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## A BILL FOR AN ACT

RELATING TO TRANSPORTATION.

**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:**

1           SECTION 1. The legislature finds that vehicular  
2 transportation within the State continues and promises to be a  
3 crucial problem for all residents in Hawaii. Certain areas on  
4 each island continue to suffer from debilitating vehicular  
5 congestion on a daily basis. Various solutions have been  
6 proposed over the years including fixed or light rail mass  
7 transit, improved bus rapid transit management systems, ferries,  
8 carpooling, jitneys, high occupancy vehicle lanes, and zipper  
9 lanes on Oahu. However, road pricing is one proven approach  
10 that has not been considered or implemented.

11           Road pricing generally means that motorists pay directly  
12 for using a particular roadway or for driving in a particular  
13 area. The term "value pricing" is also used but is actually a  
14 marketing term emphasizing that road pricing can directly  
15 benefit motorists through reduced congestion or improved  
16 roadways.

17           Economists have long advocated road pricing as an efficient  
18 and equitable way to pay roadway costs and encourage more



- 1 efficient transportation. Road pricing has two general  
2 objectives - revenue generation and congestion management.  
3 Different types of road pricing currently in use include:
- 4 (1) Toll roads that charge users a fee to use roads that  
5 are usually privately-built;
  - 6 (2) Congestion pricing (or value pricing) that vary the  
7 toll charged during different times of the day to  
8 reduce peak-period vehicle trips;
  - 9 (3) HOT (high occupancy toll) lanes that restrict use of  
10 certain lanes to vehicles with high occupancy;
  - 11 (4) Cordon (area) tolls that charge a fee to drive in a  
12 particular area, usually a city center;
  - 13 (5) Road space rationing (a form of congestion pricing)  
14 that rations the number of peak period vehicle-trips  
15 or vehicle-miles per paid ticket that may be traded or  
16 resold to other drivers;
  - 17 (6) Vehicle use fees that use distance-based charges such  
18 as mileage fees; and
  - 19 (7) Electronic road pricing.

20 Perhaps the situation most closely associated with road  
21 pricing is that in Singapore, which pioneered a road pricing  
22 operation more than thirty years ago in 1975. It began as a



1 manual scheme based on paper permits that were used only during  
2 the morning rush hours. Since then, it has evolved into an  
3 electronic version that operates throughout almost the entire  
4 day.

5 Originally, there were two manual road pricing schemes in  
6 Singapore. The first was the area licensing scheme, which  
7 lasted twenty-three years. The second manual system was the  
8 road pricing scheme, which was implemented progressively on  
9 expressways from 1995. Both manual systems were replaced in  
10 1998 by the current electronic version called the electronic  
11 road pricing system. Basically, both schemes required motorists  
12 to buy paper licenses prior to going through certain control  
13 points set up on the roads.

14 The area licensing scheme began in 1975 and covered the  
15 more congested parts of the central business district, which was  
16 designated the "restricted zone". The size of the restricted  
17 zone increased from about 1,510 to about 1,795 acres over time  
18 as more land turned commercial and land was reclaimed from the  
19 sea. Prior to the end of the scheme in 1998, the restricted  
20 zone was demarcated by thirty-one overhead gantry signs at its  
21 control points.



1 To get into the restricted zone during the restriction  
2 periods, non-exempt vehicles needed to display an area license.  
3 Monthly licenses were sold at post offices, while daily licenses  
4 were sold at roadside sales booths located at the approach roads  
5 to the restricted zone, gas stations, post offices, and  
6 convenience stores.

7 Licenses were printed in various shapes for different  
8 classes of vehicles and were color-coded monthly. Traffic  
9 personnel merely observed whether vehicles displayed the  
10 licenses. Violating vehicles were not stopped, but their  
11 licenses were recorded and their owners sent a summons.

12 The area licensing scheme originally affected only weekday  
13 morning rush hours until 1989 when it extended operation to  
14 weekday evening rush hours. In 1994, hours were further  
15 extended to cover weekday and Saturday non-rush hour periods.  
16 License fees increased to adjust for inflation and to control  
17 the gradual increase in the number of vehicles entering the  
18 restricted zone. Starting at about \$1.74 per day for a license  
19 in 1975, the fee went up to about \$2.90 per day in 1980. In  
20 1989, it was cut back to \$1.74.

21 Starting in 1994, there were two levels of fees - all-day  
22 use and non-rush hour only use. Fees for the latter were pegged



1 at two-thirds of those of the former. For cars, the daily  
2 license fees were \$1.74 and \$1.16, respectively.

3 The other manual road pricing scheme in Singapore was known  
4 as the road pricing scheme. This was designed for use on  
5 expressways and was first implemented on June 1, 1995. Meant as  
6 a pilot scheme to introduce the idea of road pricing at other  
7 congested points outside the restricted zone, the road pricing  
8 scheme required motorists who passed through the two gantries to  
9 display a different category of license, although area licensing  
10 scheme licenses valid for the day or month were also acceptable.  
11 Starting with two control points operating for two hours during  
12 the morning rush hours, this was subsequently extended to three  
13 other locations before its replacement with the electronic  
14 version in 1998.

15 Both manual schemes had drawbacks, not the least being that  
16 they were extremely labor-intensive. With the advent of  
17 technology, the electronic road pricing scheme was launched in  
18 pilot form in 1996 and replaced both the area licensing scheme  
19 and the road pricing scheme.

20 Under the new electronic road pricing scheme, vehicles  
21 wishing to use priced roads must be fitted with transponder  
22 units. Foreign cars may either rent a transponder or pay a



1 daily flat fee (S\$5 (\$3.42 in U.S. dollars) as of 2007). Stored  
2 value smart-cards, marketed by local banks for multiple uses are  
3 inserted into the transponders. Different color-coded  
4 transponders are produced for different classes of vehicles.  
5 Vehicle detectors and enforcement camera systems are installed  
6 on gantries at various points. Data are continuously sent to a  
7 control center. The control center itself monitors, times, and  
8 synchronizes all road gantries and processes all financial and  
9 violation transactions. The user merely inserts the smart-card  
10 into the transponder and when the vehicle passes through a  
11 gantry, the appropriate charge is deducted from the smart-card  
12 and the amount is displayed on the transponder. Usage charges  
13 vary based on time and location and no charge is imposed during  
14 off-peak hours. Each transponder also has a pre-defined low  
15 balance indicator, alerting the user to replenish the balance.  
16 If there is an insufficient balance, no smart-card inserted, or  
17 no installed transponder, enforcement cameras identify the  
18 offending vehicle, and the offender receives a request for  
19 payment.

20 Traffic volume into the central business district decreased  
21 by about ten to fifteen per cent during electronic road pricing  
22 system operation hours, as compared to the previous area



1 licensing scheme. The major difference is that a charge is  
2 levied for each boundary crossing while the area licensing  
3 scheme charge allowed multiple entries for that day. Hence, the  
4 electronic road pricing system affects the behavior of motorists  
5 who make multiple trips into the central business district,  
6 estimated to be about twenty-three per cent of trips under the  
7 area licensing scheme. Many of these motorists have now cut  
8 down on their number of trips into the district. For example,  
9 many office workers eschew their cars to attend mid-day meetings  
10 or lunches and rely on public transport.

11 Singapore has reported that road traffic has decreased by  
12 nearly twenty-five thousand vehicles during peak hours with  
13 average road speeds increasing by about twenty per cent. Within  
14 the restricted zone itself, traffic has gone down by about  
15 thirteen per cent during the system's operational hours with  
16 vehicle numbers dropping from 270,000 to 235,000. Carpooling  
17 has increased while average road speeds for major roads have  
18 remained the same despite rising traffic volumes over the years.

19 Singapore's electronic road pricing system is fair,  
20 convenient, and reliable - fair because those who cause the most  
21 congestion pay the most, convenient because there is no need to  
22 buy daily permits, and reliable because the fully automated



1 system minimizes human error. Perhaps the next innovation in  
2 Singapore's electronic road pricing system will be the  
3 replacement of the current relatively inflexible system of  
4 physical gantries by a more flexible global positioning system  
5 to monitor road usage.

6 The purpose of this Act is to require the department of  
7 transportation to conduct a feasibility study on implementing a  
8 version of an electronic road pricing system in Hawaii.

9 SECTION 2. (a) The director of transportation shall  
10 conduct a feasibility study on implementing a version of an  
11 electronic road pricing system in Hawaii. The study shall  
12 include at least the following:

- 13 (1) A review of electronic road pricing as implemented in  
14 other jurisdictions such as Singapore and London;
- 15 (2) The feasibility of initially implementing a small-  
16 scale pilot program;
- 17 (3) Identification and evaluation of all potential zones  
18 within the State where implementation of electronic  
19 road pricing may be advantageous;
- 20 (4) Identification and evaluation of all technological  
21 requirements to implement electronic road pricing,  
22 depending on the version to be implemented, including





- 1 a pricing program based on global positioning system  
2 technology instead of a gantry-based system;
- 3 (5) Identification and evaluation of all non-technological  
4 requirements and issues that need to be resolved to  
5 implement electronic road pricing, such as rights-of-  
6 way, use of eminent domain, cost and financing,  
7 personnel, effects on traffic patterns including  
8 public acceptance, and possible effects on fixed rail  
9 system travel on Oahu;
- 10 (6) Identification and evaluation of desired, intended,  
11 and possibly unintended effects of implementing  
12 electronic road pricing;
- 13 (7) Evaluation of the cost effectiveness of implementing  
14 electronic road pricing;
- 15 (8) Tentative timetable for implementing electronic road  
16 pricing; and
- 17 (9) Any other issues deemed necessary or relevant by the  
18 director of transportation.
- 19 (b) The director of transportation shall submit a written  
20 report of findings and recommendations, including any necessary  
21 proposed legislation, to the legislature no later than twenty  
22 days prior to the convening of the regular session of 2009.



1 SECTION 3. There is appropriated out of the general  
 2 revenues of the State of Hawaii the sum of \$ or so much  
 3 thereof as may be necessary for fiscal year 2008-2009 for a  
 4 feasibility study on implementing a version of an electronic  
 5 road pricing system in Hawaii.

6 The sum appropriated shall be expended by the department of  
 7 transportation for the purposes of this Act.

8 SECTION 4. This Act shall take effect upon its approval  
 9 except that section 3 shall take effect on July 1, 2008.

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INTRODUCED BY:

*[Handwritten signature]*  
 P-4. L -  
 Cindy Evans  
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 Maif See  
 Tahi  
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JAN 22 2008



**Report Title:**

Electronic Road Pricing; DOT Feasibility Study; Appropriation

**Description:**

Requires the department of transportation to conduct a feasibility study to implement electronic road pricing in the State. Report to legislature. Appropriation.

