What’s an e-bike?

Electric bicycles (e-bikes) are similar in geometry to human-powered bicycles but have a small electric motor that provides pedal assistance. They allow riders to accelerate, climb hills, and overcome wind resistance more easily than standard bicycles. There are two main categories:

- **Bicycle-style electric bike (BSEB)**: This type of e-bike is similar to a human-powered bicycle but includes an electric motor. The motor can add any incremental assistance when the bicycle is pedaled. BSEBs are usually functional, with pedals that are meant to propel the bike with or without the help of the motor, which is engaged either automatically (torque or cadence sensor) or with the operator’s throttle.

- **Scooter-style electric bike (SSEB)**: These are called scooter-style electric bikes because they are designed for use on public thoroughfares. They are more powerful and fast than BSEBs and have an internal combustion engine. A driver’s license, vehicle registration, turn signals, brake light, headlamp, and a horn are usually required.

**Bicycle-style electric bike (BSEB) can reach 20 miles per hour when propelled solely by the motor and have a motor of 750 W or less. These bikes have pedals that are meant to propel the bike with or without the help of the motor, which is engaged either automatically or with the use of a throttle. BSEBs are distinguished by their ability to be considered bicycles.**

**Scooter-style electric bike (SSEB) has an internal combustion engine. A driver’s license, vehicle registration, turn signals, brake light, headlamp, and a horn are all required.**

**Federal Regulations**

Applies to manufacture and first sale of e-bikes

The Consumer Product and Safety Administration (CPSC) and the National Highway Traffic Safety Administration (NHTSA) regulate the manufacture and first sale of e-bikes. NHTSA codifies CPSC’s definition of low-speed electric bicycle and considers vehicles meeting the standard not to be motor vehicles. The standards for low-speed electric bicycles are below:

- Max speed of 20 mph
- Max 750 W output
- Fully operable pedals

**State & Local Regulations**

States free to govern use and licensing of e-bikes

States regulate the use and licensing of e-bikes. This includes where they can be ridden, how powerful and fast they can go, and any other requirement the states enact. When states do not have definitions that recognize e-bikes as a unique vehicle, the existing definitions of similar vehicles are used, such as motorized bicycle or motor-driven cycle. In 24 states, e-bikes are essentially regulated as a bicycle.

Some municipalities have enacted further regulations on e-bikes, sometimes restricting use on certain paths.

**Discussion & Next Steps**

Confusion at federal level

Terms and clauses used by CPSC and NHTSA for the regulation of e-bikes have led people to believe the federal law “supercedes” state laws. This is true only for manufacture and first sale, but not for use. This also creates gaps when consumers use conversion kits or when a manufacturer claims their product is not primary for use on public thoroughfares.

A new class of vehicles, regulated similar to bicycles

E-bikes are not quite bicycles, but they are certainly not mopeds. The wide variety of e-bikes presents the need for a framework for classification. The Bicycle Product Suppliers Association released a draft classification for e-bikes that considers how the bike is built, use requirements, and where use of e-bikes should be permitted. A Class 2 e-bikes would differ from Class 1 that they are throttle-assisted and would not be permitted on trails. Neither Class 1 nor 2 would require a license or registration, and the maximum speed is set at 20 mph. Class 1 e-bikes, sometimes called speed pedelecs, would have more stringent requirements. There is still some uncertainty about some parameters, such as weight, size, shape, and helmets. Lastly, policy makers must determine whether the motor can add any incremental assistance when the operator reaches the maximum speed.

**Regulations of E-bikes in the United States**

A Policy Review (15-4235)

John MacArthur & Nicholas Kobel

1 Portland State University Transportation Research and Education Center

**Objectives**

1. Delineate the types of e-bikes currently on the market.
2. Offer an overview of e-bike regulations in the U.S. at federal and state levels.
3. Consider the implications that the current legal status of e-bikes creates.

**Methodology**

Through reviewing the literature and online resources, we researched how people use the term e-bike to help develop a normative framework for addressing standardization. For legislation, we researched federal, state, and municipal codes by querying legal databases and contacting state DOTs, DMVs, and state police. We also contacted several federal agencies to ensure accurate interpretation.

**States with E-bike Definitions**

[Interactive map of e-bike laws on homepage]

**Oregon**

20 mph maximum speed

Functional pedals required

Max output of 1000 watts

In Oregon, electric assisted bicycles are regulated similar to a standard bicycle. Exceptions are that the operator must be 16 years of age, and they are not permitted on sidewalks. The City of Eugene banned the use of e-bikes on off-street bicycle and pedestrian paths for 9 years; the City recently repealed the decision.

**Michigan**

No definition (it’s a moped)

License, registration required

Must outfit with turn signals

There is no definition for e-bikes in Michigan, and they are considered mopeds. It creates confusion because mopeds specify a piston displacement of <100 CCs, and e-bikes do not have an internal combustion engine. A driver’s license, vehicle registration, turn signals, brake light, headlamp, and a horn are all required.

**Discussion & Next Steps**

Confusion at state level

When states fail to define e-bikes, riders are left with little guidance on how to use their bike legally and often times face restrictions and requirements that are irrelevant. Even with definitions, the laws are unclear. If a bicycle is a vehicle “propelled by human power,” then it is also unclear whether the word “safely” must be prepended to distinguish e-bikes from bicycles.

**More Information**

For a copy of the full report, visit HTTP://EBIKE.RESEARCH.PDX.EDU