

peak-hour road charges are “just another government tax” instead of a means of making transportation systems more efficient. Transportation improvements could consist of increased or better roads and public transit, rebates to low-income drivers, new vehicle signalling systems, and so on.

Reducing Peak-Hour Toll Inequity

The last issue is how to reduce the economic inequity of peak-hour road tolls. There is no doubt that such tolls would inconvenience the poor more than the non-poor, since the latter would be more easily able to pay for continued peak-hour driving. This disadvantage cannot be offset directly without undermining the whole point of peak-hour tolls: to raise the money cost of driving—especially alone—during peak hours. Perhaps some type of offsetting benefits could be provided to poor households through license fee rebates based on income, or special income tax rebates. Exempting HOVs from tolls would help the poor, many more of whom share rides than do the non-poor.

Conclusion

These issues pose formidable challenges to those agencies put in charge of implementing peak-hour road pricing across any metropolitan area. I believe that they can be dealt with effectively, and that doing so is eminently worthwhile. But I also believe that confronting their existence at the outset will produce more effective long-term results than trying to pretend they do not exist. Only if these concerns are considered together can the most effective overall strategy for dealing with them be designed and achieved.

Reference

1. A. Downs. *Stuck in Traffic*. The Brookings Institution, Washington, D.C., 1992, Chapter 4.

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ENVIRONMENTAL BENEFITS OF CONGESTION PRICING



Michael Cameron

The movement of people and commerce within our urban areas consumes valuable resources, including time, money, land, fuel, minerals, and clean air. An efficient transportation system, one that uses the fewest resources possible to accomplish needed levels of mobility, is economically and environmentally desirable. Congestion pricing, if it leads to greater efficiency, would promote environmental protection.

Economists have long recognized our transportation systems and urban air sheds as common pool resources. Although they are finite, access to them is virtually unlimited, and they are vulnerable to being overused. In the case of our roadways, overuse means that when the number of vehicles exceeds the capacity of the roads, the number of people served falls below capacity. With our air sheds, overuse means that the volume of pollutants emitted from burning fossil fuels exceeds the absorptive capacity of the atmosphere, and people's health is endangered.

In response to chronic traffic congestion, society has traditionally responded by building more roads, buying more vehicles, and spending more time and fuel traveling. Instead of solving the problem of unlimited access to the transportation system, our only response thus far has been to make the system bigger. In response to fouled skies we have ensured that new additions to the vehicle fleet are cleaner than the old. Instead of addressing the problem of unlimited access to the air shed, we keep trying to reduce the impact of additional users. Both responses fail to address the fundamental violation that occurs when there is free and unlimited

access to social resources. To save society from wasting precious time and money, and from breathing polluted air, vehicle access and emissions must eventually be limited to the capacity of the systems.

Congestion pricing is one of several economic tools available for limiting vehicle access to the capacity of the transportation system. By charging a fee high enough to keep vehicle usage within the limits of road capacity, congestion pricing would promote transportation efficiency. Because reduced vehicle use would likely result in lower vehicle emissions, congestion pricing incidentally would help restore the integrity of the air shed. In a 1991 study

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of the South Coast Air Basin in California by the Environmental Defense Fund and the Regional Institute of Southern California, it was estimated that congestion pricing would reduce vehicle miles of travel by 5 percent and smog precursors by 8 percent (1).

Congestion pricing, however, has one serious Achilles' heel with regard to its potential benefits for both transportation efficiency and reduced air pollution. As a public fee, congestion pricing would raise

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substantial new public revenues. There are critics of congestion pricing who will object to imposition of a new fee simply because it is a "tax." Others will object because it may unfairly inhibit the mobility of different income or regional groups. The most serious environmental objection, however, is that the most likely disposition of these revenues would be back into publicly provided transportation infrastructure.

Environmentalists in particular are leery of giving new money to public transporta-

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tion agencies who, over the past 40 years, have failed to address the unlimited access problem, have poured money almost exclusively into new roads, and are now developing technologies to squeeze more vehicles onto existing roads in the form of intelligent vehicle-highway systems (IVHS). Thus, although congestion pricing has the potential to at last protect the road resource—and incidentally the air shed—its revenues provide the means for perpetuating our time-tried and failed policy of continually expanding the transportation infrastructure.

The concern over misspent revenues and their adverse environmental impacts is not without foundation. In Southern California, all public spending on the surface transportation system, including roads, highways, and transit, exceeds \$5 billion per year (2). A moderate congestion fee averaging 15 cents per mile traveled could by itself raise an additional \$10 to \$15 billion annually. If too many of these funds are bulldozed back into additional road capacity, the air shed would suffer and

arguably the transportation system would remain inefficient. Thus the environmental benefits of congestion pricing cannot be fully evaluated without a comprehensive and detailed implementation program, complete with a plan for spending the revenues.

Finally, even if congestion pricing revenues can be used without exacerbating environmental problems or income inequities, other questions remain. A variety of other economic instruments for protecting both the road system and the air shed should be considered alongside congestion pricing. For example, various forms of parking pricing, smog fees, pay-at-the-pump insurance, tradable travel permits, and deregulation of private transit services hold promise for increasing transportation efficiency and promoting clean air. Given the multiplicity of goals for our transportation systems, it is important to design policies with as many goals in mind as is practical. Although congestion pricing stands as the most comprehensive and powerful single instrument for maintaining the integrity of the road system, the best economic policy may be some hybrid of several instruments that protects both the road system and the air shed. For example, a congestion fee indexed according to the emissions characteristics of each vehicle would be more environmentally beneficial than a straight congestion fee.

The level of waste in our urban transportation systems has reached enormous proportions. We have, in most cases, spent more time and money on roads and vehicles than is necessary to sustain mobility. Our economy and our environment bear the brunt of these mistakes. Under certain circumstances, congestion pricing and other economic policies could help restore the integrity of our transportation and environmental resources.

References

1. M. Cameron. *Transportation Efficiency: Tackling Southern California's Air Pollution and Congestion*. Environmental Defense Fund and Regional Institute of Southern California, Oakland, Calif., 1991, p. 37.
2. A. Diamant. *Public Finance of Surface Transportation in Southern California, 1989–1991*. Environmental Defense Fund, Oakland, Calif., 1992.

Congestion Pricing Pilot Projects Funded by ISTEA

The Intermodal Surface Transportation Efficiency Act of 1991 allows for federal funding of \$25 million annually to support up to five congestion pricing pilot projects. In November 1992, the Federal Highway Administration invited proposals from state and local governments and other public authorities. FHWA subsequently approved, subject to further negotiation, a proposal from the San Francisco Bay area. Several other proposals were not accepted, but revised and new proposals can still be submitted. Contact John Berg or James Link at 202-366-0570.

For those who would like to read more about congestion pricing issues, the following articles are suggested:

- K. Button and A. Pearman. Congestion Pricing—Theory and Practice. Chapter 3. In *Applied Transport Economics: A Practical Case Studies Approach*. Gordon and Breach Science Publishers, New York and London, 1985.
- S. A. Morrison. A Survey of Road Pricing. *Transportation Research-A*. Vol. 20A, No. 2, March 1986, pp. 87–97.
- W. S. Vickrey. Statement on the Pricing of Urban Street Use. *Hearings, U.S. Congress, Joint Committee on Metropolitan Washington Problems*, Nov. 11, 1959.
- W. S. Vickrey. Optimization of Traffic and Facilities. *Journal of Transport Economics and Policy*, 1(2), Jan. 1967, pp. 123–136.
- W. S. Vickrey. Pricing, Metering, and Efficiently Using Urban Transportation Facilities. In *Highway Research Record 476*. HRB, National Research Council, Washington, D.C., 1973, pp. 36–48.
- A. Walters. The Theory and Measurement of Private and Social Cost of Highway Congestion. *Econometrica*, Vol. 29, No. 4, 1961, pp. 676–699.