Micromobility and West Kelowna

INTRODUCTION

The term micromobility device refers to a wide range of vehicles that are human powered, electrically assisted, electrically or gas powered, capable of different speeds and of varying weight. They range in size and weight from small kick scooters, weighing under 5 kilograms (kg) to limited speed motor cycles weighing approximately 100 kg and able to reach speeds of over 70 kilometres per hour. The variety and diversity of micromobility devices available in British Columbia is growing.

Although the province has introduced enabling legislation that will establish rules to govern use of micromobility devices, such vehicles are already commonplace on roads and paths throughout the province. Local jurisdictions have historically set their own, and sometimes conflicting rules, concerning micromobility, creating potential challenges for interoperability between municipalities. To allow for interoperability of micromobility vehicles throughout Central Okanagan, as well as policies that are conducive to local interests, we recommend that West Kelowna work with the Sustainable Transportation Partnership of the Central Okanagan (STPCO) to establish a shared policy position concerning micromobility devices and communicate that to the province.

While the variety of micromobility devices is increasing, electric-assist bicycles stand out as a vehicle that could help West Kelowna to achieve climate, economic and health objectives. In particular, e-bikes

- Offer limited emissions, low noise levels, and flexibility for integration with transit;
- Are generally popular and where available and accessible, are well utilized;
- Tend to support reductions in motor vehicle kilometers travelled;
- If built to a robust standard and with tires that are suited for a variety of surfaces, these bikes are equally appropriate for use in urbanized and rural settings;
- Are comparable to bicycles in terms of their safety record and do not require a special license or extensive training to use safely;
- Allow people to get physical exercise, thus supporting public health objectives;
- Are significantly cheaper to operate than motor vehicles; and
- Have the potential to spur the development of infrastructure designed to serve bicycles and a growing range of low-speed vehicles.

We therefore recommend that West Kelowna consider ways and means to encourage increased use of e-bikes by local residents. There are a number of ways in which West Kelowna could encourage and support increased use of electric assist bicycles as a means of transport,

including, a shared e-bike program, rebates, low-interest loans, voucher with vehicle trade-in and point of sale discounts.

The province of BC has initiated a process to pilot shared micromobility. We recommend that West Kelowna consider embracing adoption of a shared e-bike, but not until a basic network of dedicated cycling routes have been established within the municipality. In the meantime, we recommend that West Kelowna establish a flat rebate of between $400 and $800 in concert with local bike shops to allow residents of West Kelowna to obtain a discount when purchasing a new e-bike.

MICROMOBILITY OVERVIEW

In communities throughout North America, there appears to be a growing variety and diversity of micromobility devices, clouding distinctions between pedestrians, bicycles and motor vehicles. The following summary provides a short overview of the various types of micromobility devices and considers whether they would be appropriate for use in West Kelowna.

Under the authority of the Motor Vehicle Act (MVA), the Insurance Corporation of British Columbia (ICBC) dictates which kinds of vehicles are allowed on roads in the province, and whether insurance, registration and licensing is required. The following Table provides a brief overview.

Table 1: Micromobility Device Overview

Type	**Typical Specs**	**Provincial Regulations**	**Permitted on:** **Major Roads** **Local Roads** **Bike Lane/Pathway** **Sidewalk**	**Insurance, Registration & Licensing Requirements**
Skateboards and Longboards 	Weight: 4.5kg Dimensions: 0.2m x 0.8m Speed: 16kmph Powered: Active	No provincial rules, but many (though not all) municipalities have enacted bylaws regulating their use.	Major Roads - No Local Roads - Some Bike Lane/Pathway - Some Sidewalk - Some	None
E-skateboards (hover-boards, and electric unicycles) 	Weight: 10kgs Dimensions: 0.3m x 0.8m Speed: 25kmph Powered: Internal Battery	Considered a vehicle under BC MVA. Does not meet safety requirements for vehicles.	Major Roads - No Local Roads - No Bike Lane/Pathway - No Sidewalk - No	None

Push scooters 	Weight: 4.5kg Dimensions: 0.2m x 0.5m Speed: 15kmph Powered: Active	No provincial rules, but some municipalities have enacted bylaws regulating their use.	Major Roads - No Local Roads - Some Bike Lane/Pathway - Some Sidewalk - Some	None
E-scooters and segways 	Weight: 12.5kg Dimensions: .4m x 1.2m Speed: 25kmph Powered: Integrated battery	Considered a vehicle under BC MVA. Does not meet safety requirements for vehicles. The province has drafted regulations to permit e-scooters to operate in BC	Major Roads - No Local Roads – No* Bike Lane/Pathway – No* Sidewalk – No* *Except where permitted by municipal bylaws	None
Motorized wheelchairs 	Weight: 100kg Dimensions: 0.6m x 1.2m Speed: 8kmph Powered: Multiple removable batteries	Treated similarly to pedestrians and can operate anywhere that pedestrians are permitted to walk	Major Roads - No Local Roads - No Bike Lane/Pathway - No Sidewalk - Yes	None
Bicycle 	Weight: 10kg Dimensions: 0.7m x 1.8m Speed: 20kmph Powered: Active	Not considered a vehicle but referenced within the BC MVA. Rider must wear a helmet.	Major Roads – Yes, with some exceptions Local Roads - Yes Bike Lane/Pathway – Yes Sidewalk - Some	None
E-bikes (bicycle-style) 	Weight: 30 kg Dimensions: .7m x 1.8m Speed: 32kmph Powered: Battery	Not considered a vehicle but referenced in the BC MVA. Classified as an electric assist bike (requiring pedaling for assist to engage) or as a limited speed motorcycle (with throttle operation). Rider must be 16 years or older and wear a helmet. Gas-powered cycles and electric cycles without attached pedals don't qualify	Major Roads – Yes, with some exceptions Local Roads - Yes Bike Lane/Pathway – Yes, with some exceptions Sidewalk - No	None
E-bikes (scooter-style) 	Weight: 95kg Dimensions: 0.9m x 2m Speed: 32kmph Powered: Internal battery	Considered a vehicle under BC MVA. Rider must be 16 years or older and wear a helmet. Gas powered scooters are prohibited in BC	Major Roads – Yes, with some exceptions Local Roads - Yes Bike Lane/Pathway – Yes, with some exceptions Sidewalk - No	None**
Limited speed motorcycles (mopeds & scooters) 	Weight: 95kg Dimensions: 0.8m x 1.9m Speed: 70kmph Powered: gas or electric	Considered a vehicle under BC MVA.	Major Roads - Yes Local Roads - Yes Bike Lane/Pathway – No Sidewalk - No	Must be registered and insured. Any license sufficient (except learner's)

Image sources: Panel survey images

** Recent ruling by BC has placed the legal standing of these devices in question (Zeidler, 2020)

Source: Adapted from Davidson, Gavin and Tim Davidson, (2020) Readiness for Shared Micromobility: Public Perceptions in Metro Vancouver: Recommendations from Case Studies. Retrieved from https://bikehub.ca/sites/default/files/imce/tl_micromobility_case_studies_hub_cycling_recommendations_20200709a.pdf

One important distinction to consider when examining the above Table, is whether an e-bike is electric assist (requiring pedaling for the electric assist to engage) or electric powered and controlled using a throttle. A recent Supreme Court ruling in BC has clarified the legal standing of electric powered e-bikes. Justice Robert W. Jenkins ruled that a scooter style electric powered e-bike "does not comply with the intent of the legislation" because the pedals are not required to be used for the electric motor to engage. As such, these electric powered e-bikes are defined as limited speed motorcycles and not as a bicycle, and those using such vehicles are required to have a license and insurance (Zeidler, 2020). Cycling advocacy organizations in BC, including HUB Cycling and BC Cycling Coalition, support the position taken by the BC Supreme Court and note that while scooter style e-bikes are generally throttled, that the same can be said of some bicycle style e-bikes. The ambiguity between electric assist and electric powered vehicles poses an ongoing challenge for enforcement and will likely require a legislative change should the provincial government wish to permit a range of electric powered vehicles to operate more widely in BC.

Despite the lack of clear regulations, the variety of micromobility vehicles in operation on streets and pathways in BC is becoming increasingly diverse and the numbers are growing. On any given day in Central Okanagan, one can encounter scooter style e-bikes, e-scooters, e-skateboards, hover-boards and electric unicycles operating on bikeways and streets throughout the region.

All of the micromobility vehicles listed above have the potential to play a role in reducing over-reliance on automobiles in Central Okanagan. Micromobility devices:

- Offer limited emissions, low noise levels, and (all except scooter-style e-bikes and limited speed motorcycles) can offer the flexibility to be carried on public transit;
- Are generally popular and where available and accessible, are utilized as means of transport;
- Tend to support reductions in motor vehicle kilometers travelled; and
- Those that are permitted on designated cycling infrastructure have the potential to spur growth of infrastructure designed to serve bicycles and a growing range of low-speed vehicles.

Bicycles, pedal assist e-bikes, skateboards and push scooters offer the added benefit of allowing people to get physical exercise, thus supporting public health objectives. Yet, of these vehicles, bicycles and pedal assist e-bikes are most appropriate in rural and suburban like West Kelowna where average trip distances tend to be longer, where grades are steep and where micromobility users may be obliged to travel on gravel, dirt and uneven pavement.

Studies suggest that "on average each additional e-bike adoption will reduce around 2,000 vehicle kilometers travelled per year, yielding a net reduction of 460 kg per year in CO2 emissions and a net increase of 21 minutes per week of physical activity" (Bigazzi and Berjisian, 2019). Further, an average motor vehicle costs over $7,000 a year to operate while a typical e-bike costs less than $1,000. If used to replace auto ownership an e-bike pays for itself within the first few months and can deliver thousands of dollars in annual household savings.

These expected benefits support policies to promote e-bike adoption, including purchase incentives and improved riding and parking facilities. We therefore recommend that West Kelowna consider ways and means to encourage and support the adoption and use of electric assist bicycles as a means of transport.

POLICY GUIDANCE

In response to growing use and latent demand for various micromobility options, the provincial government has introduced enabling legislation that will set the stage for rules covering micromobility devices. Such rules should mirror the Society of Automotive Engineers (SAE) taxonomy and classification system for powered micromobility devices (SAE International, 2019) which categorizes various vehicles by weight, size, speed and power source.

Yet local jurisdictions in BC have historically set their own, and sometimes conflicting rules, creating challenges for interoperability between municipalities. To allow interoperability of micromobility vehicles throughout Central Okanagan, municipal governments, and the Sustainable Transportation Partnership of the Central Okanagan (STPCO) should consider developing consistent operating rules, enforcement, and fast and effective means to identify different classes of micromobility vehicles. Further, we recommend that West Kelowna specifically support the adoption and use of e-bikes as a means of transport in West Kelowna due to the range of benefits that individuals and society can realize, including economic, environmental, health and social benefits.

Support for e-bikes in BC

The Province of British Columbia, regional and municipal governments throughout the province have undertaken a number of initiatives in recent years to support e-bike adoption.

Currently the BC government offers sales tax waiver on e-bikes, as well as a rebate of $750 from the SCRAP-IT program when residents of British Columbia scrap their old car and purchase an e-bike worth over $1,200 from an authorized dealer. This program offers an incentive for vehicle owners to replace a higher polluting vehicle with cleaner forms of transportation. Unfortunately, the program has been a victim of its own success and is scheduled to be cancelled in 2022.

E-Bike Share Programs

A number of municipalities have established E-bike Share programs which allow residents and visitors to rent e-bikes for trips that start and end within a defined service area. Both Kelowna and North Vancouver have established programs that are stationless, which means that users don’t need to end their trip as a pre-set location, so long as one ends a trip within the designated service area. In Kelowna, the micromobility share program seeks to support the following objectives:

- Reducing greenhouse gas emissions;
- Supporting the use of active transportation;
- Improving road safety by supporting a “safety in numbers” effect where injury rates drop as ridership increases;
- Improving transportation choice and reducing the cost of living by allowing residents and visitors to reduce their reliance on the private automobile;
- Reducing traffic congestion, noise and other negative impacts associated with motor vehicles;
- Encouraging people to walk, bike and take public transit more often;
- Lowering the cost of living by allowing residents to build a robust set of options around how they move; and
- Building on a culture of active living in the community.

Retrieved from: https://www.kelowna.ca/roads-transportation/active-transportation/shared-bikes-and-e-scooters

Although e-bikes have only recently been added to Kelowna’s micromobility share program, evidence from other programs in North America suggest that e-bikes compete more directly with car trips while also displaying much faster adoption rates than pedal bicycles. For every pedal bike ride, bikeshare operators see more than two electric bicycle rides (Kelowna, 2019). Kelowna’s program also includes electric kick scooters (e-scooters). Preliminary evidence from Calgary, suggests that injury rates for e-scooters appear to be high relative to injury rates for bicycles.

Calgary commissioned an academic study to understand who, how, when, where and why people are being injured on e-scooters. The study involved collecting data from users who visited an emergency room in July, August and September of 2019. This study indicates that every 1,500 e-scooter trips results in at least one (1) emergency department visit. This equates to a rate of 678,000 injuries per 1 billion trips, or 678 injuries per million trips. This is significantly higher than injury rates (emergency department visits) reported from other recent studies as shown in Table 2 (OECD/ITF 2020, P27).

Another way to measure injury rates is based on the number of patients admitted to a hospital bed. In this case the data is also somewhat mixed. Based on the number of patients admitted to hospital beds, Calgary, Austin and Auckland showed injury rates of 10, 29 and 62 per million trips respectively, while not a single bicycle related study reported more than 10 cyclists admitted to hospital for every million trips.

No study of which we are aware, has compared the injury rates of those using e-scooters and bicycles based on a consistent protocol, over the same area and timeframe. Although the safety performance of standing e-scooters relative to other transport modes remains inconclusive, there appears to be enough evidence to suggest that injury rates are generally higher for e-scooters than for bicycles. For this reason and because e-scooters are less appropriate for suburban and rural settings where:

- Road conditions vary;
- Dedicated bikeway networks are not well established;

- Trip distances are generally longer; and
- There are lots of steep grades.

We do not recommend that West Kelowna allow or encourage uptake of e-scooters.

Table 2: Rider injury rates per billion trips

Ref	City, Time	Standing e-scooter	Bicycle	Powered two-wheeler
Injuries - Emergency Department visits per billion trips				
1	Calgary, Alberta, 2019	678,000		
2	Austin, Texas, 2018	203,000		
3	Baltimore, Maryland, 2018-19	87,000		
4	Portland, Oregon, 2018	251,000		
5	Auckland, New Zealand, 2018-19	200,000		
6	United States, 2009		110,000-180,000	
Injuries - Hospital admissions per billion trips				
1	Calgary, Alberta, 2019	10,000		
2	Austin, Texas, 2018	29,000		
5	Auckland, New Zealand, 2018-19	62,000		
7	Germany, 2008-2009		1,000 to 2,000	
8	Rhone, France, 2005-2006		4,000	28,000
9	Toronto, Canada		circa 1,000	
6	United States, 2009		5,000 to 9,000	
7	United States, 2008-2009		6,000 to 10,000	
8	Canada, 2006-2011		6,220 (95% CI 6,110 to 6,330	

[1] City of Calgary (2019) [2] Austin Public Health (2019); [3] Baltimore City (2019); [4] PBOT (2019); [5] Bekhit et al. (2020) [6] CDC WISQARS (2019); [7] Buehler and Pucher (2017); [8] Blaizot et al. (2013); [9] Bassil et al. (2015).

E-Bike Incentive programs

Throughout North America there are a variety of programs offering incentives for those who purchase an e-bike. The following spreadsheet identifies over 50 incentives that are offered by municipal, state and provincial agencies including post purchase rebates, low-interest loans, sales tax waivers, voucher with vehicle trade-ins, and point of sale discount. In some cases, these incentives are coupled with other incentive elements, such as training or rentals, and a number of the programs are income qualified or offer deeper discounts for those with low incomes.

https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit?usp=sharing

Although e-bike incentive programs have increased in recent years, to date there has been limited evaluation of program impacts on e-bike adoption or usage (McQueen, MacArthur, and Cherry, 2019).

Yet, in their study modelling the impact of e- bike purchase incentive programs, Bigazzi and Berjisian (2019) found that flat rebates were a preferred approach for a number of reasons. Flat rebate programs tend to be easier to access and administer than programs that are proportional to income or tiered based on the cost of the e-bike. Flat programs are also preferable from an equity perspective, since they:

- Can be indexed by income level, allowing deeper discounts for those with limited incomes; and
- Do not allow higher rebates for higher priced e-bikes (which are normally purchased by higher income individuals).

Further, because they are simple, flat programs tend to spur uptake, offering appeal to a broad range of people. Bigazzi and Berjisian (2019) further recommend a value of between C$400 to C$800 for the rebate, since that range appears to be adequate to induce prospective buyers to make a purchase.

The District of Saanich is piloting a program that offers a rebate to residents purchasing a new electric assist bicycle. Saanich is the first local government in BC to provide rebates for e-bikes to help residents to use cycling to improve physical health and reduce local greenhouse gas emissions. The program is anticipated to save between 1,000-2,000 tonnes of GHG by 2030. Incentives range from $350 and up to $1,600 for income qualified households. A number of other municipalities in BC have since adopted or are considering adopting such incentives, including, but not limited to City of Vancouver, North Vancouver and Nelson.

CONCLUSION

We recommend that West Kelowna consider establishing a flat rebate of between $400 and $800 in concert with bike shops in Central Okanagan to allow residents of West Kelowna to obtain a discount when purchasing a new e-bike. This approach directs residents toward appropriate micromobility devices and helps to increase demand for vehicles that support

greenhouse gas reductions, personal cost savings, and improved health all while reducing impacts upon West Kelowna's transportation infrastructure and supporting the local economy.

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