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TECHNOLOGY

Importing a Decongestant for Midtown Streets

By KEN BELSON

HAWTHORNE, N.Y.

WHEN Mayor Michael R. Bloomberg proposed a congestion pricing plan last year, some residents of car-averse New York might have thought he was trying to cap the cost of nasal remedies.

But thanks to the attention — and controversy — the proposal sparked, New Yorkers and the rest of the country soon learned that congestion pricing was a catchall term for plans that charge drivers to enter crowded city centers and busy highways.

Mr. Bloomberg's plan to unclog Midtown Manhattan streets and raise money for mass transit would make New York the first city in the United States to introduce congestion pricing. The mayor took cues from London, Stockholm and other foreign cities now trying this solution.

For the most part, those pricing systems have worked as promised, cutting traffic, generating billions of dollars in fees and making drivers consider alternatives to using their cars. Encouraged by the results, London plans to introduce new charges based on a vehicle's carbon emissions; Singapore is going a step further, using the toll and traffic data it collects to predict vehicle flow patterns with technology developed at I.B.M.'s research center here.

Unlike a highway where access is limited to a small number of entrances, a tollbooth network would be impractical for Midtown's avenues and cross streets. The New York plan would rely on the E-ZPass readers already in millions of cars; cars without the radio-frequency E-ZPass tags would be identified by video cameras for billing.

But first the City Council and State Legislature would need to approve the plan, which would charge car drivers a daily fee of $8 (or $21 for trucks) to enter Manhattan below 60th Street between 6 a.m. and 6 p.m.; drivers can re-enter the zone that day without paying again.

If the plan is approved by March 31, the city would receive $350 million in federal aid. Still, legislators representing New York's suburbs and other boroughs have expressed serious concerns that the fees are an unfair burden on drivers from their districts — though the plan is expected to raise about $500 million a year to help expand mass transit in some of those areas.

Even if the plan is scuttled this time, New York will eventually adopt some form of congestion pricing, traffic experts say.

“Road space is a scarce resource and congestion is hampering our economy, so you’re going to see a need for more mass transit investment,” said Kate Slevin, executive director of the Tri-State Transportation Campaign, a New York-based group that advocates for public transportation. “We’re heading towards a user-fee mentality.”

While New York officials try to win acceptance for their plan, London is forging ahead. In the five years since its introduction, the system has reduced traffic 21 percent, the subway has carried record numbers of customers and bus and bicycle ridership has jumped by about 45 percent.

London’s system, which uses video cameras rather than radio tags to identify cars and bill drivers, brought in about $429 million last year, but 42 percent of that money was used to collect the fees. That rate is about four times that of the E-ZPass system, according to Jonathan Peters, an assistant professor of finance at the College of Staten Island, who said that using video cameras to track and bill drivers increased costs.

Undeterred, London has continued to expand its plan. In October, vehicles with large engines will be charged a new, higher fee based on carbon dioxide emissions. One maker of powerful cars, Porsche, has begun a legal challenge, saying it is unjust to penalize drivers for the type of car they own.

Transportation analysts add that the higher fees may alienate drivers who have largely accepted that congestion charges have made roads less crowded.

“People can see a tangible benefit with congestion pricing, but it’s another leap of logic to say what kind of car they should be driving,” said Scott Le Vine, a transportation consultant at the Center for Transport Studies at Imperial College London.

The Swedish Road Administration has taken a more conservative approach in Stockholm. There, congestion pricing was introduced as a seven-month trial. Convinced of its utility, voters then permanently approved it.

“If you confront people with a congestion tax, most people will say no,” said Louise Jarn Melander, a spokeswoman for the road administration’s congestion tax department, who said traffic into the city center fell 22 percent during the trial. “But if people saw that traffic was reduced and not hard to handle, they will be more in favor.”

Stockholm’s system depends almost entirely on license plate cameras, a method chosen because Swedish law requires that the agency have photographic evidence when assessing taxes. The plate numbers are read from the photos by an optical character recognition program developed by I.B.M., which provided a demonstration of a similar system at its Industry Solutions Lab here. According to Ms. Melander, the system reads plates accurately 93 percent of the time; plates that can’t be read by the software are entered manually.

Three-quarters of drivers pay by having their bank account debited, while others can pay online or at retailers like 7-Eleven. The fee is based on the time of day, increasing for peak travel hours.

The proportion of alternative-fuel cars, which are exempt from fees, entering the city has risen to 10 percent, from 3 percent during the trial. Cars with foreign plates are also exempt.

In a taste of the future, Singapore, which has dabbled in congestion pricing perhaps longer than any city, is

working with I.B.M. and others to develop technology that will predict traffic up to an hour in advance. The system fuses congestion fee data with information from video cameras, G.P.S. devices in taxis and sensors embedded in streets.

“It is the aspiration of most traffic authorities in the world to predict traffic conditions in advance and use this information to manage traffic conditions before they occur,” said Kian Keong Chin, a director at Singapore’s Land Transport Authority.

The algorithms I.B.M. developed could help the authority set traffic signals, plan for big events, alert drivers about conditions ahead and set prices for road use. Using this combination of technology and public policy to develop a variable pricing system may prove more successful in modifying consumer behavior than previous attempts to reduce traffic.

“Predicting traffic helps you predict pricing,” said Laura Wynter, an I.B.M. researcher working with the authority.

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