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**SFA****BILL ANALYSIS**

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Senate Bill 1016 (as enrolled)  
Sponsor: Senator Bill Bullard, Jr.  
Committee: Transportation and Tourism

**PUBLIC ACT 494 of 2002**

Date Completed: 7-15-02

**RATIONALE**

On December 3, 2001, Dean Kamen, inventor of the first insulin pump and the portable kidney dialysis machine, unveiled his newest invention on *Good Morning America*. Speculation had been building about the nature of Mr. Kamen's most recent innovation after it was revealed that the Harvard Business School Press had offered him \$250,000 to chronicle the making of the "It", as the invention was code-named. Mr. Kamen would say only that new device would change the nature of human transport. Postings on the Internet and in the news predicted that "It" would be a hydrogen-powered hovercraft or teleportation pad. Instead, "It" was the Segway Human Transporter, a two-wheeled, upright, self-balancing vehicle, with a platform on which the rider stands facing forward grasping a narrow set of handlebars. Powered by battery, the Segway is unique because it relies on the rider's slight movements to propel, steer, and stop it. (For more information on how the Segway works, please see **BACKGROUND**.)

In an article in *The New York Times* (12-3-01), Mr. Kamen suggested that the level of excitement about his invention was a signal that people desire a transportation device that fills the niche between walking and driving. While bicycles, motorized scooters, and in-line skates satisfy some of that demand, most cities prohibit two-wheeled vehicles (other than wheelchairs) from sharing the sidewalks with pedestrians. Because of the unique nature of the Segway, some people believe that their use should be regulated.

**CONTENT**

The bill amended the Michigan Vehicle Code to regulate the operation of an "electric personal

assistive mobility device" on a sidewalk, roadway, or crosswalk. Under the bill, electric personal assistive mobility devices are not considered motor vehicles, but a person operating such a device has the same duties as the driver of a vehicle under Chapter 6 of the Code (which contains various traffic laws), except those that are by nature inapplicable.

The bill defines "electric personal assistive mobility device" as a self-balancing, nontandem, two-wheeled device, designed to transport only one person at a time, having an electrical propulsion system with an average power of 750 watts or one horsepower, whose maximum speed on a paved level surface does not exceed 15 miles an hour.

The bill specifies that the governing body of a county, city, village, or township may, by ordinance based on the health, safety, and welfare of its citizens, regulate the operation of electric personal assistive mobility devices on sidewalks, roadways, or crosswalks. A governing body may prohibit operation of the devices in an area open to pedestrian traffic adjacent to a waterfront, on a trail, in a downtown or central business district, and in a historic district. Signs indicating the regulation must be conspicuously posted in the area where the use of an electric personal assistive mobility device is regulated. Further, the Department of Natural Resources may, by order, regulate the use of the devices on all lands under its control. The bill prohibits the use of the devices on Mackinac Island, and on roads with speed limits of more than 25 miles per hour, except to cross the roadway.

Operators of electric personal assistive mobility devices must adhere to many of the same regulations that govern bicycle and

moped operators. Under the Code, moped operators are prohibited from carrying more than one person at a time; the same applies to electric personal assistive mobility device operators. When operating bicycles, low-speed vehicles, and mopeds on roadways, operators must ride as close to the right side of the road as practicable, and may not pass between lines of traffic, or carry any article or package that prevents the driver from keeping both hands on the handlebars, or ride more than two abreast. The bill requires the same of electric personal assistive mobility device operators.

When riding a bicycle on the sidewalk, bicycle operators must yield the right of way to pedestrians and give an audible signal before overtaking and passing them; the bill adds electric personal assistive mobility device operators to this requirement. Under the Code, if a usable and designated bicycle path is provided next to a roadway, a bicycle rider must use that path if local ordinance requires it; under the bill, electric personal assistive mobility device operators have to adhere to the same requirement. Further, the bill requires that electric personal assistive mobility devices have a lamp affixed to the front and a rear reflector if the device is operating on a road between half an hour after sunset and half an hour before sunrise; be equipped with reflective tires or spoke reflectors; and enable the operator to bring the device to a controlled stop. These provisions currently apply to bicycles.

The bill also prohibits the sale of an electric personal assistive mobility device unless it is equipped with tires having reflective sidewalls or with wide-angle prismatic spoke reflectors.

A person who violates the bill is responsible for a civil infraction.

MCL 257.13c et al.

## **BACKGROUND**

Dean Kamen developed a technology that his company has labeled "Dynamic Stabilization", which is the core of the Segway Human Transporter. Dynamic Stabilization enables the Segway to respond sensitively to the body's movements through the use of five gyroscopes, two tilt sensors, and 10 computers that monitor a user's center of

gravity about 100 times a second. When a user leans slightly forward, the Segway moves forward; when the user leans back, the Segway moves back. A "yaw" on the right handlebar turns the vehicle to the left, right, or in a circle; the device has a zero turning radius. A digital key pressed into a pad on the left handlebar turns the device on and off, much like an ignition key on an automobile. The Segway's tires are puncture-proof; some models come equipped with snow tires for slip-proof riding on snow and ice.

Currently, the Segway is available only for commercial use. The United States Post Office has been using 20 units on mail routes in Concorde, New Hampshire, and Fort Myers, Florida. The City of Atlanta purchased several dozen Segways for Federal employees who commute short distances, and the Boston Police used several Segways to patrol the April 2002 Boston Marathon. Amazon.com, G.E. Plastics, and Michelin North America have been using the Segway in their warehouses and corporate campuses. A consumer model is expected to debut in November or December 2002 for \$3,000.

## **ARGUMENTS**

*(Please note: The arguments contained in this analysis originate from sources outside the Senate Fiscal Agency. The Senate Fiscal Agency neither supports nor opposes legislation.)*

### **Supporting Argument**

Traffic congestion in cities is increasing every year as more people move to urban centers. Reportedly, soon over 80% of the world's population will be living in cities. This congestion frustrates drivers who can spend 20 minutes in their cars traveling four miles. More significantly, automobile use contributes to the "greenhouse effect" and increases United States dependence on foreign oil. The Segway Human Transporter would provide an economical, environmentally friendly solution to traffic congestion, pollution, and gasoline consumption. Because the Segway is electric, it produces no pollutants, and can travel 15 miles on a six-hour charge. (Its battery is recharged when plugged it into a standard wall outlet.)

The Segway Human Transporter, however, is not intended to replace the automobile. Rather, it is meant to extend the distance people are willing to walk—from a few blocks

to a few miles. Its use on sidewalks should be permitted because its size, purpose, and speed closely resemble those of a pedestrian, not an automobile. Mr. Kamen has referred to the Segway as a "magic sneaker" because its "footprint"—the space it inhabits—approximates that of an average adult male, and because it so quickly and sensitively responds to human movement. Permitting its use on sidewalks will encourage more people to commute or travel short distances outside their automobiles, thus saving time, reducing emissions, and conserving gasoline.

### **Opposing Argument**

Mixing pedestrian traffic and motorized vehicles on sidewalks presents several safety concerns. First, the bill does not require a minimum age to operate the Segway, nor does it require Segway operators to be licensed or insured, to wear a helmet, or to receive instruction. In addition, because the Segway's average speed in pedestrian traffic is eight miles an hour--about three times the average walking speed--collisions between the device and walkers seem inevitable.

**Response:** The Segway's gyroscopes and sensors enable it to stop the instant the rider leans back slightly. In the event a pedestrian stepped in front of a Segway rider, the Segway would stop before a collision occurred. There is no chance of being "run over" by one of these devices.

### **Opposing Argument**

The bill is not necessary, because the Segway is both too bulky and too expensive to become a popular alternative method of transit. At \$3,000 and about 65 pounds, it is not feasible that an owner would chain one to a bike rack or haul it upstairs to an office or apartment. Similar claims of revolutionizing transit have been made about other inventions, such as the electric bicycle, but those devices have not caught on. The bill is unnecessary legislation.

**Response:** According to the *Lansing State Journal* (4-6-02), 12 states have passed legislation making the use of the Segway legal on sidewalks; in five other states, according to a Segway company representative, similar legislation is waiting to be enacted; and Segway bills have been introduced in 22 other states. Like the price of DVD players, handheld computers, and countless other new technologies, the cost of the Segway should drop considerably with each passing year, thus encouraging more people to purchase

them. The legislation is necessary to regulate the Segway's use.

Legislative Analyst: Claire Layman

### **FISCAL IMPACT**

The bill will have no fiscal impact on State or local government.

Fiscal Analyst: David Zin

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This analysis was prepared by nonpartisan Senate staff for use by the Senate in its deliberations and does not constitute an official statement of legislative intent.