

# Road and Parking Pricing: Issues and Research Needs

KIRAN U. BHATTA AND THOMAS J. HIGGINS

Road and parking pricing are of increasing interest to transportation and air quality planners as ways to reduce automobile use and traffic with its associated pollution. Three road and parking pricing concepts are examined. The issues of effectiveness, feasibility, legality, acceptance, and implementation are evaluated on the basis of experience and research to date. In road pricing, key issues include public acceptability, legal impediments with respect to pricing of federally aided facilities, legislative requirements concerning enforcement, administration of large-scale permit distribution or automatic vehicle identification (AVI) systems, and institutional requirements pertaining to administration, enforcement, and revenue distribution. Parking pricing issues relate to the extent of pricing (public or private parking facilities or both), the legal and administrative implications of taxing the providers or users of parking, how employer policies interact with parking pricing to influence employee automobile use and mode choice, and the question of enforcing pricing permit schemes on private property. Specific research and assessment needed to address the issues are suggested, and roles for local, state, and federal agencies in carrying out the research agenda are identified.

Three broad road and parking pricing strategies may reduce congestion and improve air quality in urban areas. Pricing may focus on

- Major facilities, including freeways and highways in a region or leading to and from large activity centers and downtowns;
- Areawide networks, including surface streets in a congested zone;
- Areawide parking, including parking facilities in a zone.

## ROAD AND PARKING PRICING OPTIONS

### Facility Pricing

In facility pricing, road users would be charged on the basis of their use of congested highway facilities. A congestion pricing program could cover a large portion of the highway network or could confine charges only to selected freeway segments or facilities in a travel corridor. The required charges for highway use could be assessed automatically by mounting electronic licenses on the affected vehicles. The charges would be made at pricing points along a facility through electronic roadside interrogators. This technology, dubbed automatic vehicle identification (AVI), has been tested successfully in

controlled pilot projects. It promises an effective way of implementing road pricing, although many questions about its application in the United States remain unanswered.

One major problem with AVI is how to accommodate occasional road users who may not have electronic licenses. For these infrequent users, supplementary licenses would be necessary, making it more costly to enforce and administer the program. If all vehicles were equipped with AVI (perhaps for theft prevention, collection of travel data, or general vehicle identification and registration), this problem of the occasional user would be solved.

The alternative to AVI is to require the affected vehicles to prepurchase and display supplementary windshield permits (daily, weekly, or monthly). The administrative and enforcement problems for this option are likely to be more difficult compared with those for AVI, because it would require retail distribution systems and manual or photographic monitoring of moving vehicles for proper use at freeway ramps and intersections.

### Areawide Pricing

In the areawide pricing alternative, vehicles entering an area from surface streets or freeway exit ramps would pay a special price or charge. Larger or smaller areas could be designated as priced areas. Clearly, larger benefits would be realized if pricing was applied to all areas with significant congestion.

It would not be appropriate from the efficiency standpoint to price an entire region, simply because not all areas in a region are congested. However, to guard against the disadvantage to competitive businesses and development in priced areas, more than just a few areas within the region would need to be considered for pricing (possibly most major activity centers).

As with facility pricing, electronic licenses could be used to automatically charge the affected vehicles at roadside pricing points equipped with electronic interrogators. Again, there is the problem of AVI's accommodating occasional users. Alternatively, supplementary licenses could be required for all vehicles entering the designated priced areas. The use of supplementary licenses for areawide pricing application might not be as problematic as their use for freeway pricing. In area pricing, monitoring would be required for vehicles moving much slower than in corridor applications. Such area pricing has been used in Singapore, although many questions remain for U.S. application, particularly if many drivers try to subvert the system.

## Parking Pricing

The areawide road pricing just described would collect charges from all vehicles entering designated areas at certain times of the day. Such a program would use supplementary licenses (windshield stickers) or electronic licenses and require monitoring of moving vehicles as they enter the priced area.

Another areawide pricing alternative is to charge all parked vehicles in the designated areas at given times. This would require charges for vehicles parked in all private and public spaces (on and off street) within an area. Such a policy would cover all traffic but through traffic. Thus, although it would not be as effective as the areawide pricing policy, it would still affect a large number of vehicles. Parking prices would be much easier to enforce because moving vehicles would not have to be monitored.

In an areawide parking pricing program, the affected vehicles would be required to purchase and display a special parking permit (available at retail outlets in daily, weekly, or monthly designations). Daily and hourly areawide parking permits are in use in several U.S. and European cities. Thus, a parking permit approach should be feasible.

Significant reductions in travel are possible with this policy, particularly if major employment and other activity centers in a region are covered. The analysis of impacts of such policies is difficult, because those facing parking charges may spill over outside the priced area and into surrounding residential and retail spaces. Careful design of area boundaries and parking regulations in adjoining areas would be needed to reduce such unintended consequences. Heavy and widespread employer subsidies for employee parking also would defeat the program.

## ISSUES

There are many unanswered questions about the three pricing concepts. Although they promise to reduce congestion and generate revenues for transportation alternatives, general issues arise around

- Public acceptability, including concerns about right to travel, paying for roads twice through pricing and gasoline taxes, and the quality of alternative modes or facilities for those not wanting to pay;
- Possible legal impediments, at least with respect to the pricing of federally aided facilities;
- Legislative requirements to facilitate enforcement and to permit demonstration on federally aided facilities;
- Need for a large-scale distribution system for permits or AVI, possibly involving both government and retail outlets; and
- Requirements for new organizations to apply and enforce congestion pricing and new roles for existing institutions with respect to collection and distribution of revenues.

Specific issues surrounding each pricing alternative are discussed in the following sections.

## Facility Pricing

Section 129, Title 23, of the U.S. Code effectively bans toll roads on federal-aid facilities. In the past, only special exemptions have allowed states to use federal funds to construct toll bridges, tunnels, and approaches to federal-aid highways. In these exceptions, states agreed to discontinue tolls upon retirement of bond indebtedness unless Congress passed legislation waiving the requirement. Congress has granted exceptions and allowed toll collections to continue after bonds are paid off, but also required the state to repay the federal investment. The state of Delaware has paid back the federal portion of some toll roads. In Maine, the federal portion was forgiven. However, forgiveness is very rare and is allowed only for unusual circumstances such as for worn-out facilities.

Under the Intermodal Surface Transportation Efficiency Act of 1991, tolls on federal-aid facilities are permitted to a much greater degree than in the past. Permitted types of work are initial construction of toll facilities (except for Interstate facilities), so-called 4R work on toll facilities, reconstruction or replacement of free bridges or tunnels and conversion to toll facilities, reconstruction of free highways (except Interstate roads) to convert them to toll roads, and preliminary studies to determine the feasibility of any of the above work. The act also allows congestion pricing strategies (e.g., higher tolls in the peak than off peak or higher tolls for solo drivers versus carpoolers) under a pilot program. Five projects are allowed, up to three on the Interstate system.

Of course, federal-aid restraints on pricing do not apply to new private toll roads. For example, in 1990 California Governor Deukmejian approved four private toll road projects under the provisions of AB 680. Two of these projects may provide opportunities for congestion pricing. They are the 11.2-mi extension of the Orange Freeway (Route 57) along the Santa Ana River channel and an extension of the high-occupancy-vehicle (HOV) lanes in the median of the Riverside Freeway (Route 91) in Orange County. The other projects are in northern California and in southeast San Diego County.

An important issue in private toll road projects is how project sponsors might be encouraged or required to implement congestion pricing. For example, in the case of California legislation AB 680, the California Department of Transportation (Caltrans) is not authorized to set or regulate toll schedules for these projects. The only requirement of the legislation with respect to tolls is that "toll revenues be applied to payment of the private entity's capital outlay costs for the project, the costs associated with operations, toll collection, and administration of the facility, reimbursement to the state for the costs of maintenance and police services, and a reasonable return on investment . . . [and that] any excess toll revenue be applied to any indebtedness incurred by the private entity with respect to the project or be paid into the State Highway Account." Of course, nothing prevents Caltrans from negotiating for congestion pricing in project agreements with the private project sponsors.

Some states may have legislation authorizing state regulation of tolls on private facilities. Such legislation may allow state agencies to require congestion pricing on private toll facilities. For example, California Streets and Highways Code

Division 17, Chapter 3, 30800, gives the state certain rights in the approval of toll facilities. In particular, Caltrans "has exclusive jurisdiction . . . and may grant franchises, privileges or licenses for the construction of toll bridges, toll roads and toll ferries . . . situated wholly or in part within the State." Furthermore, Section 30802 indicates that the state may "fix the toll rates" of any such toll agency or entity and regulate what amounts are kept (30805) and the disposition of the funds (30808). Several authorities are authorized by Section 30802 (e.g., Gold Rush Parkway, El Dorado County Tunnel), with specific language authorizing tolls, bonding, acquisition, and operation authority.

Enforcement of pricing is a key issue on private toll roads, especially who would carry out the enforcement. In the California example, AB 680 allows the state to provide police services at cost. Section 143 refers to "agreements for maintenance and police services entered into pursuant to this section. . . ." Consequently, because the California Highway Patrol is authorized to issue citations on state-owned facilities, there is no need for the private toll road sponsors to obtain special legislation to enforce against toll evasion. However, in other states, there may be a need for such legislation.

Another enforcement issue applying to both private and public toll facilities is whether the driver or owner is liable for evading the toll. Under many state laws, drivers and not owners are liable for evading tolls. This provision presents two enforcement options: (a) enforcers must be available and ready at or near pricing points and apprehend drivers at the time of violation, and (b) enforcers must rely on photographs of vehicles and drivers as well as on a mail citation system. The first option requires enforcement resources and the logistics of pursuing and stopping a driver. The second option entails complex legal procedures relying on vehicle registration. If the vehicle is not registered, there is no way to locate and cite the driver.

The enforcement complexities involved in the aspect of the second option in which photographs of violators are used are illustrated by the following example. Pasadena, California, uses photo radar at 57 locations to enforce against speeding (the technology also is used in Cambell, Danville, and Roseville, California). A camera takes pictures of vehicles and drivers traveling over the speed limit as indicated by radar. The city then mails the owners of speeding vehicles a request for pay. The request is not a legally binding instrument, since under state law the city cannot issue such instruments to vehicle owners without evidence that the owner was the driver of the speeding vehicle. Many vehicle owners pay the fine indicated in the request, in spite of the fact that it is not binding. According to police staff (Sergeant Gray, Pasadena Police, unpublished data, telephone interview, November 28, 1990), the city obtains an 84 percent compliance rate on requests to pay. However, if a notice is not paid, the city then obtains from the California Department of Motor Vehicles (DMV) a facsimile of the owner's driver license. If the picture on the license matches the photo radar picture the city then issues a legally binding *summons* against the driver. However, if there is no match (meaning that someone other than the owner was driving), the city cannot issue a summons. Of course, if the vehicle is not registered, police cannot initiate the enforcement process.

Clearly, enforcement procedures would be greatly simplified by legislation that makes the registered owner liable for moving violations or toll evasion on toll roads. The city of New York recently obtained state legislation making the vehicle owner liable for moving violations, except for cases involving a stolen vehicle. This legislation may provide a starting model for consideration.

### Areawide Pricing

Perhaps the foremost issue with areawide pricing is effectiveness. Areawide pricing for an activity center may not relieve much congestion on the region's freeway system, where the congestion may also be severe. To achieve significant reductions in freeway congestion, several major areas in the region may require pricing. It may be difficult to gain acceptance for such an extensive approach.

The main implementation issues surrounding areawide pricing are the mechanism for pricing and its enforcement. In an areawide approach such as that implemented in Singapore, vehicles are required to display a permit or carry an electronic tag that is recognized by a roadside electronic device. Either could be required for entry into a priced zone. Two key issues include how users of the priced zone acquire permits or tags and how enforcement might be carried out.

Experience in the United States and overseas suggests that permits for areawide pricing programs might be sold effectively through local retail and government establishments. However, there has been no experience with regional sales and distribution. For example, in Santa Cruz County, California, areawide parking permits allowing visitors to park along 3 mi of coastline are sold through retailers and roving vans. In Eugene, Oregon, retailers sell city parking permits to commuters for daily, weekly, and monthly parking privileges in residential and retail areas around the University of Oregon. In Cork, Ireland, and in several cities in Israel, retailers and post offices sell permits for parking on the street. Permit sale volumes are substantial, because the programs regulate on-street parking over large areas. In essence, the permits serve the same function as parking meters, except that the meter is on the vehicle instead of on the street. In short, experience suggests that it should be possible to distribute permits to both regular and infrequent users through local retail outlets, at least for localized programs.

The other implementation issue is enforcing areawide pricing. In Singapore for many years, two dozen enforcers stationed at 22 entry points successfully monitored vehicles without permits. Now cameras are used to take pictures of license plates for later citation. Revenues from citations in Singapore have more than offset enforcement program costs. In Hong Kong, electronic pricing successfully monitored 99 percent of passing vehicles in a pilot program. Closed-circuit cameras had no difficulty identifying automobiles for purposes of evaluation and valuation recording (1,2). However, as with the enforcement of toll road AVI systems, discussed previously, most state laws do not hold the vehicle owner liable for evading tolls. New legislation is needed before enforcement could be effective.

Areawide pricing also presents issues of acceptance and implementation. The concept potentially affects not just travel

corridors, but also large networks of arterials fronting businesses and residences. Unlike toll roads, areawide pricing is an approach that has not been tried in the United States, raising questions about operational and enforcement feasibility. Several jurisdictions rejected attempts by the federal government in the late 1970s to demonstrate the concept. Objections centered on risks to businesses, possible impacts on the poor, and operational and administrative issues of implementation (2). More recently, areawide pricing was evaluated for Manhattan in 1986, but no steps toward implementation have been planned by New York City.

One way to overcome problems of acceptance is to insure against some of the risks through a trial period. It probably is unrealistic to expect any downtown or activity center to bear all the risks of distributing visual permits or electronic tags, or both; to cope with enforcement; to meet possible legal challenges; and to structure a comprehensive evaluation. Nor is it realistic to expect businesses in a priced zone to bear all the risks of possible declines in revenue compared with the revenues of competing businesses in other activity centers within the region. To meet concerns about these risks, regional, state, and federal governments may have to share in risks and insure localities against them. Some possible government roles might include the following:

1. The federal government might cover a portion of the operational and evaluation costs for up to 2 or 3 years and perhaps insure against certain net revenue losses (e.g., business taxes and parking revenues after accounting for revenues from the areawide pricing program).

2. Local governments might reduce business taxes to offset possible declines in business revenues. The local transit district might add extra services in the priced zone aimed at commuters and the poor.

### Parking Pricing

There are several options for using parking pricing policy to reduce congestion: parking taxes on the *providers* of parking, pricing or taxes on *users* of parking, and increased rates at *municipal* facilities. The most effective approach probably would be pricing of users rather than providers of parking. This approach is more effective than a revenue tax on parking, since the charges are applied directly to the parker. Under a revenue tax, parking operators may well absorb or redistribute the cost burden, as they did in San Francisco after a 25 percent increase in taxes on private commercial and city-owned parking. Parking rates changed at some garages but not at others, and the number of cars parked declined at about half the affected facilities, but increased at the rest (4). A broad user tax would be more effective than a rate increase or surcharge at municipal facilities, which often make up only a fraction of all parking spaces in urban and suburban areas.

Some of the issues surrounding a tax or fee on users include the following:

- Would the fee be imposed only on parkers in facilities owned and operated by private parking businesses (commercial parking)? On parkers in all facilities provided by private providers (e.g., owners of office buildings with parking whether

explicitly priced or not, whether open to the public or tenants only)? On parkers in publicly owned and publicly operated facilities (either priced or not priced)?

- Whoever the parkers are who are encompassed by the user fee or tax, what proportion of the total parking population would be priced? Would the tax fall on a significant proportion of the parking population? Clearly, if the tax falls on a small segment of all users of parking facilities, the effects on parking and travel may be small. Presumably, if most of the principal activity centers and employment sites in a region were covered by the parking permit program, significant amounts of traffic in the region could be affected.

- Presuming that the proportion of parkers affected is significant, would the parking prices be sufficient to influence mode choice? Several studies of parking pricing suggest that fairly substantial rate increases are needed to influence mode choice. In one closely evaluated case of federal workers in Washington, D.C., rate hikes in the range of \$20 to \$30 per month brought only from 1 to 10 percent reduction in automobile use (5).

- Would facilities not taxed be priced or managed to complement taxing policies? In particular, if only parkers in private entities were taxed, would meter feeding be illegal and prevented? Would timed-zone parking be enforced? Would neighborhood streets be protected from commuter spillover?

The effectiveness of a user parking tax depends on the application. For maximum potential effectiveness, the tax could encompass parkers in both public and private facilities. As for targeting particular parkers, the tax could be aimed at long-term parkers or parkers receiving employer parking subsidies, or both.

Importantly, the effectiveness of the tax on parkers can be blunted in several ways. For example, effectiveness would be reduced to the extent that employers absorb or reimburse employee parking taxes. Although certain parkers (e.g., parking longer than 3 or 4 hr) may be required to pay the tax (it might be collected by the parking operator), nothing prevents employers from reimbursing employees for the tax through increased wages or other means. In fact, certain labor union agreements with employees may require employers to reimburse employees for all parking costs, including any user fees. Also, if the tax is only on long-term parking, parkers may move their cars at mid-day to avoid the long-term parking restriction.

The tax on parkers raises several implementation issues. The tax could be implemented in the following ways:

1. At the least burdensome level for the public sector, parking operators would be required to collect the tax. Operators might be required to post notice of the tax, separate it from parking fees, and collect the tax. If long-term parking were the focus of the tax, it might be collected only from parkers on monthly leases or those parking over 4 hr.

2. Another option would be for the public sector to sell special permits for long-term parking in certain zones and facilities. In this case, permit sales might be through government offices and retail stores on a commission basis. Parking enforcers would monitor long-term parkers for display of the permit.



Implementation of the tax by either of these options presents certain issues. If operators are responsible for charging and collecting the tax, they can avoid charging some or all of the tax by reporting a lesser number of long-term parkers than actually park in the facility. Or they may lower their rates as an offset to the tax, depending on their desire to be competitive in the parking market. Operators of surface lots without attendants pose a special problem. Legislation might require these lots to have attendants, or a permit might be required for parking long term in these lots. Several electronic parking meters on the market now issue such permits ("pay and display" systems).

A parking permit system operated by the public sector avoids the problems associated with operators administering and collecting the tax. Under such a system, parkers would be required to purchase and display priced permits for parking in public and private facilities. Daily and weekly licenses could be dispensed through retail outlets, banks, post offices, and even vending machines. Annual permits could be distributed most easily through the mail. Self-validating permits probably are preferred, because these can be bought in batches.

Needless to say, such a system is not without complexities:

1. It requires both public and private sales outlets. U.S. experience with parking permit sales and distribution through retail and public offices is limited. As previously mentioned, Eugene, Oregon; Santa Cruz County; and the city of Hermosa Beach, California, require and distribute parking permits through retail establishments and public offices. Of course, state lottery tickets as well as fishing and hunting licenses are also sold through retailers. Outside the United States, parking permit systems with retail distribution are found in Ireland, Scandinavia, France, and Israel. Consequently, large-scale sale and distribution may be manageable, but certainly deserves further analysis.

2. The permit system raises enforcement issues. If permits were required on private property, legislation would be required enabling public-sector enforcers to monitor and issue citations in support of the program.

Legality is important to implementation of parking taxes. A tax on users of parking has legal advantages over a tax on providers. Under most state laws, user taxes are defined as excise taxes, whereas typical taxes on parking providers based on the number or value of parking spaces generally are considered property taxes. As an excise tax, the parking user tax may be varied in line with its purpose as a means to reduce solo driving and traffic. In contrast, property taxes must be uniform within a tax district. Of course, although user taxes can be varied by area, purpose, or situation, the variation must follow reasonable constraints. Taxing variation cannot be so great as to violate equal protection provisions in state and federal law. Generally, variations in tax provisions are allowed as long as the tax applies equally to all persons within a category (area, purpose, or situation) and the variations fit the purposes of the law (e.g., reduced traffic). Still, legal research is needed to determine the extent of variation that might be allowable and at what level such taxes might be considered as confiscation.

There is an important legal impediment to the application of a priced parking permit scheme to public and private park-

ing. Usually, local jurisdictions do not have the authority to prevent parking violations on private property. This means that enforcement cannot take place without special agreements with property owners or new authorizing legislation.

Finally, there is the issue of acceptance. Acceptance of user taxes or fees is likely to be a problem in the same way as acceptance of congestion pricing. The parking industry, local businesses, automobile associations, employers, and employees will raise concerns and objections. One way to meet at least some concerns is to require permits only for parking during congested peak periods or during the seasons of the worst air pollution.

Resistance also might be lessened if pricing permits are slated for implementation at major activity centers across the region as part of air quality improvement programs. The Puget Sound Council of Governments in the state of Washington recently adopted a 2020 Plan with permit parking pricing at major activity centers. In this way, no individual center, such as a major downtown in a region, is disadvantaged relative to others.

## SUMMARY AND CONCLUSIONS

### Facility Pricing

Given the many issues surrounding facility pricing, states and localities might first consider a pilot project covering a few facilities. From the standpoint of political feasibility, it is probably best to evaluate opportunities for piggybacking on forthcoming new toll projects rather than on facilities now without any prices. Future new tunnel, bridge, or freeway double-deck projects also may provide opportunities to examine congestion pricing approaches and evaluation designs.

As part of carrying out assessments, local, regional, and state agencies should consider the following actions to evaluate facility pricing:

- Track assistance under the federal toll road and congestion pricing demonstration program, the overall progress of the federal program, and any relevant legislative changes.
- Identify new non-Interstate projects and reconstructions for toll and pricing tests and examine possible congestion pricing on Interstate roads under the new federal congestion pricing demonstration program.
- Analyze code and legislation changes necessary to make vehicle owners liable for evasion of tolls.
- Prepare an evaluation design for possible future tests of congestion pricing, including components to monitor traffic impacts, best AVI options, enforcement procedures, operations, and equity impacts.
- Review state highway department authority to regulate tolls and encourage congestion pricing under any legislation encouraging private toll roads.

### Areawide Pricing

Areawide pricing makes sense if the congestion levels are severe on an areawide basis rather than confined to major

corridors. In many regions, activity center congestion is not as severe or as widespread as is freeway congestion, making areawide pricing less applicable than corridor pricing. Furthermore, despite any compensatory or mitigating actions, no area in a region is likely to opt for areawide pricing unless other major competing areas within the region are priced also.

Although areawide pricing can be justified theoretically, particularly if applied to many activity centers in a region, past attempts to demonstrate the concept in U.S. cities suggest that there will be acceptance problems. Experience suggests that business centers within a region often are in competition with one another for development and business expansion. They may perceive themselves at a competitive disadvantage because of pricing that is confined to their area. Consequently, future analysis of areawide congestion pricing should probably focus on joint implementation across the major activity centers in a region.

Local, regional, and state agencies should consider the following steps in carrying out evaluation and assessment on areawide pricing:

- To determine perceptions about areawide pricing, meet with actors and interests, including representatives of local businesses and developers; representatives of outside agencies such as transit, ridesharing, and air quality; and local government officials (police, traffic, parking, revenue, and taxation).
- Identify possible roles of various governments in sharing the costs and risks of a demonstration program, including whether federal demonstration funds would be available for areawide pricing.
- Derive general specifications for the best pricing technology and distribution systems (permits versus AVI, centralized versus multiple outlet sales). The state of California is now attempting to set uniform standards for AVI.
- Track latest implementation lessons from areawide pricing applications in Singapore, Sweden, and Hong Kong, especially lessons relating to permit distribution and enforcement.

### Parking Pricing

Although the beneficial impacts of a parking permit program might be smaller than those of an areawide program of the same extent, parking permits might be more feasible in the near future. Because monitoring focuses on parked cars, enforcement is easier than for area pricing, which requires monitoring of moving vehicles. Although it would be necessary to empower jurisdictions to monitor and cite violators on

private spaces, such authority might already be inherent in state or federal air quality legislation encouraging parking pricing as an air pollution control measure. Also, travelers may be more willing to accept parking pricing than an area-wide congestion pricing approach. In spite of some advantages over congestion pricing, parking pricing cannot be expected to produce the same congestion reductions as facility pricing or even areawide pricing.

Specific assessment actions that local, regional, and state agencies should consider on parking pricing include the following:

- As with congestion pricing, meet with actors and interests to determine perceptions about priced parking. Evaluate regional parking pricing approaches in the context of long-range regional plans, as recently adopted in the Seattle region.
- Carry out legal research to determine the extent of pricing variation that might be allowable across priced zones and at what level parking fees might be challenged as confiscation.
- Determine whether air quality legislation may enable management districts to impose regional parking fees without need for further legislation.
- Determine what authority is needed to enforce parking regulations on private property. Research is needed on the legal obstacles and precedents for such powers.
- Assess the degree of employer-subsidized parking in the region and assess labor union agreements requiring employers to compensate employees for parking charges.
- Flesh out implementation particulars on parking user taxes, including the best permit schemes on the basis of revenues, enforcement, fraud potential, and overall administration.

### REFERENCES

1. S. Borins. The Political Economy of Road Pricing: The Case of Hong Kong. Presented at World Conference on Transport Research, 1986.
2. K.W. Fong. The Electronic Road Pricing System in Hong Kong. In *Innovative Strategies to Improve Urban Transportation Performance* (A. Chatterjee and C. Hendrickson, eds.), American Society of Civil Engineers, New York, 1985.
3. T. J. Higgins. A Clash of Analysis and Politics: The Case of Road Pricing. *Policy Analysis*, Vol. 6, No. 7, Winter, 1980.
4. D. Kulash. *Parking Taxes as Roadway Prices: A Case Study of the San Francisco Experience*. Paper 1212-9. The Urban Institute, Washington, D.C., 1974.
5. G. Miller and C. Everett. Raising Commuter Parking Prices—An Empirical Study. *Transportation*, No. 11, 1982.

---

*Publication of this paper sponsored by Task Force on Transportation Demand Management.*