
<td></td>
</tr>
<tr>
<td>VO2 (ml/kg/min)</td>
<td>14.72</td>
<td>18.97</td>
<td>15.43</td>
</tr>
<tr>
<td>(5.76)</td>
<td>(17.29)</td>
<td>(7.84)</td>
<td></td>
</tr>
<tr>
<td>REE (Kcal/min)</td>
<td>5.73</td>
<td>7.54</td>
<td>5.93</td>
</tr>
<tr>
<td>(2.67)</td>
<td>(6.87)</td>
<td>(3.43)</td>
<td></td>
</tr>
<tr>
<td>Average Speed (kph)</td>
<td>4.92</td>
<td>12.19</td>
<td>14.66</td>
</tr>
<tr>
<td>(1.51)</td>
<td>(7.54)</td>
<td>(7.88)</td>
<td></td>
</tr>
</tbody>
</table>

*Standard deviations shown in parenthesis.

*Comparisons of means are significant at 99% confidence level across all categories.

E-Bike Laws

E-BIKE REGULATIONS

ACCETPABLE
- Regulated as a bicycle
- Passengers allowed
- No age minimum
- No licensing or registration required
- Can use existing bike infrastructure

PROBLEMATIC
- Regulated as a moped or motor vehicle
- Confusing equipment + use requirements
- Confusing licensing + registration requirements
- Confusing access to bike infrastructure

MODEL LEGISLATION
- PFB and BPSA have enacted our model law, which defines and regulates three classes of e-bikes.
Federal Regulation

- E-bikes are federally regulated for the purposes of product safety
- Under jurisdiction of Consumer Product Safety Commission
- Federal law regulates their condition at the first point of sale, not their use
- Does not answer the question: where can people ride?
• Key points from definition:
  • Allows pedal or throttle assist bicycles
  • Maximum power of 750 watts
  • Maximum speed of 20 MPH under motor power alone
  • No specified maximum speed when operating under combined human and motor power

Federal Regulation
State Regulation

- States regulate the use of e-bikes on our streets
- About half of states define e-bikes in their traffic laws and regulate them similarly to bicycles
- The other half have not created a definition for e-bikes. E-bikes may be regulated under other classifications including bicycle, motorized bicycle, or moped
- State law is typically limited to regulating street or path use
# California Electric Bicycle Policy

<table>
<thead>
<tr>
<th>VEHICLE TYPE</th>
<th>PEDESTRIAN OPERATED</th>
<th>MAXIMUM MOTOR-ASSISTED SPEED (MPH)</th>
<th>MINIMUM AGE (YEARS)</th>
<th>DRIVER'S LICENSE</th>
<th>LICENSE PLATE</th>
<th>HELMET</th>
<th>CLASS I BIKE PATH</th>
<th>CLASS II BIKE LANE</th>
<th>CLASS III BIKE ROUTE</th>
<th>CLASS IV PROTECTED LANE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BICYCLE</td>
<td>YES</td>
<td>N/A</td>
<td>N/A</td>
<td>NO</td>
<td>NO</td>
<td>17 AND UNDER</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>TYPE 1 E-BIKE*</td>
<td>YES</td>
<td>20</td>
<td>N/A</td>
<td>NO</td>
<td>NO</td>
<td>17 AND UNDER</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>TYPE 2 E-BIKE*</td>
<td>NO</td>
<td>20</td>
<td>N/A</td>
<td>NO</td>
<td>NO</td>
<td>17 AND UNDER</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>TYPE 3 E-BIKE*</td>
<td>YES</td>
<td>28</td>
<td>16</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>MOPED</td>
<td>NO</td>
<td>N/A</td>
<td>16</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

* Pending AB-1096

**Sources:**
- [California Bicycle Coalition](https://www.cyclingca.org)
- [People for Bikes](https://www.peopleforbikes.org)

---

# California

California is a state known for its unique geography and diverse terrain, which presents various challenges and opportunities for electric bicycle riders. The California Electric Bicycle Policy chart outlines the specific regulations and requirements for electric bicycles, including pedal assistance, maximum speed limits, minimum ages for operation, license requirements, and helmet use. This policy is crucial for ensuring the safety and rights of electric bicycle riders within the state. 

- **Bicycle:** Yes
  - Pedestrian Operated: Yes
  - Maximum Motor-Assisted Speed: N/A
  - Minimum Age: N/A
  - Driver's License: No
  - License Plate: No
  - Helmet: 17 and Under
  - Access:
    - Class I Bike Path: Yes
    - Class II Bike Lane: Yes
    - Class III Bike Route: Yes
    - Class IV Protected Lane: Yes

- **Type 1 E-Bike:** Yes
  - Pedestrian Operated: Yes
  - Maximum Motor-Assisted Speed: 20 MPH
  - Minimum Age: N/A
  - Driver's License: No
  - License Plate: No
  - Helmet: 17 and Under
  - Access:
    - Class I Bike Path: Yes
    - Class II Bike Lane: Yes
    - Class III Bike Route: Yes
    - Class IV Protected Lane: Yes

- **Type 2 E-Bike:** No
  - Pedestrian Operated: No
  - Maximum Motor-Assisted Speed: N/A
  - Minimum Age: N/A
  - Driver's License: No
  - License Plate: No
  - Helmet: 17 and Under
  - Access:
    - Class I Bike Path: Yes
    - Class II Bike Lane: Yes
    - Class III Bike Route: Yes
    - Class IV Protected Lane: Yes

- **Type 3 E-Bike:** Yes
  - Pedestrian Operated: Yes
  - Maximum Motor-Assisted Speed: 28 MPH
  - Minimum Age: 16
  - Driver's License: No
  - License Plate: Yes
  - Helmet: Yes
  - Access:
    - Class I Bike Path: Yes
    - Class II Bike Lane: No
    - Class III Bike Route: Yes
    - Class IV Protected Lane: Yes

- **Moped:** No
  - Pedestrian Operated: No
  - Maximum Motor-Assisted Speed: N/A
  - Minimum Age: 16
  - Driver's License: Yes
  - License Plate: Yes
  - Helmet: Yes
  - Access:
    - Class I Bike Path: No
    - Class II Bike Lane: Yes
    - Class III Bike Route: Yes
    - Class IV Protected Lane: Yes

*Note: Pending AB-1096*

---

**Sources:**
- [California Bicycle Coalition](https://www.cyclingca.org)
- [People for Bikes](https://www.peopleforbikes.org)
Colorado passed rules in 2009 that allow low-powered electrical assisted bikes, those limited to 750 watts, or about one horsepower, in bike lanes and on streets without the license, registration and insurance that motorcycles, scooters and mopeds are required to carry.
Boulder

City of Boulder
Existing Multi-Use Paths
that allow E-Bike Use

Legend
- E-Bikes Use Allowed
- E-Bikes Use Prohibited
- University of Colorado
- City Limits
Other Policies

• E-bikes have major potential to replace car trips
• Working on incorporating e-bikes into electric vehicle purchase incentive programs
e-Mountain Bikes (eMTB)

- Policies
- Existing Research
• What does “eMTB” mean?
• Class 1 e-bikes
• Pedal assist only – no throttles
• Typically 250-350 watts
eMTB Policy

• Federal: Considered “motor vehicles” and allowed on trails with other motorized devices
• State + Local: Variable, most agencies have not addressed e-bikes
Motorized trails are open to eMTBS.
Some provide single-track type experience – e.g., Monarch Crest.
• Study on physical impact of Class 1 eMTBs released this year by IMBA

• Under study conditions, “soil displacement and tread disturbance from Class 1 eMTBs and traditional mountain bikes were not significantly different, and both were much less than those associated with a gasoline-powered motorcycle.”
Next Steps

• Public process
• Community discussion
• Council recommendation
• Website:
  http://www.durangogov.org/electricbikes
THANK YOU!

Q&A

Photo: Bicyclists and walkers on the Animas River Trail