THE PRICE OF LIFE IN THE FAST LANE

Since the 1969 opening of the bus-only lane on the Shirley Highway outside Washington, D.C., high-occupancy vehicle (HOV) lanes have become a staple feature of American metropolitan transit systems. But as congestion has continued to mount along many of the nation's metropolitan transit corridors, transportation officials have begun paying increasing attention to the idea that the relative luxury of speedy travel in an HOV lane is a benefit that solo drivers will pay to enjoy. The result, in several metropolitan areas, has been the evolution of HOV lanes into HOT (high-occupancy toll) lanes. Essentially, the operators of these systems are selling unused capacity in HOV lanes to drivers who are willing to pay for it. Experience to date suggests that HOT lanes and other such "congestion pricing" methods may hold promise as tools for unclogging roads and improving air quality.

At a time when political leaders are loath to hike the gasoline tax to pay for highways and bridges, the appeal of such alternative strategies as HOT lanes may be growing broader. But, cautions Michael A. Replogle, transportation director for Environmental Defense, the value of congestion pricing as a device that will reduce pollution and provide greater transit options for the public depends heavily on how it is administered. The key element for truly effective congestion pricing, he says, is dedication of HOT lane fees to public transit and public health purposes in the same transit corridor. "If it's well done, it can be a real win–win kind of strategy that can improve public health, improve environmental performance of both existing and expanded transportation

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systems, and give people better travel choices that save them time and money," Replogle says.

If it's done poorly, he suggests, congestion pricing would be operated as a mere revenue source to fund the construction of yet more highways. He criticizes a bill, H.R. 1767, that has been introduced by Congressman Mark Kennedy (R–Minnesota) for doing just that. The so-called Freeing Alternatives for Speedy Transportation bill would prohibit the use of fee revenues to pay for public transit or public health improvements. "The tolls could only be used for short-term financing of expanding road capacity," Replogle says. "The net effect would be to increase traffic, sprawl, and pollution growth without managing the environmental and health problems caused by that growth."

HOT Lanes: Boon or Bane?

Two of the congestion pricing systems that receive the most attention (in large part because they've been around the longest) are in Orange County and San Diego County, both part of California's "FasTrak" network of electronic toll installations. The San Diego system covers eight miles of Interstate 15 in San Diego County and generates about $10,000 in revenue a day from the 5,000 or so drivers who pay to use the HOV/HOT lanes. Heather Werdick, associate transportation planner for the San Diego Association of Governments (SANDAG), the regional planning agency that administers FasTrak, says that annual revenues come to about $2 million, about $1 million of which is used to fund express bus service in the corridor.

SANDAG opened its HOT lane in October 1996, charging a flat $50 per month for a sticker that granted drivers access to the lanes, which are separated from the rest of the highway. "Then we started looking at per-trip pricing," Werdick says, "and we came up with this dynamic pricing system where the toll rates in the express lanes would change based on traffic volumes in the express lanes." The new system required sophisticated electronic technology to first set the toll every six minutes by monitoring the congestion in the express lanes and sending that price to a large screen at the lanes' entrance point, and then identify users via transponders that they must carry in their cars in order to use the system. The rates range from $1 at times of lower congestion to a peak of $4, usually in late-afternoon peak travel times. Payment is extracted from users' credit cards. "So there's no cash involved," Werdick says. "You just get on the lanes, and you don't stop."

She says the system has been successful and popular: since its beginning, the traffic in the general-purpose lanes has risen by about 10%, but the traffic in the HOV/HOT lanes has increased by 140%. In November, SANDAG began a project to extend FasTrak along the full 20 miles of the I-15 corridor, coupled with a Bus Rapid Transit system that the HOT lane fees will help to subsidize.

The Orange County system, a 10-mile stretch along State Route 91, is similar, but uses a set time-of-day pricing system instead of a dynamic, electronically generated one. But like San Diego's system, Orange County's program operates without toll booths and relies on transponders and credit cards to charge users. Edward Sullivan, a civil and environmental engineering professor at California Polytechnic State University, headed a study of that system that was commissioned by the California Department of Transportation and the Federal Highway Administration. "I would definitely characterize [the Orange County HOT lanes] as a successful experiment," Sullivan says today. "It has shown that you can use congestion pricing to optimize the use of the corridor."

But for a time the Orange County plan also showed how a HOT lane system can fall short of producing broad public benefits if it's not set up properly. The problem with this plan was that it was initially also an experiment in privatization. Strapped for adequate road building funds, the California legislature passed a law enabling the California Transportation Department to entertain proposals for up to four privately funded highway projects. The SR-91 HOT lane plan was the first (and, to date, the only) project to be funded privately. The state awarded a franchise to an entity called the California Private Transportation Company, a consortium of three companies, to build a roadway down an SR-91 median that had been built extra wide for the purpose of future additional lanes. According to Sullivan, the project worked fine for a while—for the first couple of years, congestion went down significantly, and everyone was happy. But in 1998, due to general growth in the area and a new link to another busy highway, the congestion levels in all the lanes had nearly returned to pre–HOT lane days.

The problem, Sullivan says, was that in giving the contract to the California Private Transportation Company, the state had assented to the company's requirement for a noncompetition agreement. The agreement stipulated that the state highway department would not do anything that might damage the private company's business—such as build a new roadway or other improvements to relieve congestion along its own parallel highway.

The public was outraged. Public pressure, coupled with several internal developments within the three parent companies (one had been bought out by a telecommunications firm that had no interest in running a highway) finally led them to get out of the business. Early this year, the Orange County Transportation Authority took over the HOT lanes, and the highway department is currently planning improvements that should help mitigate the traffic

congestion. Furthermore, says Sullivan, once the transportation authority recoups the money it spent on buying the system, it probably will earmark some of the toll revenue to subsidize its existing public transit system.

Other questions have been raised about the "regressive" nature of HOT fees—that is, although everyone pays for road use through the gasoline tax, the kind of two-tier system created by HOT lanes benefits wealthier people because they are better able to afford the tolls. Replogle argues, however, that if HOT lanes monies go into funds for public transit and other strategies that benefit low- and moderate-income people, the inequitability is ameliorated.

Questions about Air Quality

Although well-operated congestion pricing systems may benefit public transit by earmarking toll revenues for that purpose, does it follow that less congestion has a direct impact on air quality? Not necessarily, says Kenneth Adler, manager of the Transportation Policy and Evaluation Group in the Environmental Protection Agency (EPA) Office of Transportation and Air Quality. "When we look at the amount of air pollution coming from cars," he says, "one of the determinants is how fast the cars are going"—the so-called speed correction factor. Essentially, he says, the speed correction factor refers to emissions per mile traveled. While a car moving very slowly along a congested roadway is a bad air polluter, it doesn't follow that emissions decline steadily the faster a car speeds up. At a June 1999 agency workshop on estimating highway vehicle emissions, David J. Brzezinski of the EPA Office of Mobile Sources reported that increasing a car's speed from 7 to 15 miles per hour leads to a substantial reduction in nitrogen oxide emissions. But increasing the speed above 15 miles per hour tends to increase the emissions. In other words, it's good for air quality to increase traffic speed a little, but not too much.

Analyses of the effects of the two California HOT lane systems on air quality have not produced any conclusive findings. "Our analysis found that there really was very little difference in terms of emissions effects," Sullivan says of the Orange County corridor. "But our methodology was old." A new method known as the comprehensive modal emission model better measures the effects of vehicle movement on emissions, and Sullivan believes it is ideally suited to measure the effects of HOT lanes. "My guess is that it would show that we're better off with the HOT lane than with a normal HOV lane or a facility without any managed lanes at all," he says. "If you can take a big part of your traffic and remove it from stop-and-go conditions, you should see a significant improvement in emissions."

Charles Komanoff, an energy economist and director of the Bridge Tolls Advocacy Project, which favors an electronic toll system at four East River bridges in New York, is an ardent advocate of user fees to reduce congestion and emissions, but he's not confident that congestion pricing offers strong environmental promise. He believes that a straight "vehicle miles traveled" fee is an ideal and equitable way for all drivers to fund more of the transportation system and to encourage them to use their cars less. Such a fee could either replace a registration or "smog check" fee, or be used to reduce sales taxes that are now dedicated to transportation. Komanoff is ambivalent about HOT lanes and other forms of congestion pricing because at the same time that some drivers are encouraged to stay away from congestion or higher peak-period tolls, others are drawn to use the HOT lanes because they are relatively less congested than other options.

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Congestion suggestion. New pricing schemes that allow drivers to pay a premium for avoiding traffic congestion are being touted as a traffic jam solution. Whether they will become a driving force for environmental benefits remains to be seen.

Although congestion pricing's potential for improving air quality remains iffy, more HOT lanes are opening around the country. The University of Minnesota's Hubert H. Humphrey Institute of Public Affairs maintains a website, **http://www.valuepricing.org/**, that keeps an up-to-date list of current and pending congestion pricing projects. In addition to the two California HOT lane systems, other congestion pricing systems are currently operating in Houston, Florida's Lee County, and the New York/New Jersey area. The site also lists 22 other pending projects.

The further proliferation of these types of programs is statutorily restricted under the Transportation Equity Act for the 21st Century. Under that law, state and local agencies can apply tolls to interstate highways only if they qualify as a pilot project under the Federal Highway Administration's Value Pricing Pilot Program, which was created to provide funding for innovative pilot programs (lasting three or fewer years) to reduce highway congestion. Replogle believes that in time that restriction will ease. In fact, he says, the Bush administration supports congestion pricing and contains a measure in its current proposed transportation bill to authorize a broad new program that would grant states stronger authority to apply tolls to new or existing highways. But the administration and the House and Senate authorizing committees are far apart on whether to raise gas taxes or borrow to pay for a new transportation bill, he says, so a new transportation bill might not get passed until after next fall's general election.

As Replogle testified before the congressional Joint Economic Committee at a 6 May 2003 hearing on ideas for reducing congestion, the time has come for more innovative and equitable transportation funding mechanisms. "Across America, we are on a crash course with worsening traffic congestion, crumbling roads and bridges, and investment levels that can't keep up with maintaining the infrastructure we've got," he said. "Throwing more money into road building and streamlining project reviews to curtail consideration of environmental factors in transportation decisions won't solve congestion. But better accountability, planning, consideration of pricing and system management alternatives, and support for new, smart, inventive strategies can help local and state agencies, business, and citizens cut their way through our traffic mess and boost transportation equity."

Richard Dahl