MINNESOTA

2026 Report on the

Electric-Assisted Bicycle Youth Operation Study

February 2026

Prepared by:

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Cover Letter

February 12, 2026

The Honorable Scott Dibble, Chair
Senate Transportation Committee
3107 Minnesota Senate Building
Saint Paul, Minnesota 55155

The Honorable John Jasinski
Ranking Minority Member
Senate Transportation Committee
2227 Minnesota Senate Building
Saint Paul, Minnesota 55155

The Honorable Brad Tabke, Co-Chair
House Transportation Finance & Policy Committee
5th Floor Centennial Office Building
Saint Paul, Minnesota 55155

The Honorable Jon Koznick, Co-Chair
House Transportation Finance & Policy Committee
2nd Floor Centennial Office Building
Saint Paul, Minnesota 55155

Re: 2026 Electric-Assisted Bicycle Youth Operation Study Report

Dear Legislators,

Last year, the Minnesota Department of Transportation and Department of Public Safety conducted a study on electric-assisted bicycle youth operations. This report fulfills the requirements laid out under 2024 Laws of Minn., Ch. 127, Art. 3, Sec. 127 providing an overview of the safety challenges and recommendations on the operation of electric-assisted bicycles by persons under the age of 18 to increase the safety of riders, other cyclists, and all other users of active transportation infrastructure.

If you have any questions about this report, please contact us or you may reach out to Caroline Ketcham at caroline.ketcham@state.mn.us or at (651) 366-4180.

Sincerely,

Nancy Daubenberger, P.E. (MN)
Commissioner
MN Department of Transportation

Bob Jacobson
Commissioner
MN Department of Public Safety

Contents

Legislative Request

This report is issued to comply with 2024 Laws of Minn., Ch. 127, Art. 3, Sec. 127.

Sec. 127. STUDY; ELECTRIC-ASSISTED BICYCLE YOUTH OPERATION.

Subdivision 1. Definitions.

a) For purposes of this section, the following terms have the meanings given.
b) "Active transportation advisory committee" means the committee established in Minnesota Statutes, section 174.375.
c) "Advisory Council on Traffic Safety" means the advisory council established in Minnesota Statutes, section 4.076.
d) "Commissioners" means the commissioner of public safety and the commissioner of transportation.
e) "Electric-assisted bicycle" has the meaning given in Minnesota Statutes, section 169.011, subdivision 27.

Subd. 2. Electric-assisted bicycles study.

a) The commissioners must conduct a study and develop recommendations on the operation of electric-assisted bicycles by persons under the age of 18 to increase the safety of riders, other cyclists, and all other users of active transportation infrastructure. The commissioners must conduct the study jointly with the active transportation advisory committee and the Advisory Council on Traffic Safety.
b) The study required under paragraph (a) must:
    1) identify challenges to the safe operation of electric-assisted bicycles by those under the age of 18;
    2) evaluate existing legal authority for strategies, practices, and methods to reduce the availability of modifications to the electric motor of electric-assisted bicycles;
    3) make recommendations on whether to change state law to improve electric-assisted bicycle safety on roads, trails, and other areas where safe operation of electric-assisted bicycles is needed; and
    4) propose educational and public awareness campaigns to educate the public about electric-assisted bicycles, promote their safe operation, and raise awareness of their unique characteristics when operating on roadways.
c) In conducting the study with the Advisory Council on Traffic Safety and the active transportation advisory committee, the commissioners must consult with interested stakeholders, including but not limited to:
    1) active transportation and bicycling advocates;
    2) local elected officials;
    3) retailers and manufacturers of electric-assisted bicycles;
    4) the Department of Natural Resources;
    5) the Department of Commerce;
    6) E-12 educators with experience in active transportation safety training;
    7) medical professionals and emergency medical technicians;
    8) the State Patrol and local law enforcement; and
    9) consumer protection advocates.

Subd. 3. Report.

By February 1, 2026, the commissioners must submit the study conducted under this section to the chairs and ranking minority members of the legislative committees with jurisdiction over transportation policy and finance.

The cost of preparing this report is about $165,000.

Electric-Assisted Bicycle Youth Operation Study Executive Summary

Study Purpose

As directed by the Legislature, this report is prepared for the Commissioner of Transportation and Commissioner of Public Safety to report to the chairs and ranking minority members of the legislative committees with jurisdiction over transportation policy and finance. This report complies with the legislative request to complete the following documentation and stakeholder consultation by February 1, 2026:

- Conduct a study jointly with the active transportation advisory committee and Advisory Council on Traffic Safety;
- Consult with interested stakeholders including, but not limited to, active transportation and bicycling advocates; local elected officials; retailers and manufacturers of electric-assisted bicycles; the Department of Natural Resources; the Department of Commerce; E-12 educators with experience in active transportation safety training; medical professionals and emergency medical technicians; the State Patrol and local law enforcement; and consumer protection advocates; and
- Submit a study that:
    - identifies the challenges to the safe operation of electric-assisted bicycles by those under the age of 18;
    - evaluates the existing legal authority for strategies, practices, and methods to reduce the availability of modifications to the electric motor of electric-assisted bicycles;
    - makes recommendations on whether to change state law to improve electric-assisted bicycle safety on roads, trails, and other areas where safe operation of electric-assisted bicycles is needed; and
    - proposes educational and public awareness campaigns to educate the public about electric-assisted bicycles, promote their safe operation, and raise awareness of their unique characteristics when operating on roadways.

Summary of Benefits and Challenges of E-Bikes for Youth

As electric-assisted bicycles (e-bikes) continue to popularize among young people, e-bike-related crashes and injuries are also increasing, creating a perception that e-bikes are unsafe for youth to ride and require further regulation. However, there is also a drastically positive impact to mobility equity for young people, particularly for those who benefit from independent mobility. Most youth, as well as their parents or caregivers, will benefit from the independent mobility provided by e-bikes, in particular youth from low-income households, youth in rural areas, and non-drivers. Additionally, in an era of declining car use among youth due to financial constraints, environmental concerns, the desire for healthier lifestyles, and individual choice, e-bikes expand young people's access to opportunities including school, jobs, recreation, social functions, and leisure activities, which are vital to learning and education, skill development, building confidence, fostering independence, improving

engagement and peer connections, exploring interests and career paths, and making connections for future opportunities.

While safety risks related to e-bikes do exist, they must be contextualized in order to appropriately mitigate risk while allowing safe and equitable mobility. Data shows that youth are far more likely to be injured or killed in motor vehicle crashes than bicycle or e-bike crashes. Trends and data emphasize the need to ensure safe riding practices, appropriate driving and riding speeds, sharing the road and trails, wearing safety gear, and obeying traffic laws. However, over-regulation can have unintended negative consequences, such as biased enforcement, and can create undue burden on youth, their families, and public safety agencies. Well-designed roadways with complementary educational practices are effective for ensuring a safe transportation system, including for youth e-bike riders, as they can address safety and equity disparities, reduce crash risks, and increase ridership if conducted effectively. To ensure that the many benefits of e-bikes are realized by youth, resources and tools about safe riding, legal e-bikes, and e-bike awareness for all transportation system users must be made available and accessible throughout Minnesota.

Summary of Minnesota E-Bike Laws and Practices

Minnesota's approach to e-bikes is built around clearly distinguishing legal e-bikes from other, similar-looking motorized devices, commonly referred to as e-motos. In general, e-bikes are treated as a type of bicycle, but only if they meet clearly defined requirements, primarily related to speed and power thresholds. This framework aligns with national consumer product standards and the class system used in many other states, which helps create a common baseline for e-bike manufacturers, sellers, operators, and enforcement.

The e-bike class system is an important part of how Minnesota manages expectations for speed and operation. To reduce confusion and improve compliance, manufacturers and distributors must apply permanent labels that identify the e-bike's class and key performance information, and those labels must be updated or removed if the bike is modified in a way that changes its classification.

A major policy and practical challenge is the presence of faster, higher-powered vehicles that resemble e-bikes (e-motos), but do not meet e-bike requirements. Minnesota attempts to limit this confusion through consumer protection requirements. Even with these measures, illegal operation of e-motos and e-bikes occurs. E-bike buyers can have difficulty determining what type of e-bike-like device they are purchasing and it can be challenging for law enforcement and the public to know what type of e-bike-like device they are seeing on the streets or trails.

The State currently restricts the modifications of legal e-bikes through various laws applicable to operators, sellers, and manufacturers of e-bikes and e-motos. When an e-bike is modified in such a way that enables it to operate outside of one of the three legal e-bike classes, it is no longer a legal e-bike. Recommendations in this report expand the efforts to reduce e-bike modifications through education and awareness, requiring disclosures at the point of sale of e-bikes and e-motos, proactive enforcement of existing consumer protection laws, and collecting data on the type of e-bikes being used.

Minnesota generally allows e-bikes to be used in the same places and manner as conventional bicycles, which simplifies the rules for riders and supports consistent enforcement. However, Minnesota differs from some other states by setting a firm minimum operating age of 15 with no exceptions. The safety impacts of that law are not yet well understood due to limited data. Minnesota also allows transportation infrastructure owners

(often local governments) to restrict e-bike access where they believe it conflicts with safety or general welfare, which can create a patchwork of local rules and added confusion.

To support safe e-bike riding and a safe transportation system, Minnesota requires active transportation safety training in public schools for children in grades K-8. MnDOT is also required to maintain a comprehensive set of training resources to promote consistent education statewide.

Summary of Study Recommendations

The Study recommends 26 actions to enhance e-bike safety and equitable mobility for youth. In many cases, the recommendations are also intended to benefit e-bike operators of all ages as well as general transportation system users, regardless of the mode of travel. The recommended actions are structured around seven strategies. Combined, the recommended strategies and actions address youth e-bike education and awareness, barrier reduction, state programs, infrastructure, and data.

Education / Awareness Recommendations

Strategy 1: Create a broad awareness and understanding of e-bikes in Minnesota.

- Action 1.1: Develop an e-bike education toolkit.
- Action 1.2: Develop and deploy an e-bike awareness and education campaign.
- Action 1.3: Develop the e-bike component of the education program required for school districts to provide to students.
- Action 1.4: Encourage school districts to create an e-bike registration system where high school students are required to participate in e-bike training to be allowed to park their e-bike at school.
- Action 1.5: Prioritize safety information and access to e-bikes in vulnerable communities.
- Action 1.6: Use incentive programs to disseminate safety information and spread awareness.
- Action 1.7: Require businesses that sell e-bikes to distribute e-bike educational materials at the point of sale for every e-bike.
- Action 1.8: Require biking safety awareness to be included in drivers' education programs.
- Action 1.9: Encourage local law enforcement to prioritize education and awareness programs over enforcement of operator regulations.
- Action 1.10: Build capacity through encouragement of cycling ridership.

Strategy 2: Proactively address unlawful e-bike and e-moto operation.

- Action 2.1: Require businesses that sell e-bikes to disclose at the point of sale for every e-bike that e-bikes must not be operated by people under the age of 15.
- Action 2.2: Require businesses that sell e-motos to disclose at the point of sale for every e-moto that e-motos are not e-bikes and have different operating requirements.
- Action 2.3: Require the Attorney General's office to prioritize enforcement of retailer and manufacturer requirements.

Barrier Reduction Recommendations

Strategy 3: Reduce barriers to accessing e-bikes and safety equipment.

- Action 3.1: Establish specific standard for e-bike battery and electric drive certification.
- Action 3.2: Require businesses that sell e-bikes to include front lamps and reflectors at the point of sale for every e-bike.
- Action 3.3: Expand and modify the E-Bike Rebate Program to incorporate safety education and awareness.
- Action 3.4: Require landlords to allow certified e-bikes to be stored in rental units.
- Action 3.5: Require private e-bike rental and bikeshare operators to offer discounted rates for low-income riders.

Strategy 4: Ensure clarity and consistency in e-bike riding rules.

- Action 4.1: Require jurisdictions to allow e-bikes on trails and facilities where conventional bicycles are allowed.

State Program Recommendations

Strategy 5: Incorporate e-bikes into existing state transportation and safety programs.

- Action 5.1: Incorporate e-bike safety into existing statewide safety and mobility programming.
- Action 5.2: Update state fleet purchasing standards and aftermarket recommendations to place a greater emphasis on safety.

Infrastructure Recommendations

Strategy 6: Update statewide resources and guidance to reflect best practice for accommodating e-bikes.

- Action 6.1: Reflect best practices for designing bikeways that accommodate e-bikes in statewide plans, policies, and design standards.
- Action 6.2: Support transportation partners by providing guidance and best practice resources.

Data Recommendations

Strategy 7: Improve methods for collecting and evaluating e-bike use trends, crash trends, and risk factors.

- Action 7.1: Expand quantitative and qualitative e-bike safety and use data collection methods.
- Action 7.2: Develop safety performance metrics to measure the roadway safety conditions for e-bikes and other micromobility modes.
- Action 7.3: Incorporate data and evaluation metrics into decision-making related to e-bike travel.

Electric-Assisted Bicycle Youth Operation Study Report

Process and Stakeholder Engagement

As directed by the Legislature, the study was conducted jointly with the active transportation advisory committee (ATAC) and the Advisory Council on Traffic Safety (ACTS). Electric-Assisted Bicycle (e-bike) Youth Operation Study information was presented to the ATAC and ACTS four times for feedback. In addition, representatives of ATAC and ACTS served on the Project Advisory Committee (PAC) for this study.

The PAC met three times during the study process to establish a research framework, guide the development of the study, review draft materials, and provide feedback. In addition to the ATAC and ACTS representatives, the PAC included individuals representing the League of Minnesota Cities, Metropolitan Council, City of Fridley, Three Rivers Park District, University of Minnesota Center for Transportation Studies, and the Bicycle Alliance of Minnesota.

The study process was also guided by a Technical Advisory Committee (TAC) comprised of a broader range of stakeholders. The TAC met two times during the process to review materials, provide feedback, participate in stakeholder interviews, recommend other stakeholders for outreach, and provide guidance on education and implementation partners. TAC membership included individuals representing the Department of Public Safety, Department of Natural Resources, West Central Initiative, Arrowhead Regional Development Commission, Statewide Health Improvement Partnership, Safe Routes Partnership, Safe Kids Grand Forks, Minneapolis Public Schools, South Lake Police Department, and Shakopee Police Department.

The study process involved a literature review of available data and studies to synthesize the state of knowledge around youth e-bike safety and the related impacts on youth such as mobility, access to opportunities, and childhood development. The study was also informed by 25 stakeholder interviews conducted with individuals representing the Department of Transportation (statewide and regional), Department of Safety, Department of Health, Office of the Attorney General, Department of Commerce, Department of Natural Resources, Pollution Control Agency, local and regional transportation agencies, schools, Safe Routes to School, public health and medical professionals, local law enforcement, emergency services, driving schools, bicycle retailers and educators, bicycle advocacy organizations, and environmental sustainability. A memo summarizing the literature review and stakeholder interviews is available upon request.

The study included a review of available Minnesota Department of Health (MDH) hospital data for e-bike related injuries. Although not a comprehensive source of e-bike safety data, the hospital data from October 1, 2023 through March 31, 2025 provides some insights into youth e-bike injuries. This data was used to inform the study recommendations. A memo summarizing the MDH hospital data is available upon request.

The study included a review of Minnesota and peer agency laws, regulations, education and awareness practices and assessed each through a safety and equitable mobility lens. A memo summarizing the peer review is available upon request.

The literature review, stakeholder interviews, hospital data review, and peer review established the understanding of the benefits and challenges of e-bikes for youth, ultimately leading to the study recommendations contained in this report.

Benefits and Challenges of E-Bikes for Youth

Research on how youth in the U.S. are using e-bikes, including their health and safety outcomes, is largely missing. Available reports focus largely on hospital data and behavior data from other countries or small sample sizes. Local efforts are underway to improve data available, but it is currently challenging to compare across data sources and across time. However, the trends in the available data indicate the actual and potential positive and negative safety impacts of youth e-bike use. Evidence also shows the myriad benefits of e-bike use, especially among youth. The State should carefully consider how laws, regulations, policies, programs, and practices not only affect transportation safety, but also other State priorities including mobility, equity, public health, and the environment.

E-bike use is growing rapidly in the U.S. among youth and adults, improving mobility and access to opportunities, particularly for people with limited abilities or limited financial resources, and for those who live in contexts where using conventional bicycles is a challenge due to distances between places, such as rural and exurban places. E-bikes can reduce barriers to independent mobility, enhancing access to opportunities that support growth and future success such as school, jobs, socialization, sports and clubs, recreation, and the outdoors. Additionally, the cost of car ownership and use can be a significant burden for many young people and families, and e-bikes can help alleviate transportation burdens and expand options.

Expanding mobility options for youth and cultivating independence can reduce household stressors, positively impacting the mental wellness of parents and youth alike.[1] Transportation challenges for parents can lead to chronic stress that has adverse effects on children, particularly for low-income families with fewer or less reliable vehicles, families in rural areas who travel longer distances, or single-parent households with more limited support.

E-bikes can also expand access to the broad mental and physical health benefits associated with cycling. In general, cycling improves cardiovascular health, lowers risk of diabetes, strengthens muscles, improves joint mobility, contributes to overall fitness, and reduces stress and anxiety.[2] E-bikes may be especially supportive for people who are intimidated by conventional biking due to lower fitness, fatigue related to illness or disability, or for those who must travel longer distances. By making biking more accessible, e-bikes may also encourage youth to spend more time outdoors, which can support stress reduction, immunity, and focus.[3]

The introduction of e-bikes has altered the travel behavior and mobility patterns of teenagers, expanding their access to a wider range of destinations and increasing trip frequency, expanding the travel distances and types of destinations and opportunities they can access. The tendency to use cars less has the potential to significantly improve the environment. Reducing carbon (CO_2) emissions and vehicle miles traveled (VMT) directly impacts regional air quality, further improving the environment and reducing negative health impacts of pollution caused by motor vehicle use.

E-bikes operated by youth present real and perceived safety risks. Compared to conventional bicycles, e-bikes have greater kinetic energy due to higher speed and weight, increasing the severity of injury if a crash occurs. The perceptions of risk vary, but include: youth make risky choices, lack knowledge and experience about the rules of the road, lack knowledge and experience using e-bikes, and operate e-motos at high speeds. The

[1] https://link.springer.com/article/10.1007/s11205-025-03585-y
[2] Cycling - health benefits | Better Health Channel
[3] Health Benefits of Getting Outside

challenge is determining what the actual risks are based upon the limited and sometimes conflicting data about youth e-bike safety.

In framing these safety concerns, it is essential to compare e-bike related injuries and fatalities with those from other transportation modes to understand the actual risks. Youth in the U.S. are statistically more likely to be injured or killed in motor vehicle crashes than on e-bikes or conventional bicycles. In 2023, the Fatality Analysis Reporting System (FARS) recorded 22 youth fatalities in Minnesota involving youth drivers or youth passengers in motor vehicles. Comparatively, there were 6 deaths involving youth bicycle riders. Nationally, this discrepancy is even more pronounced. In 2023, there were 9,146 youth fatalities in motor vehicles compared to 84 on bicycles. These comparisons illustrate that while e-bike injuries are rising and deserve targeted attention, their risks must be viewed within the broader context of transportation safety.

All travelers, no matter their age, are safer when more people use active transportation rather than motor vehicles. In addition, there is a safety-in-numbers effect with bicyclists. Research suggests that bicyclist risk decreases as the number of bicyclists increases. E-bikes can encourage more people to bicycle, increasing the safety for all cyclists.

According to data from the U.S. Centers for Disease Control and Prevention, youth ages 10 to 15 experience the highest crash counts for both e-bikes and conventional bicycles. Data from the National Electric Injury Surveillance System (NEISS) shows that youth 10-13 years of age had the highest rate of e-bike injuries compared to other age groups from 2011 to 2020. Similarly, the Consumer Product Safety Commission found that 36 percent of individuals injured on micromobility devices (e-bikes, e-scooters, hover boards) are children 14 years of age and younger. In Marin County, CA, 911 response data shows that younger children aged 10-15 years had highly elevated e-bike crash risk compared to other age groups.

The Minnesota Department of Health (MDH) hospital data from October 2023 through March 2025 provides some insight into the real safety risks for youth. During the 18 months when data was available, 514 people were discharged from the 140 hospitals that are members of the Minnesota Hospital Association with an e-bike-related injury. Table 1 shows the number of e-bike injuries per age group, the percentage of e-bike injuries for each age group (age group injuries / total injuries), and the percent of Minnesota's population within each age group. Compared to their representative proportion of the state population in 2024, youth aged 0-14 years were underrepresented in e-bike injuries, youth aged 15-17 years were overrepresented in e-bike injuries, and adults were overrepresented in crashes.

Table 1: Minnesota Department of Health Hospital Data (10/1/2023-3/31/2025) for E-Bike-Related Injuries

Age Group	Number of E-Bike Injuries	Percent of E-Bike Injuries	Percent of Minnesota Population
0-14 years	64	12%	18%
15-17 years	36	7%	4%
18+ years	414	81%	78%
All ages	514	100%	100%

Males comprised 68 percent of e-bike injuries and females comprised 32 percent. The gender disparity was the greatest among youth aged 15-17 years with males comprising 81 percent of e-bike injuries. Males comprised 70 percent of e-bike injuries for youth aged 0-14 years and 66 percent for adults.

E-bike injuries that did not involve another vehicle, object, or person (non-collisions) were the most common collision type, which comprised 52 percent of youth e-bike injuries. Unspecified collisions were the second most common collision type for youth at 28 percent followed by vehicle collisions at 14 percent, fixed object collisions at 10 percent, and bike/ped collisions at 4 percent.

Youth e-bike injuries were slightly more likely to occur on an off-road facility or on private property (non-traffic injuries), which comprised 47 percent of youth e-bike injuries, than on a public roadway (traffic injuries), which comprised 46 percent of youth e-bike injuries. The remaining 7 percent were other or unknown.

The vast majority, 98 percent, of youth e-bike injuries were treated in the emergency department and did not include inpatient hospitalization. The remaining 2 percent of youth e-bike injuries resulted in inpatient hospitalization. Inpatient hospitalization resulted from 18 percent of adult e-bike injuries.

Severe injuries resulted in 3 percent of youth e-bike injuries and 10 percent of adult e-bike injuries. Severe injuries were those coded as 16 or greater using the injury severity score (ISS).

Traumatic brain injuries (TBI) can range from mild, where there is no or brief loss of consciousness, to severe. Youth e-bike injuries resulted in TBI for 7 percent of the incidents. For adults, 13 percent of e-bike injuries resulted in TBI.

The data provided by MDH also included whether the e-bike injury was within the 7-County Metro Region (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties) or in Greater Minnesota. The Metro Region comprised 55 percent of the state's youth population and had 42 percent of youth e-bike injuries. In contrast, Greater Minnesota comprised 45 percent of the state's population and had 58 percent of youth e-bike injuries.

Injuries, including severe injuries, due to youth e-bike use are occurring and should be addressed. Additional data would allow a more comprehensive understanding of the actual safety risks, which are not available at this time. The state should consider rational approaches to address youth e-bike safety risks based upon sound principles while not prohibiting or restricting youth, and the general public, from the benefits of e-bikes.

Minnesota E-Bike Laws and Practices

Minnesota has many laws and practices specific to or impacting e-bikes and their operation. This section does not include an exhaustive list; rather, it highlights key laws and practices that establish a baseline for the recommendations in this report.

E-Bikes and Non-E-Bikes (E-Motos)

Minnesota law defines bicycles, e-bikes, and includes additional definitions of e-bike classes. Together, these definitions explain a legal e-bike. Minnesota uses the term "bicycle" as part of the definition of an e-bike. Minnesota defines a bicycle as every device capable of being propelled solely by human power upon which any person may ride, having two tandem wheels, and including any device generally recognized as a bicycle though

equipped with two front or rear wheels. “Bicycle” includes an e-bike and does not include scooters, motorized foot scooters, or similar devices (MINN. STAT. 169.011 Subdivision 4 (2024)).

Minnesota defines an electric-assisted bicycle (e-bike) as a bicycle with two or three wheels that has a saddle and fully operable pedals for human propulsion; meets the requirements for bicycles under Code of Federal Regulations, title 16, part 1512, or successor requirements; is equipped with an electric motor that has a power output of not more than 750 watts; meets the requirements of a class 1, class 2, class 3, or multiple mode e-bike; and, has a battery or electric drive system that has been tested to an applicable safety standard by a third-party testing laboratory (MINN. STAT. 169.011 Subd 27 (2024)).

Minnesota defines the e-bike classes as follows:

- Class 1: An e-bike equipped with an electric motor that provides assistance only when the rider is pedaling and ceases to provide assistance when the bicycle reaches the speed of 20 miles per hour (MINN. STAT. 169.011 Subd 15a (2024)).
- Class 2: An e-bike equipped with an electric motor that is capable of propelling the bicycle without the rider pedaling and ceases to provide assistance when the bicycle reaches the speed of 20 miles per hour (MINN. STAT. 169.011 Subd 15b (2024)).
- Class 3: An e-bike equipped with an electric motor that provides assistance only when the rider is pedaling and ceases to provide assistance when the bicycle reaches the speed of 28 miles per hour (MINN. STAT. 169.011 Subd 15c (2024)).
- Multiple mode: An e-bike equipped with switchable or programmable modes that provide for operation as two or more of a class 1, class 2, or class 3 electric-assisted bicycle in conformance with the definition and requirements under this chapter for each respective class (MINN. STAT. 169.011 Subd 45a (2024)).

In addition to the speed and power restrictions listed in the above definitions, Minnesota law states that a multiple mode e-bike equipped with a throttle must not be capable of exceeding 20 miles per hour on motorized propulsion alone in any mode when the throttle is engaged (MINN. STAT. 169.222 Subd 6b (2024)).

Minnesota requires the manufacturer or distributor of an e-bike to apply a permanent label that contains the class number, top assisted speed, and motor wattage. For multiple mode e-bikes, they must contain a label that identifies the highest class or each of the e-bike classes in which it is capable of operating. If an operator modifies an e-bike to change the motor-powered speed capability or motor engagement so that the e-bike no longer meets the requirements for the applicable class, the operator must replace the label with revised information or remove the label if it no longer meets the requirements for any e-bike class (MINN. STAT. 169.222 Subd 6b (2024)).

There are vehicles that look similar to e-bikes and are often mistaken for e-bikes, which are commonly referred to as e-motos. They often go faster and/or have larger motors than allowed by Minnesota’s e-bike definition and do not fit within one of the defined classes of e-bikes. If an e-bike-like vehicle is not technically an e-bike, it is likely a motorized bicycle or off-highway motorcycle, as defined by Minnesota law.

In the definition of an e-bike, Minnesota states that a vehicle is not an e-bike if it is designed, manufactured, or intended by the manufacturer or seller to be configured or modified to not meet the requirements for an e-bike or operate within the requirements for an e-bike class. Configured or modified includes any of the following changes: (1) a mechanical switch or button; (2) a modification or change to the electric motor or the electric

drive system; (3) the use of an application to increase or override the electric drive system; or (4) through any other means represented or intended by the manufacturer or seller to modify the vehicle to no longer meet the requirements or classification of an electric-assisted bicycle (MINN. STAT. 169.011 Subd 27 (2024)).

Minnesota requires the seller of an e-bike to disclose the maximum power, maximum speed, and class of the e-bike being sold (MINN. STAT. 325F.661 Subd 2 (2024)). In addition, a seller of a motorized bicycle or motorcycle equipped with an electric motor for propulsion may not sell or offer for sale the vehicle if it is labeled as an e-bike or uses the words “electric bicycle,” electric bike,” “e-bike,” or similar terms without providing a disclosure that includes the name or classification of the vehicle under state law or that it is not an e-bike (MINN. STAT. 325F.661 Subd 3 and Subd 4 (2024)).

Minnesota law is aligned with U.S. Consumer Product Safety Commission standards and/or guidance as well as most other states that use an e-bike class system. Although confusion still exists, Minnesota law also provides a comprehensive definition of a legal e-bike. The labeling requirements, modification restrictions, and consumer protections presumably enhance conformance to the laws. However, e-motos and e-bikes are being operated in Minnesota illegally, although the degree to which is currently unknown. The definitions of e-bikes, e-bike classes, and other similar vehicles may not always be clear for those purchasing or seeing these types of vehicles in public right-of-way. There is also confusion among law enforcement about how to classify e-bike-like vehicles. The State can help address the illegal operation of e-motos and e-bikes through a coordinated strategy of public education and awareness as well as enforcement on manufacturers, sellers, and operators.

Legal Authority to Reduce Availability of Modifications of Electric Motor of E-Bikes

The State currently restricts the modifications of legal e-bikes through various laws applicable to operators, sellers, and manufacturers of e-bikes and e-motos identified in the E-Bikes and Non-E-Bikes (E-Motos) section. When an e-bike is modified in such a way that enables it to operate outside of one of the three legal e-bike classes, it is no longer a legal e-bike. Recommendations in this report expand the efforts to reduce e-bike modifications through education and awareness (see actions 1.1 through 1.10, 3.3, 5.1,), requiring disclosures at the point of sale of e-bikes and e-motos (see actions 2.1 and 2.2), proactive enforcement of existing consumer protection laws (see action 2.3), and collecting data on the type of e-bikes being used (action 7.1).

E-Bike Operating Rules

Minnesota, like most other states, allows people to operate e-bikes in the same place and manner as provided for the operation of other bicycles (MINN. STAT. 169.222 Subd 6a (2024)). E-bikes are most comparable to conventional bicycles, making bicycle riding laws most applicable to e-bikes. This approach simplifies communication of riding laws for e-bike and conventional bicycle operators and law enforcement. Consistent riding laws improve accessibility of regulations for users. However, there are several areas where e-bike laws differ from those for conventional bicycles.

Minnesota law states that a person under the age of 15 must not operate an e-bike, with no exceptions allowed (MINN. STAT. 169.222 Subd 6a.e (2024)). Most states restrict e-bike use by age, primarily class 3 e-bike use, but there is variability in the specific age restrictions. Those that restrict e-bike use by age generally set the minimum age to operate an e-bike between 14 to 18 years old. Due to the lack of comprehensive e-bike crash data and use, the safety impacts of Minnesota’s age restriction are not known.

In general, Minnesota allows e-bikes wherever conventional bicycles are allowed to operate. However, Minnesota allows transportation infrastructure owners, primarily local units of government, to restrict e-bike

use if the owner determines e-bike use is not consistent with the safety or general welfare of others (MINN. STAT. 85.015 Subd 1d, 85.018 Subd 2d, 160.263 Subd 2b, and 169.222 Subd 6a (2024). This is leading to inconsistencies in local laws and causing confusion for e-bike operators and law enforcement.

E-Bike Education and Awareness

Minnesota requires school district to provide public school pupils enrolled in kindergarten through grade 3 with age-appropriate active transportation safety training, but there are no specific requirements for including bicycle or e-bike topics. Districts must also provide public school pupils enrolled in grades 4 through 8 with active transportation safety training including bicycle- and e-bike-specific training. Bicycle training must include relevant traffic laws, use and proper fit of protective headgear, bicycle parts and safety features, and safe biking techniques. E-bike training must include the restriction that people under the age of 15 are not allowed to operate an e-bike (MINN. STAT. 123B.935 Subd 1 (2024)). Minnesota also requires school districts and nonpublic schools to make reasonable accommodations for the active transportation safety training of pupils known to speak English as a second language and pupils with disabilities (MINN. STAT. 123B.935 Subd 3 (2024)). Although the laws of every state were not exhaustively reviewed, no laws in other states were found that require active transportation, bicycling, and/or e-bike training for youth.

Minnesota requires that the commissioner of transportation maintain a comprehensive collection of active transportation safety training materials that meets the state requirements (MINN. STAT. 123B.935 Subd 4 (2024)). These resources are vital for consistent communication of laws and practices to enhance the safe operation of e-bikes, especially for youth, and an overall safe transportation system for all users.

Study Recommendations

With an understanding of best practices, lessons learned, and stakeholder and professional input, a series of recommended strategies and actions were developed. The recommendations aim to enhance youth e-bike safety and enhance equity, or limit potential inequities or other negative impacts. Equity and safety are vital, both in the potential benefits that e-bikes can offer and in the way that policies and practices can have equity and safety implications. E-bikes can improve physical and mental wellness, reduce Vehicle Miles Traveled (VMT) and pollution, improve mobility and access, contribute to independence, and provide people with an alternative travel option for nondrivers, for people that may not be able to afford or access a vehicle, or those who do not want to travel by vehicle.

With an increase in e-bike use, agencies must work together to implement fair and reasonable safety laws that do not have unintended negative or inequitable consequences, provide tools and resources to encourage safe and responsible ridership, and adopt standards that make riding e-bikes safer, more comfortable, and more accessible. Regulation alone does not create a safe and equitable system; this requires a multi-faceted approach. Laws need to be responsible, effective, equitable, clear and enforceable, and work along with programs and practices, without placing undue pressure on law enforcement or creating opportunities for unbalanced regulation. Infrastructure and complementary education strategies can act as preventative measures, addressing safety across modes and creating a comprehensive safety system that is not reliant on enforcement of laws. Education programs can use strategies that young people can relate to and resonate with and can use incentives that encourage safe riding behavior, including the use of safety gear.

The recommendations in this section are sorted into five categories: education / awareness, barrier reduction, state program, infrastructure, and data. These recommendations should be used by the State and partners to support an e-bike culture and system that prioritizes safety and equitable mobility, especially for youth.

This Study does not include a recommendation to require youth e-bike operators to wear protective headgear (helmet). Although helmet use does not prevent or reduce crashes, helmets reduce the severity of certain types of injuries when crashes occur. Due to the greater weight and higher speeds compared to conventional bicycles, e-bike crashes can result in more severe injuries, especially when helmets are not used. Although there is clear justification for requiring helmet use for youth on e-bikes based upon the safety benefits, even in jurisdictions with helmet use laws, studies have found that as many as 98% of youth e-bike riders fail to wear helmets. In addition, helmet requirements can have negative equity impacts. Data from conventional bicycle enforcement show that when bicycle laws are enforced, they often have disproportionate impacts on marginalized groups. Since it is desirable to have more youth e-bike operators wearing helmets for the positive safety benefits, the recommended approach is to encourage their use. The helmet-related recommendations in this Memo focus on providing discounted or free helmets to youth e-bike operators and encouraging helmet use through education and positive messaging.

Education / Awareness Recommendations

Strategy 1: Create a broad awareness and understanding of e-bikes in Minnesota.

Public education and awareness can increase the safety of the transportation system for e-bike riders and non-riders alike. Stakeholders involved in this Study identified that knowledge and understanding of laws and regulations about e-bikes varies dramatically in Minnesota. Law enforcement agencies are also struggling to consistently interpret existing State e-bike laws, leading to challenges with education and enforcement. Education and awareness can effectively facilitate a culture shift in communities and among policymakers to be more inclusive of e-bikes, reduce stigma, spread awareness and safety knowledge, and ultimately create a safer and healthier transportation system. Broadly increasing understanding and shifting awareness around e-bikes is vital to e-bike safety for youth. This will help reduce crash risks with drivers, improve confidence and comfort for riders, normalize safe riding behavior, and reduce barriers for youth to access the transportation system. In addition to the State, many agencies are involved in transportation safety and/or e-bikes. The State can take the lead on e-bike education and awareness by developing accurate and consistent information, using existing channels and partners to distribute the information, and creating new avenues for dissemination of information to reach a broad audience as well as targeted groups, including youth and parents/guardians.

Action 1.1: Develop an e-bike education toolkit.

The Minnesota Commissioner of Transportation is currently required to maintain a comprehensive collection of active transportation safety training materials. Many Minnesotans lack awareness and understanding of e-bike laws, operations, and practices. The State should develop an e-bike education toolkit to better inform the public about e-bike rules and safety as well as ensure the information being communicated is accurate and consistent. The toolkit should include materials, media, and messaging to communicate accurate, clear, and concise information for parents and youth, as well as for a broader audience. The toolkit should address many topics including speed, types of e-bikes, legal places to ride, age limits and restrictions, battery safety, ABC quick check, general rider safety, trail etiquette, crash scenarios, one rider per bike, modifications, helmet use, e-bikes vs. e-motos, and school approaches to e-bike safety. It should include various material types including flyers, tip sheets, static and video social media, online and in-person trainings, online and in-person presentations, email, newsletter, and bike tagging. The toolkit should also include materials specifically designed for young people,

parents/guardians, and other target audiences. Other target audiences should include police/law enforcement, bike shops, elected officials, schools, and city staff. Topics and material types should be customized based upon the target audience.

An improved online presence of active transportation safety, particularly e-bikes, may be an effective way to reach young people. For youth to embrace safe e-biking behaviors, they must be able to connect to and resonate with the messaging. Campaigns that successfully do this include the following approaches:

- Feature youth and use age-inclusive methods, such as videos, animation, graphics, virtual classes, and interactive activities and demonstrations.
- Include hands-on, in-person engagement for experiential learning, including riding safety as well as proper maintenance.
- Include outreach strategies that use engaging language, have authentic messaging, include interactive elements, amplify the voices of young people, incentivize youth participation, and reach youth where they are, virtually and in-person.
- Take preventative and incentive approaches over disciplinary actions and enforcement.
- Disseminate information through various languages and methods, including social media platforms, websites, newsletters, TV, radio, advertising (kiosks, transit, etc.), community events, and pop-ups.

This toolkit should include all information needed to allow not only the State, but local agencies and partners to use the toolkit. They should be able to customize materials based upon their individual needs and capabilities. In addition, the toolkit should also include guidance for distribution, communication, and customization.

Action 1.2: Develop and deploy an e-bike awareness and education campaign.

Since many Minnesotans lack awareness and understanding of e-bike laws, operations, and practices, there is an opportunity to use a campaign to inform youth broadly and the general public. Although e-bike safety campaigns are occurring in some places around the state, many communities are not being reached and information is likely inconsistent. The State should engage in an annual education and awareness campaign, potentially combining with Bicycle Safety Month[4], to expand e-bike awareness, rules, safe practices, etiquette, and support partners in their own transportation safety efforts. The campaign should utilize elements in the e-bike education toolkit described in Action 1.1. Information should be digestible and interesting for young people and should employ various outreach methods that are age and language inclusive to reach the most existing and potential e-bike users as well as drivers, bicyclists, and walkers. The State should also track who is being reached to ensure equitable outreach to communities throughout Minnesota.

Action 1.3: Develop the e-bike component of the education program required for school districts to provide to students.

School districts in Minnesota are required to provide public school pupils in kindergarten through grade 3 with age-appropriate active transportation safety training. They must also provide public school pupils in grades 4 through 8 active transportation safety training including bicycle- and e-bike-specific training. However, e-bike riders are required to be at least 15 years of age. While preliminary education of e-bikes will be beneficial, the State should require this safety training to be extended to grades 9 through 12 to reach students at riding age. Distribution of e-bike safety information and general e-bike resources needs structured leadership, statewide coordination, and intentional delivery. To ensure accurate and consistent information is provided to youth, the

[4] Bicycle Safety | Traffic Safety Marketing

State should develop template curriculums for school districts to use to incorporate e-bike components into their safety training. The State should also develop a program to provide training for educators and guidance for how to communicate safety education to youth and parents/caregivers. These resources and efforts should be prioritized first for under-resourced and vulnerable communities (see Action 1.5).

The State should consider creating a program to fund bicycle safety gear for schools to distribute to youth, especially helmets.

Action 1.4: Encourage school districts to create an e-bike registration system where high school students are required to participate in e-bike training to be allowed to park their e-bike at school.

Schools are key touchpoints for introducing safe e-bike practices to student riders and are a direct way to ensure students have access to e-bike classes and educational resources. The State should coordinate with school districts and local jurisdictions to encourage the adoption of e-bike registration programs for their students that tie permission to park a student's device at the school to an e-bike safety training, presentation, and/or assessment.

The State can support these programs by developing the materials and/or curriculum for the e-bike training (see Action 1.1) and potentially providing financial resources. Students should be given youth-friendly safety resources including safe riding practices, e-bike classification, benefits of e-bikes, and other information along with a link to a free online safety course (see the California Electric Bicycle Safety and Training Course[5]). Additional "refresher" courses may also be taught throughout the school year as instructional time allows. This would allow safety partners to ensure that students are being educated on safe practices and would allow the school the opportunity to intervene if students are using non-regulated devices, such as e-motos.

Schools should make the registration available once the students have received the e-bike training and renew the registration every school year. The registration ticket should be able to be affixed to the e-bike or should be in the form of a sticker. Students should be asked to request the registration package and receive the registration ticket once the application is filled out and the following statements are checked by the student:

- I agree to wear a properly fitted and secured bicycle helmet while riding safely to and from school, or to and from a school sponsored event.
- I agree to follow all the traffic laws, traffic signs, and any additional e-bike safety rules covered in the e-bike safety training while riding safely to and from school, and to and from a school sponsored event.
- I understand that the school is not responsible for e-bikes that are lost, stolen or damaged.
- I will walk my e-bike at all times while on school grounds.
- I understand that I will not transport any other student on my e-bike to and from home and school.
- I understand that wheelies and other stunts are never allowed on roads, in bike lanes, or on campus.
- I have read through the safety information provided to me in the safety packet.

MnDOT should partner with school districts to provide free helmets to all students who register their bikes through the school system. School districts should conduct an audit at least once a semester or trimester to check the registration of e-bikes. School districts can partner with local law enforcement to conduct these audits

[5] Definition - Electric Bicycle Safety and Training | Rise 360

and work with the students and parents if youth are found to be using e-bikes that do not meet Minnesota regulations.

Action 1.5: Prioritize safety information and access to e-bikes in vulnerable communities.

As e-bikes popularize, agencies should ensure that e-bike educational resources and tools are available and accessible to everyone to minimize safety risks and maximize the benefits. E-bikes have the opportunity to accelerate equitable mobility, particularly for youth who inherently have more barriers from the transportation system than the average adult, especially those living in rural areas, in low-income households, and/or who live with disabilities. However, to ensure that youth across the state can realize e-bike benefits, they must be informed about e-bike use to feel comfortable riding, feel comfortable purchasing e-bikes by having access to consumer information, and be aware of programs in place to help access e-bikes, safety equipment, and educational materials. The State should develop a system to prioritize marginalized and rural communities to make safety information and e-bike devices more accessible to youth in these contexts. The State should partner with local and regional groups, organizations, and stakeholders to assess what communities are being reached and how to prioritize resources for these communities.

Action 1.6: Use incentive programs to disseminate safety information and spread awareness.

Incentive programs provide an opportunity to disseminate information about e-bike rules and regulations, safe riding practices, maintenance, and benefits. Agencies can take advantage of existing programs and education modules to circulate safety information developed in Action 1.1. The State can use the E-Bike Rebate Program to disseminate information (see Action 3.3) and should also encourage local and regional partners to do the same through their own incentive programs. Providing free or subsidized educational courses can be more effective than simply requiring them, as these requirements can act as a barrier to users if they are not accompanied by a program that assists users in accessing them.

Action 1.7: Require businesses that sell e-bikes to distribute e-bike educational materials at the point of sale for every e-bike.

Currently, sellers of e-bikes are required to disclose information about the e-bike at the point of sale, such as the maximum power, maximum speed, and class. This relies on youth and parents to fill the information gaps on their own in order to have a comprehensive understanding of how to safety own and ride an e-bike. Sometimes, youth are not even present for the sale of the e-bike, so the information may not make its way to them anyway. Due to the lack of public understanding around e-bikes, the State should leverage the opportunity to disseminate information directly to the consumer to address potential e-bike knowledge gaps and increase awareness of safe e-bike practices. The State should require businesses that sell e-bikes to distribute e-bike education materials at the point of sale for every new and used e-bike. The educational materials should be developed by the State and packaged for this explicit purpose (see Action 1.1).

Action 1.8: Require biking safety awareness to be included in drivers' education programs.

It is vital for people using all modes of travel to be aware of e-bikes and understand their operating rules and how to safely share space in roadways. Hospital data from the Minnesota Department Health (MDH) from October 2023 through March 2025 show that nearly 20% of e-bike collisions involved a vehicle. These types of crashes are more likely to result in serious injury or fatality. This means that education and awareness of drivers is a key component of safety for riders. The State should develop an e-bike curriculum for driver's education companies and schools to incorporate into their programs.

Action 1.9: Encourage local law enforcement to prioritize education and awareness programs over enforcement of operator regulations.

Some law enforcement officers in Minnesota are currently responding to unsafe e-bike behavior from youth with education-first approaches, rather than citations, though citations are sometimes used after repeat offenses. Law enforcement in Minnesota is struggling with many aspects related to e-bikes including responding to citizen complaints, enforcing existing laws, interpreting unclear laws, youth riders, speeding, and distinguishing between e-bikes and e-motos. Law enforcement is an effective partner for communicating to the public, as the reach of these departments to the community is typically more extensive than other departments and outlets. They can be an effective partner in e-bike education as well.

The State can help harness the reach of law enforcement and alleviate some of their e-bike-related burden by encouraging and facilitating a focus on education. Reducing enforcement can have a significantly positive equity impact as Black and Brown youth are more likely to be stopped on bicycles, which can result in traumatic or dangerous experiences. The State should encourage law enforcement agencies throughout the state to be a partner in e-bike education and to focus capacity on trainings, demonstrations, and outreach rather than enforcement of e-bike riders. The State can leverage Toward Zero Deaths (TZD) to lead or coordinate these efforts. The State should provide consistent information, tools, and training to law enforcement and other partners (see Action 1.1). Law enforcement training should incorporate a roll call video and laminated pocket card on e-bikes, as well as tips for entering data into their Records Management System (RMS).

Action 1.10: Build capacity through encouragement of cycling ridership.

Increasing ridership can cultivate a culture of safety because it expands awareness of e-bikes and safe riding habits, reduces stigma about safety, and improves confidence of vulnerable riders, such as youth. Methods that move communities, rather than just individuals, to adopt e-biking at higher rates can help trigger a culture shift towards e-bike safety and awareness. To facilitate an increase in youth cycling and e-biking, the State should coordinate with local agencies to host events that motivate people to participate in cycling and e-biking, such as bike buses, Ciclovias, and similar methods. These types of events create safe spaces, inclusive for riders at all levels and abilities, that can help to generate broader community support for cycling and e-biking. The State should provide resources and materials for external agencies to implement these events, or the State could consider implementing these events.

Strategy 2: Proactively address unlawful e-bike and e-moto operation.

In addition to the education and awareness actions under Strategy 1, there are opportunities to revise State laws and their enforcement to address the lack of understanding of the e-bike regulations and improve understanding of the differences between e-bikes and e-motos. Stakeholders raised concerns about the prevalence of youth under 15 years of age riding e-bikes as well as the prevalence of e-motos. To limit potential negative equity impacts, the recommended actions for this strategy focus on education and awareness as well as consumer protection.

Action 2.1: Require businesses that sell e-bikes to disclose at the point of sale for every e-bike that e-bikes must not be operated by people under the age of 15.

Minnesota law prohibits e-bike use by individuals under the age of 15. However, e-bikes can currently be sold to individuals under 15 years old or for use by individuals under 15. E-bikes are currently being marketed to youth under 15 years old and they are being operated illegally in Minnesota by youth under 15. Purchasers of e-bikes, especially parents of youth, may be unaware of the Minnesota law. To limit the potential of e-bikes being sold

for use by someone under 15 years old, the State should require businesses that sell e-bikes to disclose at the point of sale for all new and used e-bikes that the e-bike must not be operated by individuals under the age of 15. The State should develop the disclosure language required.

Action 2.2: Require businesses that sell e-motos to disclose at the point of sale for every e-moto that e-motos are not e-bikes and have different operating requirements.

Minnesota law prohibits sellers of motorized bicycles and motorcycles equipped with an electric motor for propulsion to label it as an e-bike or use the words electric-bicycle, electric bike, e-bike, or similar terms without providing a disclosure that includes the name or classification of the vehicle under state law or that it is not an e-bike (MINN. STAT. 325F.661 Subd 3 and Subd 4 (2024)). Based upon stakeholder interviews, youth of all ages are using e-motos, which are often purchased by parents who may or may not know that e-motos are not e-bikes and have different regulations. Stakeholders also communicated that when youth are practicing unlawful or dangerous behavior on devices, it is often on e-moto devices and not on e-bikes.

The State should strengthen the existing law to require both the disclosure that the vehicle is not an e-bike and also include the name or classification of the vehicle under state law. In addition, the disclosure should include the specific operating requirements or restrictions for that specific type of vehicle including licensing, registration, age restrictions, required safety equipment, permitted and prohibited locations and facilities where the vehicle can be operated, and other pertinent information as to inform the purchaser of the legal means of operating the vehicle purchased. The State should develop the disclosure language required.

Action 2.3: Require the Attorney General's office to prioritize enforcement of retailer and manufacturer requirements.

Minnesota's consumer protection laws related to e-bikes are comparable to most other states that have comprehensive e-bike consumer protection laws (unless otherwise stated in this Memo). However, there are e-motos being operated illegally and e-motos are currently being advertised and sold as e-bikes, at least online. Education recommendations under Strategy 1 are assumed to help address this issue, but additional consumer protection is likely needed. The State should proactively enforce the existing e-bike consumer protection State laws, particularly e-motos being advertised and sold as e-bikes, e-bikes that can be modified to operate outside of the definition of an e-bike, class labeling, and battery and electric drive system certification to reduce the burden on young people and parents purchasing e-bikes. Action 2.1 and 2.2 recommend additional disclosures at the point of sale of e-bikes and e-motos, respectively. The State should also proactively ensure these requirements are being followed.

Barrier Reduction Recommendations

Strategy 3: Reduce barriers to accessing e-bikes and safety equipment.

E-bikes improve mobility, access to opportunities, and mental and physical health, which can have significant long-term effects for young people into their adulthood. This is particularly true for youth with limited abilities, limited financial resources, who live in different regional contexts such as suburban or rural areas, and who live in places with challenging terrain. They can also greatly reduce environmental impacts of motor vehicle travel and reduce vehicle miles traveled (VMT). Like any technology, quality e-bikes are more accessible to affluent households that can more easily afford them. The State can expand access to e-bikes and safety equipment, to ensure that youth in every community can safely enjoy the many benefits and opportunities provided by e-bikes. These actions should focus on increasing equitable mobility by not placing additional barriers or burdens on e-bike operators.

Action 3.1: Establish specific standard for e-bike battery and electric drive certification.

Minnesota law requires that an e-bike's battery or electric drive system be tested to an applicable safety standard by a third-party testing laboratory (MINN. STAT. 169.011 Subd 27 (2024)). This requirement lacks clearly defined safety standards and documentation requirements. The Consumer Product Safety Commission has created voluntary safety standards for all e-bikes sold in the U.S. to comply with relevant UL standards but has not made them mandatory. California will not allow the distribution, sale, lease, or advertising of an e-bike unless it has been tested by an accredited testing laboratory for compliance with ANSI/CAN/UL 2849 or EN 15194 starting on January 1, 2026 for bikes sold in California and January 1, 2028 for rental e-bikes.[6] The State should adopt a similar law requiring a specific standard(s). This will help to address the issue of e-bike storage in rental units and on school property described in Action 3.4.

Action 3.2: Require businesses that sell e-bikes to include front lamps and reflectors at the point of sale for every e-bike.

Currently, bicycle operators (including e-bike operators) are required to use a front lamp and rear reflector when operating in dark conditions. However, front lamps are not required of e-bike manufacturers, distributors, or sellers. Rear reflectors are required of sellers for new bicycles and e-bikes but not required of sellers for used bicycles or e-bikes. Used e-bikes are more accessible to more people because of the lower cost. E-bike operators may not know of these requirements and/or the requirements could burden e-bike operators or potential operators with additional costs, especially for youth for whom costs and access to information may be a bigger challenge. To remove the potential burden and ensure this safety gear is provided to e-bike operators, the State should require businesses that sell new and/or used e-bikes to include a front lamp and rear reflector already secured to the e-bike.

The State should consider requiring businesses that sell conventional bicycles to include front lamps and rear reflectors at the point of sale for every conventional bicycle. The State should also consider requiring businesses that sell e-bikes (and potentially conventional bicycles) to include rear lamps at the point of sale for every e-bike (and potentially conventional bicycle).

Action 3.3: Expand and modify the E-Bike Rebate Program to incorporate safety education and awareness.

Minnesota's E-Bike Rebate Program improves access to e-bikes and safety equipment for many people with low-income or disabilities across the state. This Program requires that individuals purchase safe, regulated e-bikes through approved retailers. Some e-bikes, primarily those not tested or using uncertified components, have been linked to battery fires, mechanical issues (brake or component failure), and assembly/manufacturing errors. The State should expand and modify the rebate program to increase access to safe and certified e-bikes and safety equipment by incorporating the changes, outlined below (see the Vista County E-Bike Safety Training Rebate Program[7]):

- Increase funding to reach more people.
- Track demographics and regional contexts of who participates to ensure equitable disbursement of resources.
- Require safety education for participation in the program and provide this education for free in-person and virtually. Host in person riding sessions in various languages (see Action 1.1).

[6] Bill Text - SB-1271 Electric bicycles, powered mobility devices, and storage batteries.
[7] E-Bike Safety Training & Rebate Program | City of Vista

- Provide links to safety videos, flyers, trainings, and other e-bike safety resources through the website (see Action 1.1).
- Distribute helmets to all participants who attend sessions in-person.
- Require that e-bike battery and electric drive system meet the standard per ___(see Action 3.1).
- Consider implementing a scaled rebate for income to reach more people who may still need support in affording an e-bike but who are currently not eligible. For example, if an individual makes over the maximum qualifying salary of $41,000, they could receive a smaller rebate for every $5,000 over.

Action 3.4: Require landlords and schools to allow certified e-bikes to be stored on premises.

Since e-bike batteries are required to meet safety standards in Minnesota (see Action 3.1 for additional information), the reduced fire risk has positive safety benefits and makes e-bikes more accessible to young people living in multifamily housing and for those who ride their e-bike to school. To prevent landlords and schools from restricting e-bike storage and recharge and ensure that this is not a barrier to e-bike use and ownership for some youth, the State should explicitly prohibit landlords and schools from restricting e-bike storage on rental property and schools and prohibit landlords from charging tenants extra for the storage of regulated and certified e-bike devices. California has a similar law and provides additional context, allowing the landlord to prohibit the tenant from storing or charging the device battery in the unit if the following requirements are not met.[8]

- The e-bike battery and electric drive system meet the standard per ___(see Action 3.1).
    - The landlord may request proof of the battery device as an image to ensure that it meets the standard requirement.
- The device must be insured by the tenant under an insurance policy covering storage of the device within the tenant's dwelling unit.

This requirement does not apply if the landlord provides the tenant secure, long-term storage for the tenant's e-bike device that the tenant can access at any time free of charge.

In supporting the prohibitions, the guidance recommended in Action 6.1 should provide guidance for e-bike parking at schools and multifamily properties.

Action 3.5: Require private e-bike rental and bikeshare operators to offer discounted rates for low-income riders.

Though e-bikes are a more affordable option than motor vehicles, they are still a significant upfront cost for owners, particularly youth that are purchasing their own devices. Having a place to store an e-bike may also present a barrier to e-bike ownership. Additionally, users may not want or be able to take on the burden or risk of maintaining the device. Because of barrier or choice, many e-bike users rent these devices or use bikeshare instead, regularly or occasionally. Currently, the State has resources to make e-bike ownership more accessible to low-income individuals through the E-Bike Rebate Program. However, this program does not provide assistance for low-income individuals who rent e-bikes or use bikeshare at this time. To make e-bike ridership more accessible to more users, the State should create similar systems of affordability for e-bike rentals and

[8] Bill Text - SB-712 Tenancy: personal micromobility devices.

bikeshare. The State should require private e-bike rental and bikeshare operators to offer discounted rates for low-income riders.

Strategy 4: Ensure clarity and consistency in e-bike riding rules.

Minnesota, as well as most other states, require e-bike operators to follow the same rules as conventional bicycle operators. E-bikes are generally allowed on the same facilities where conventional bicycles are allowed. However, Minnesota allows local units of government and state agencies with jurisdiction of a transportation facility (e.g., roadway, trail, bikeway, shoulder, bicycle path, bicycle trail, shared use path) to restrict the operation of e-bikes on a transportation facility. This has led to inconsistent regulations across the state, causing confusion for e-bike operators, law enforcement, and others. The State should seek to limit the confusion while promoting safe e-bike operation and limiting negative equitable mobility impacts.

Action 4.1: Require jurisdictions to allow e-bikes on trails and facilities where conventional bicycles are allowed.

The default in Minnesota law is to allow e-bikes to operate wherever bicycles are allowed to operate. However, the law allows the Department of Natural Resources and local units of government to restrict the operation of e-bikes if they determine that operation of e-bikes is not consistent with the safety or general welfare of trail, bikeway, roadway, or shoulder users. This is leading to inconsistent local laws and causing confusion among e-bike users and law enforcement. These inconsistencies could act as a barrier to e-bike use, including community bans on e-bikes. The inconsistencies in riding rules between jurisdictions is a major issue with e-bikes, since they are able to travel longer distances than conventional bicycles. The State should remove this discretion from existing law (see MINN. STAT. 85.015 Subd 1d, 85.018 Subd 2d, 160.263 Subd 2b, and 169.222 Subd 6a (2024)). This would keep riding rules consistent across the state and reduce confusion as riders are likely to be unaware that trails may have different rules.

The issue most often cited for restricting e-bikes from certain routes is speed. To address this issue, speed limits could be posted along routes or in areas where higher speed travel is not safe, such as narrow facilities and facilities with many pedestrians and slower-moving travelers.

State Program Recommendations

Strategy 5: Incorporate e-bikes into existing state transportation and safety programs.

The State has existing programs to facilitate safe mobility of travelers. Explicit and purposeful integration of e-bikes and micromobility devices into existing programs will help to institutionalize e-bikes into the transportation planning and programming systems already in place in Minnesota.

Action 5.1: Incorporate e-bike safety into existing statewide safety and mobility programming.

The State should explicitly integrate e-bikes into the various existing transportation and safety programming in Minnesota, especially those that target youth. This includes the Active Transportation Program, Safe Routes to School (SRTS), Toward Zero Deaths, Walk! Bike! Fun!, On My Way, the Statewide Health Improvement Partnership (SHIP), and the Minnesota Strategic Highway Safety Plan (SHSP). E-bikes are applicable to these programs but need more consistent and intentional integration along with the explicit consideration of equitable mobility and safety. Integrating e-bikes into existing programs will also offer avenues to distribute e-bike education and awareness materials as well as help to normalize e-bikes as part of the transportation system.

Action 5.2: Update state fleet purchasing standards and aftermarket recommendations to place a greater emphasis on safety.

Vehicle size and weight play an important role when it comes to crashes with e-bikes, especially when those crashes involve youth who are even harder to detect than adult users. While vehicle technologies vary greatly by manufacturer and vehicle use scenario, it is important to prioritize adopting standards that focus on safety features and technologies that prioritize vulnerable road users. This can include a variety of strategies such as requiring certain Advanced Driver Assistance Systems (ADAS) technologies and prioritizing selecting vehicles with smaller side and forward blind zones to make it easier to see youth e-bike users. For larger vehicles, additional convex mirrors and mirror configurations are a great way to improve visibly.

Aftermarket installation is often a more economically viable option than requiring certain safety features as standard equipment. Intelligent Speed Assistance (ISA) is a particularly effective measure in preventing fleet users from exceeding posted speed limits on roadways. For larger vehicles, side guards (also known as side underride guards or lateral protective devices) on trucks can prevent e-bike users from being pulled under a truck in the event of a crash. Telematics can also be leveraged to route large vehicles away from areas where youth congregate to avoid potential conflict points. Conspicuity enhancements, including adding reflective tape, are low cost measures that can work for any vehicle size to prevent crashes, particularly at dusk or at night.

While the State can start with these requirements on their own fleet vehicles, they can later be expanded to include vehicles that operate on behalf of, or are contracted with, the State. Although the requirements will only affect a very small portion of the vehicles on Minnesota's roads, the State could lead by example and promote adoption on a broader scale.

Furthermore, the State should pass a statewide ISA law to apply to all high-risk drivers to prevent dangerous speeding and the risk that speeding poses to youth. Modest increases in speed can significantly increase crash likelihood and severity of a crash by reducing reaction time, limiting field of vision, and increasing stopping distance. For every 10 mph over the speed limit, the risk of dying in a crash doubles. Vulnerable road users, especially shorter individuals, such as children, who are more likely to go under a vehicle instead of over it, are particularly at risk. At lower speeds, pedestrians and cyclists are more likely to survive, but once speeds enter the 30 to 50 mph range, fatality risk rises steeply. A small subset of chronically high-risk drivers is often responsible for a disproportionate share of dangerous speeding incidents. Traditional penalties, such as fines, points, license and suspensions, frequently fail to deter repeat violators, especially when violations escalate toward extreme or habitual speeding. An ISA requirement for these drivers would provide a targeted, technology-based safety net that limits a vehicle's ability to exceed posted speed limits, reducing both crash likelihood and crash severity. In 2023, 28% of Minnesota traffic fatalities involved a speeding driver. [9]As states confront rising roadway fatalities and the limitations of current enforcement systems, ISA offers a proactive, data-supported approach to protect the public, reduce preventable harm, and ensure that persistent high-risk offenders cannot continue endangering others on the road.

While the State can start with these requirements on their own fleet vehicles, they can later be expanded to include vehicles that operate on behalf of, or are contracted with, the State. Furthermore, the State should pass a statewide ISA law to apply to all high-risk drivers to prevent dangerous speeding and the risk that speeding poses to youth.

[9] https://www.lrl.mn.gov/docs/2025/mandated/251579.pdf

Infrastructure Recommendations

Strategy 6: Update statewide resources and guidance to reflect best practice for accommodating e-bikes.

Designing roadways and bikeways with the safety of all users as the top priority is one of the most effective means of preventing crashes and ensuring a safe transportation system. With the growing prevalence of e-bikes, developing safe and comfortable spaces for e-bikes and micromobility devices to operate is paramount to a safe system. Creating these safe and equitable systems for multimodal travel will require a multifaceted and collaborative approach to planning, funding, and designing facilities for e-bikes.

Action 6.1: Reflect best practices for designing bikeways that accommodate e-bikes in statewide plans, policies, and design standards.

Studies of bicycling trends and e-bike usage in China indicate that expanding the width of bike lanes would allow for a more efficient accommodation of a range of biking speeds, allowing e-bikes to share the facility with conventional bicycles and other micromobility devices. This aligns with newer guidance in the United States from NACTO's 2023 "Designing for Small Things with Wheels," which recommends cities consider the range of micromobility types, including e-bikes and cargo e-bikes, when designing bike facilities and their widths. NACTO provides the following guidance for designing for a variety of micromobility devices:[10]

- Extra Width: Bikeways should be wide enough for all users to ride comfortably and for faster riders to pass. Typical bikes need 4-5 feet, while cargo bikes or large e-bikes may need up to 7 feet.
- Safe Intersections: Intersections should have enough space for micromobility devices to wait, turn, and shift lanes. Protected intersections can separate bikeway users from drivers, promoting safety.
- Smooth Surfaces: Bikeways should be well-maintained with smooth surfaces and gentle slopes (1:20) to prevent falls for devices with small wheels (<10 inches).

In addition to the bikeways, designing bicycle support facilities that also work for e-bikes is also important for expanding access to e-biking and reducing barriers. Bikeways and bicycle support facilities should be easily identifiable with comprehensive wayfinding and intuitive transitions. Signs and markings can help users understand how to use the bikeways and welcome a range of micromobility devices. Key elements for signage and wayfinding include:

- E-bike icons on signs for allowable uses
- Larger letting to accommodate higher speeds (only where e-bikes may be traveling at higher speeds, such as on-road bike facilities)
- Posting of speed limits along facilities that allow e-bikes
- Inclusion of restrictions specific to e-bike use
- Etiquette signage specific to e-bike use

Secure e-bike parking and storage facilities are especially significant for e-bike riders given the expense of e-bikes and their design should be inclusive of the variety of e-bikes and micromobility devices in use. These facilities may include larger bike hubs managed by staff that provide additional services like repairs, or reserved

[10] https://nacto.org/wp-content/uploads/Part-II-Citation-8_-Designing-for-Small-Things-With-Wheels.pdf

lockers intended for short-term rentals during the day. End-of-trip facilities developed in coordination with transit service can support expanded e-bike use and transit use.

The State should proactively consider and address the needs of people using e-bikes in transportation planning efforts, when developing policy, and ensure design guidance reflects best practice for facilitating safe and comfortable e-bike travel. The State should update planning and design guidance resources, considering factors like lane widths, separation barriers, sight lines, and physical separation or increased spacing between modes. Standards for signage and wayfinding as well as end-of-trip facilities should be updated to include references to applicable information for e-bike use.

Action 6.2: Support transportation partners by providing guidance and best practice resources.

Many roadways and trails throughout Minnesota are operated by local and regional agencies. E-bikes should also be considered on non-state roadways. The State should support these agencies in their planning, design, and implementation of roadways and trails that are appropriate for e-bike use, particularly for youth riders, by distributing State resources and guidance, providing technical assistance and trainings, and fostering coordination. The State is well-positioned to offer support for the planning and implementation of e-bike-friendly facilities across the state.

The State should create programs and resources to educate and train local and regional planners, designers, and engineers on industry standard design practices around e-bikes. Once State plans and policies are updated to reflect design standards for e-bike use (see Action 6.1), these resources should be communicated to applicable departments in cities, towns, and counties across Minnesota via factsheets, webinars, and in-person workshops (see Action 1.1).

The State should expand funding for local bicycle projects that accommodate e-bikes through the Active Transportation Infrastructure Grants, which offers funding and technical assistance to improve walking, biking, and rolling.[11] The State could elevate projects that emphasize separated bikeways and support e-bike ridership. Given the expanded trip lengths made possible by e-bikes, the State could facilitate the development of connected, inter-jurisdictional corridors that facilitate longer e-bike trips and/or projects that create a high degree of separation and protection for riders, ensuring low-stress routes for e-bike riders of all ages.

The State should consider developing an emerging transportation technologies program to monitor what new technologies are on the market and address their safety issues and mobility opportunities.

Data Recommendations

Strategy 7: Improve methods for collecting and evaluating e-bike use trends, crash trends, and risk factors.

Data on how people are using e-bikes in Minnesota, including their health and safety outcomes, are largely missing. To inform recommendations for this Study, data from around the world was synthesized to form an understanding of e-bike safety trends, including the nuances in trends between age groups. Having comprehensive, Minnesota-specific data would help transportation professionals understand e-bike use characteristics and safety risks generally and specific to youth to be used to inform policies, practices, and decisions. In addition to the hard data, public input and opinions from Minnesotans around the state should also

[11] Active Transportation Program - MnDOT

be collected and used. The recommended actions for this strategy include addressing gaps in e-bike data as well as lack of broader micromobility data.

Action 7.1: Expand quantitative and qualitative e-bike safety and use data collection methods.

Hospital Data

For this Study, hospital data from e-bike injuries was provided by the Minnesota Department of Health (MDH), which provided information on age of riders, gender, collision types, traffic, admission status, injury severity, regional context, season, and payer type. Because bicycle and pedestrian involved crashes are often both underreported and not often captured in collision reports since they do not include a vehicle, this information is vital to filling gaps in crash data. The hospital data identified that most e-bike crashes do not involve a vehicle, especially crashes involving young riders, which means much of the crash data will not be revealed through state crash reporting. To address this, the State should formalize a system to collect data from hospitals and clinics across the state and incorporate this data into crash analysis methodology and reporting where much of the types of crashes that youth are involved in can be understood. Hospital and EMS run report data is not as easily accessible as crash data, so there is an opportunity for Minnesota to become a leader in this, setting a standard for data collection practices that inform a comprehensive understanding of safety trends and information.

Collision Reporting

The State should collaborate with agencies to enhance standardized collection, tracking, and monitoring of e-bike- and micromobility-involved crashes at the state, local, and regional level. Historically, state and local law enforcement have not differentiated between types of bicycles or micromobility devices in collision reports. With the rise of e-bikes, e-scooters, and other micromobility devices, jurisdictions should begin segmentation in crash reporting. Adding e-bikes and other micromobility devices to the crash classification form will allow for more detailed reporting in the future. The State can support local agencies in adopting this reporting and encourage the use of updated e-bike and micromobility coding. To gather detailed micromobility-specific crash information, the State could outline which attributes law enforcement should collect, which could include type of device (e-bike or e-moto), age of rider(s), and number of riders/passengers. The State could also develop best practices for:

- A micromobility collision template and implementation process for local agency collision reporting.
- A micromobility injury reporting template for local partners.

Additionally, the State should provide training for field officers to enhance data consistency.

Ridership Data

Year-over-year ridership data can paint a broad picture of the overall growth and prevalence of e-bike and micromobility usage. E-bike and micromobility ridership data can also help understand exposure when conducting safety analyses and allows for the comparison between crash frequency, factors, and number of trips. The Minnesota Pedestrian and Bicyclist Data Program consists of a network of automated permanent and portable counters that collect pedestrian and bicycle traffic data to inform state, regional, and local planning and engineering initiatives and to assess important transportation policies and programs. However, the technology to differentiate conventional bikes and e-bikes for automated counting systems is currently lacking. The State should supplement the existing automated count system by conducting manual e-bike volume collection quarterly (once per season) on one weekday and one weekend using screen-line counts. The State is currently

exploring additional technologies that may be able to differentiate between bike types. If and when the technology is available and implementable, the State could consider replacing or supplementing the manual counts with this type of technology. This data would provide an estimated percentage of e-bikes to conventional bikes to use as an assumption when evaluating e-bike data.

Vendor Data

Lime and Spin are two vendors that operate e-bike share in Minnesota. The State should formalize a system to collect ridership data, including age, from all e-bike vendors annually and incorporate this data into analysis methodology.

Engagement Campaigns

Individual lived experience and observations are valuable inputs to measure the performance of e-bike safety strategies and provide context for policy development and decision-making. The public input can also fill gaps in quantitative data and provide additional context for data collected. The State should create an engagement campaign that collects information about e-bike use, both from e-bike users and users of other modes that share the roads and facilities with e-bikes. This campaign should occur annually, incorporate into existing active transportation engagement efforts, and collaborate with local and regional transportation partners. Conducting online and in-person methods should be used to help understand:

- If they are aware of and understand Minnesota regulations
- What type of safety education they have received and the source
- E-bike use impacts on travel behavior and access to opportunity
- Where e-bike riders travel, for which types of trips, and what distances
- What information was provided to them by the retailer and if they used the rebate program to purchase
- What type of e-bike riders rent or own and what were the factors they considered when purchasing
- Crash and near crash locations and causes
- What makes e-bike riders and people who encounter e-bikes comfortable and uncomfortable
- What policies, infrastructure, and programs are most impactful and what changes would improve their experience

Agency Feedback Loops

The State should formalize feedback loops with local and regional partners to understand how education strategies, infrastructure, and enforcement are impacting safety, what resources provided by the State are most effective, and what opportunities for improvement still exist. This effort should be conducted on an annual basis with school district representatives, city and county staff, regional agency staff, retailers, and transportation safety organizations.

Action 7.2: Develop safety performance metrics to measure the roadway safety conditions for e-bikes and other micromobility modes.

Defining safety performance metrics related to e-bike and micromobility crashes is key for establishing the baseline safety conditions and for measuring the progress of the adopted safety strategies over time. The modal-specific safety performance measures can be developed in alignment with the MnDOT's ongoing safety planning efforts. At a minimum, the State should consider documenting and tracking the number of crashes

involving e-bike and micromobility devices by year, severity, jurisdiction, age, and facility type. The State should consider conducting regular, systemic safety analyses to assess e-bike and micromobility safety and risk factors. The e-bike data should be presented along with data for other transportation modes to contextualize e-bike safety in relation to the broader transportation system.

In addition, the State should create an e-bike education and awareness evaluation system to understand what the real and perceived safety issues are, use that information to determine where gaps exist in education and awareness, understand how these gaps differ for youth and adults, and identify how to best address these gaps.

Action 7.3: Incorporate data and evaluation metrics into decision-making related to e-bike travel.

The State should develop a method to synthesize data and feedback from Action 7.2 and present it in a manner to create a better understanding of e-bike use and help to inform policies, practices, and decisions as well as safety programs including the Capital Highway Investment Plan, State Highway Investment Plan, Strategic Highway Safety Plan, Highway Safety Plan, and Complete Streets, Safe Routes to School, Towards Zero Deaths, and similar programs.

Appendix A: Further Research Direction

As e-bike use continues to grow in Minnesota, the State should take proactive measures to understand the data and trends related to e-bike use as well as safety outcomes. This will require a concerted effort to collect, obtain, analyze, and report the data and trends to inform policy, regulation, programs, and infrastructure decisions at the state and local levels.

E-bike Age Restriction

Minnesota does not allow youth under the age of 15 to operate an e-bike (MINN. STAT. 169.222 Subd 6a.e (2024)). Although most regulations related to e-bikes are aligned with regulations for conventional bicycles, the age restriction differs. The e-bike age restriction is likely intended to reduce e-bike crashes and injury severity by limiting e-bike access to youth, who likely lack a comprehensive understanding of the rules of the road. Due to the lack of comprehensive e-bike crash data and use, the safety impacts of the age restriction are not known. However, the age restriction may place undue mobility restrictions on youth and quality alternative transportation for families. The age restriction may limit travel options for youth, especially youth with limited physical ability to pedal a conventional bicycle, youth that need to travel long distances or carry more weight, and youth that do not have consistent access to an individual with a motor vehicle and time to drive them. As new data and studies become available, the State should reassess the opportunity to reduce or possibly eliminate the age restriction on e-bike use to enhance youth mobility.

Sidewalk Cycling in Business Districts

Similar to conventional bicyclists, e-bike operators are prohibited from riding on sidewalks within business districts in Minnesota (MINN. STAT. 169.222 Subd 4 (2024)). The restriction on sidewalk riding within a business district likely reduces conflicts between pedestrians and people on bicycles. However, it is likely difficult for the public to know when they are in a business district. This restriction could also force cyclists to ride where they are not safe or comfortable if bicycle facilities are not available. Young cyclists are often less confident riders and prefer separate and protected bicycle facilities. Being forced to ride in the street may limit bicycle use, especially for less confident cyclists. This law also creates a risk for unequitable enforcement as Black and Latinx riders are far more likely to be stopped by law enforcement. The State should collect, obtain, and assess additional data related to safety risks, mobility, and access for all roadway users in business districts. The State should also engage with stakeholders around the state to assess the issues, challenges, and opportunities for all road users, property owners, and business operators in business districts. The State should use the quantitative and qualitative data to reassess the restriction on sidewalk riding in business districts.

Collect and Use Data

Although much of the data collection and reporting is described in Strategy 7 and Actions 7.1 through 7.3, much of the content is related to further research direction. There are a lot of subjective observations and opinions among transportation and law enforcement professionals, stakeholders, and the public regarding e-bike use and safety, but there is a lack of comprehensive data to understand actual safety outcomes, use characteristics, and

how e-bikes compare to other modes. The State should seek to add objective data to the conversation to create a more comprehensive understanding of e-bike use and safety, especially for youth. The State should standardize a process for data collection and assessment of e-bike safety data throughout the state. The State should harness the existing hospital data from the Minnesota Department of Health (MDH) and dig deeper into both the hospital data and the crash data to create a better understanding of the safety challenges.

In addition to safety data, also the State should collect e-bike use data, especially for youth. Although it is known that e-bike use is rising in general and among youth, much is unknown, such as who is riding e-bikes, what types of devices they are using, why they are riding, where they are going, on what facilities do they ride, and other general use characteristics. The State should seek to answer these questions to inform regulatory, policy, funding, and infrastructure decisions.

The State should also explicitly evaluate existing policies, such as the 15 year old age limit, to determine how they impact youth safety and equitable mobility.

Reporting safety and use data should be compared to other modes of travel to present a holistic understanding of transportation safety and equitable mobility. The anecdotal story is that youth on e-bikes are dangerous. However, youth are far more likely to be injured or killed in a motor vehicle crash than in an e-bike incident, suggesting a need for proportional risk framing in e-bike discussions.