

THE FUTURE OF E-BIKES IN ONTARIO

Stakeholder Consultation

Ministry of Transportation

June 16, 2009

ISSUE

- This government is a strong champion of initiatives that expand mobility options for Ontarians, improve air quality, and promote green technologies.
- Because feedback on the three-year e-bike pilot has been mainly positive, the legislation was amended to permit the continued use of e-bikes after the pilot regulation's October 3, 2009 expiry date.
- Opportunity now exists to improve the safe operation and interaction of e-bikes through regulations based on experience to date/best practices in other jurisdictions.

CURRENT STATUS

- As part of Bill 126, *Road Safety Act, 2009*, MTO proposed an amendment to the Highway Traffic Act (HTA) definition of “bicycle” to include e-bikes. The bill received Royal Assent on April 23, 2009.
- Bill 126 also reflects the majority of stakeholder input received to date:
 - To adopt the federal e-bike definition and clarify that e-bikes must have operable pedals attached and be capable of being propelled only by muscular power.
 - To maintain the current e-bike pilot’s minimum age of 16 and the requirement that everyone operating/riding an e-bike must wear a helmet.
 - To require braking and lighting requirements that are consistent with motorcycles and motor-assisted bicycles (mopeds).
 - To provide Ministerial regulation-making powers to further define both equipment and operating requirements.
- Five of the 24 stakeholders that addressed the Standing Committee on General Government at the Bill 118 and 126 public hearings commented on e-bikes; most did not agree with scooter-style e-bikes being permitted to operate as bicycles.

CONTEXT

- MTO is committed to supporting the use of new vehicle configurations that increase mobility and are environmentally friendly, fuel efficient and safe.
- Safe integration of new vehicle types with pedestrians and other vehicles is a key consideration before any new type of vehicle will be permanently allowed on Ontario roads.
- Ontario was the 9th Canadian jurisdiction to permit e-bikes, but the only one to do so as a pilot project -- provides opportunity to address emerging safety concerns.
- Ontario's current e-bike operating rules, and those across Canada in general, can be considered slightly stricter than those found in the U.S., but more flexible than e-bike rules across the European Union, China and New Zealand.

CONTEXT - E-BIKE BENEFITS

- Environmentally friendly
- Reduced commute times, fuel costs and emissions
- Increased mobility
- No insurance, licence or registration requirements
- Relatively inexpensive alternative mode of transportation
- Expand cycling opportunities for Ontarians who are not able to or are concerned about using conventional bicycles that are solely muscular-powered

CONTEXT – VULNERABLE ROAD USERS

- This government takes the safety of pedestrians and cyclists very seriously.
- The Ministry has undertaken many initiatives to improve the safety of vulnerable road users – mandatory bicycle helmets for children, stricter driver licensing for moped users, higher fines for failing to yield to pedestrians, and demerit points for school crossing violations.
- MTO partners with more than 100 community groups across the province, including police and municipalities, to promote road user and bicycle safety.
- MTO recognizes that the creation of new operating and equipment regulations to address road safety concerns needs to always be balanced with consideration for expanding Ontarians' mobility options to reduce reliance on passenger cars.

CONTEXT – VULNERABLE ROAD USERS (cont'd)

Ontario's Road Safety Annual Report (2006) indicates:

- Cyclist fatalities increased from 21 in 2005 to 32 in 2006, up 52.4% (total injuries decreased over the same period).
- Ontario's cyclist fatality rate was 0.24 per 100,000 population (5.6 % higher than the national average of 0.22).
- Pedestrian fatalities increased from 105 in 2005 to 126 in 2006, up 20% (total injuries increased slightly over the same period).
- Ontario's pedestrian fatality rate was 0.99 per 100,000 population (up from 0.84 in 2005).
- **NOTE:** *These are HTA-reportable collisions; i.e., only collisions involving a bicycle and a moving motor vehicle or a streetcar are required to be reported. These statistics do not include bicycle only, bicycle/ bicycle, or bicycle/pedestrian collisions.*

ONGOING E-BIKE SAFETY CONCERNS

- E-bikes are silent (conventional bicycles generate noise from pedalling and chains);
- Ease with which maximum motor speed can be increased through modifications;
- Absence of standards/requirements for e-bike electrical components; and
- View that e-bikes can be operated by those with suspended licences to circumvent impaired driving penalties.
- Appropriate braking systems.
- No requirement for licensing/registration/insurance.
- Sharing roads and bicycle paths with pedestrians and cyclists, given that certain e-bikes are wider, longer and heavier than regular bicycles.
- Scooter-style e-bikes cause confusion as to where they fit within the regulatory scheme on the part of law enforcement, municipalities and general public, and for other road users in terms of integrating with them; and
- Maneuverability and stability of scooter-style e-bikes may be compromised due to small tires.

REGULATORY OPTIONS TO ADDRESS E-BIKE SAFETY CONCERNS

| NOTE: Text in red font has been already been addressed through Bill 126, Road Safety Act, 2009 | CCMTA BEST PRACTICES | ONTARIO STATUS QUO | EU | Your Position |
|---|-----------------------------|---------------------------|-----------|----------------------|
| Minimum Age | 14 | 16 | -- | |
| Maximum E-Bike Weight (kg) | 50 | No | -- | |
| Maximum Speed (km/h) | 32 | 32 | 25 | |
| Power Cut-Off Speed (km/h) | No | No | 25 | |
| Maximum Power (W) | 500 | 500 | 250 | |
| Pedal-Assist only (P), Throttle (T), or Both (B) | P | B | P | |
| Municipal by-law power to prohibit | Yes | Yes | -- | |
| Prohibit Removable Pedals | -- | -- | Yes | |
| Brake and Lighting Requirements | Yes | Yes | Yes | |
| Braking Distance Requirement | Yes | No | No | |
| Prohibit speed tampering | Yes | -- | -- | |
| Electrical wiring Req'ts | Yes | No | Yes | |
| Battery Recharge Req'ts | -- | No | Yes | |
| Bicycle registration | -- | No | -- | |
| Minimum Wheel Width/Diameter (mm) | 35/350 | No | -- | |
| Compliance label | Yes | Yes | Yes | |
| Helmet | Yes | Yes | No | |
| Licence Requirement | -- | No | -- | |
| Other? | -- | -- | -- | |

MARKET SURVEY OF E-BIKES



NOTE: The above models would likely be permitted under the CCMTA Best Practices, EU, and status quo options

MARKET SURVEY OF E-BIKES



NOTE: The above models would likely ONLY be permitted under the status quo option.

NEXT STEPS

- Face-to-face consultation with stakeholder groups on potential options (*June 16, 2009*).
- Solicit public feedback through posting on Regulatory and Environmental Registry website (*June 18, 2009*)
- Deadline to receive stakeholder submissions and/or comments through the Regulatory and Environmental Registry websites (*July 9, 2009*).
- Communication of new equipment and operating rules for e-bikes (*September/October, 2009*)
- Legislative/regulatory e-bike items are proclaimed and become effective (*October 3, 2009*)

E-BIKE JURISDICTIONAL SCAN

| | Transport Canada | CCMTA | BC | AB | SK | MB | QU | NS | UNITED STATES | UNITED KINGDOM | ERPEAN UNION | AUSTRALIA | China |
|--|------------------|--------|-----|-----|-----|-----|----------|-----|---------------|----------------|--------------|-----------|-------|
| Minimum Age | No | 14 | 16 | 12 | 16 | 14 | 14 | -- | Varies | -- | -- | -- | -- |
| Maximum E-Bike Weight (kg) | No | 50 | No | 35 | No | No | No | No | Varies | 40-60 | -- | -- | 40 |
| Maximum Speed (km/h) | 32 | 32 | 32 | 35 | 32 | 32 | 32 | 32 | 32 | 25 | 25 | -- | 20 |
| Power Cut-Off Speed (km/h) | No | No | Yes | No | No | No | No | No | No | 25 | 25 | -- | -- |
| Maximum Power (W) | 500 | 500 | 500 | 750 | 500 | 500 | 500 | 500 | 750 | 200 | 250 | 200 | 250 |
| Pedal-Assist only (P), Throttle (T), or Both (B) | B | P | P | B | B | -- | -- | -- | No | B | P | P | -- |
| Municipal by-law power to prohibit | N/A | Yes | -- | -- | Yes | - | -- | -- | Varies | -- | -- | -- | Yes |
| Prohibit Removable Pedals | No | -- | No | No | No | No | No | No | Varies | Yes | Yes | -- | -- |
| Brake and Lighting Standards | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | -- | Yes | Yes | -- | -- |
| Prohibit speed tampering | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | -- | -- | -- | -- | -- |
| Electrical wiring Req'ts | No | Yes | Yes | No | No | No | No | No | -- | Yes | Yes | -- | -- |
| Battery Recharger Req'ts | No | No | No | No | No | No | No | No | -- | Yes | Yes | -- | -- |
| Bicycle registration | No | No | No | No | No | No | No | No | Varies | -- | -- | -- | -- |
| Minimum Wheel Width/Diameter (mm) | No | 35/350 | 350 | No | No | No | No | No | -- | -- | -- | -- | -- |
| Compliance label | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | -- | -- |
| Helmet | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Varies | -- | No | -- | -- |
| Licence Requirement | No | -- | No | No | Yes | No | 14 to 17 | No | Varies | -- | -- | -- | -- |

DISCUSSION

- Do you have a preference amongst the CCMTA, EU, or status quo options?
 - If not, is there a hybrid option you would like to propose? And if so, what would your position be on each of the potential regulatory items (e.g., maximum weight, braking distance, etc.)
- Are stakeholder concerns related to weight/size/braking of some e-bikes, particularly scooter-style ones, justified?
 - Are there any additional benefits/safety concerns that you feel we did not address?
- What is a reasonable estimate of the number of e-bikes on Ontario's roads? Of these, what proportion are those that resemble scooters?
- What kind of questions/feedback are customers providing you?
 - Do you feel that customers were fully aware that e-bikes were permitted under a pilot project and that there was no guarantee as to the outcome prior to their purchase?
- Is there any recent published data/research on e-bikes that you feel we should be aware of and that could be shared?
- Are there emerging e-bike technologies/designs/configurations that we should be aware of?
- The CCMTA and EU options would likely make most scooter-style vehicles ineligible for use as e-bikes. However, they may be permitted under the Limited-Speed Motorcycle (LSM) program pending speed/equipment modifications and compliance.
 - Do you feel any of the scooter-style e-bikes available could meet LSM equipment standards? If not, how would you propose the Province address them outside of the e-bike program? What kind of impact would regulations that essentially moved scooter-style vehicles from the e-bike program into the LSM category have on your business?

APPENDICES

DEFINITION

POWER-ASSISTED BICYCLES (E-BIKE)

- (a) has steering handlebars and is equipped with pedals,
- (b) is designed to travel on not more than three wheels in contact with the ground,
- (c) is capable of being propelled by muscular power,
- (d) has one or more electric motors that have, singly or in combination, the following characteristics:
 - (i) it has a total continuous power output rating, measured at the shaft of each motor, of 500 W or less,
 - (ii) if it is engaged by the use of muscular power, power assistance immediately ceases when the muscular power ceases,
 - (iii) if it is engaged by the use of an accelerator controller, power assistance immediately ceases when the brakes are applied, and
 - (iv) it is incapable of providing further assistance when the bicycle attains a speed of 32 km/h on level ground,
- (e) bears a label that is permanently affixed by the manufacturer and appears in a conspicuous location stating, in both official languages, that the vehicle is a power-assisted bicycle as defined in this subsection, and
- (f) has one of the following safety features,
 - (i) an enabling mechanism to turn the electric motor on and off that is separate from the accelerator controller and fitted in such a manner that it is operable by the driver, or
 - (ii) a mechanism that prevents the motor from being engaged before the bicycle attains a speed of 3 km/h.

DEFINITION

LIMITED-SPEED MOTORCYCLES (LSMs)

A limited-speed motorcycle is a motorcycle that:

- (A) can attain a rate of speed of more than 32 km/hr on level ground within a distance of 1.6 kilometres from a standing start;
- (B) has a maximum attainable speed of 70 km/h or less;
- (C) has steering handlebars that are completely constrained from rotating in relation to the axle of only one wheel in contact with the ground;
- (D) has a minimum seat height, when the vehicle is unladen, of 650 millimetres;
- (E) has a minimum wheel rim diameter of 250 millimetres and a minimum wheelbase of 1016 millimetres;
- (F) has a maximum engine displacement of 50 cubic centimetres or less; or,
- (G) if the motorcycle was manufactured on, or after, September 1, 1988, it must have affixed a compliance label required under the Federal Motor Vehicle Safety Act (Canada) that identifies the motor vehicle as a limited-speed motorcycle.

To operate these vehicles on a roadway:

- A limited-speed motorcycle must meet vehicle requirements as defined under the federal Motor Vehicle Safety Act (MVSA). However, in order to use a limited-speed motorcycle, the driver must comply with the operating requirements of a motorcycle under provincial regulations.
- the driver must hold a restricted class M licence for limited-speed motorcycles and mopeds (Class M2 with L condition or M with L condition or a valid motorcycle licence (Class M1, M2 or M));
- the vehicle must be insured, registered and have a valid LSM licence plate;
- the operator must wear an approved motorcycle helmet.

CENTRE FOR ELECTRIC VEHICLE EXPERIMENTATION IN QUEBEC (CEVEQ) STUDY (2000)

SELECTED EXCERPTS:

- “Cyclists generally complained that their e-bikes performed poorly in terms of speed achieved with power assistance from the motor. It was more difficult to reach maintain normal cruising speed than with conventional bicycles.”
- “There is too much weight in relation to its maximum speed; The weight noticeably increases acceleration when you go down hills.”
- “Top priority should therefore be given to reducing the weight of the bicycles.”
- “An e-bike weighs between 27 and 35 kg, which makes it difficult to carry or set in motion from a stationary position.”
- “Weight, not the motor’s maximum power assist speed, was the characteristic cited most often as a reason for feeling insecure.”
- “The cyclists considered brake reliability and performance to be the most important safety components on both electric bicycles and conventional bicycles, although they wanted to see some improvement in these areas.”



Charger



Amigo



E-Bike



Racoon Compo



Velectron



Elektron



Equation



Th!nk Traveller



PAS XP



Diamondback