

## Abridgment

# Enforcement of Parking Management Strategies: A Critical Element in Program-Project Implementation

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Parking management strategies have become an important component of urban transportation programs. However, the implementation of such strategies and their eventual success is heavily influenced by the degree to which their new requirements are enforced. This paper examines the enforcement component of parking management strategies and identifies some of the key enforcement characteristics of successful strategies and programs. Case studies of a towing and booting program and a residential parking permit program in Boston are used to illustrate the important role that enforcement has in project implementation. The enforcement and adjudication process established should consider not only the types of tactics that can be used but also the capability of the agencies involved in the process to handle their responsibility. This is especially true in the adjudication component when the responsible actors are the courts. Finally, the U.S. Department of Transportation should take appropriate action to incorporate the start-up costs of parking enforcement programs into existing federal-aid programs.

Transportation professionals have become increasingly interested in parking management strategies as a means of restricting urban and neighborhood automobile use, encouraging public transit use, improving the urban economic base through better access to shopping establishments, and developing a source of revenue from parking fines (1). Several studies have shown that such strategies as residential parking permit programs (RPPPs), preferential parking for high-occupancy vehicles, differential pricing, and provision of off-street parking are effective ways of achieving these and other objectives (2,3). To succeed, however, a strategy must have public compliance, and that compliance is heavily influenced by effective enforcement, particularly during the initial stages of project implementation. This paper examines the role of enforcement in the implementation of parking management strategies and identifies some of the characteristics of successfully implemented enforcement programs. Case studies of two parking enforcement programs in Boston (a RPPP and a tow and hold-booting program) illustrate the importance of enforcement and the role of enforcement agencies in the project development process.

## PARKING ENFORCEMENT IN THE UNITED STATES

Transportation planners and engineers have long recognized that enforcement was a critical component of project implementation, especially as it related to the success of parking strategies. As the following statements reveal, effective enforcement of parking regulations is an important and complex component of parking management strategies.

The practical difficulties of initiating and operating a restraint scheme must be addressed. Administration and enforcement of present day parking controls has proved to be costly and difficult. (4)

Strict enforcement, particularly in well-traveled areas, is generally required in order to achieve maximum benefit from parking controls.... Thus full enforcement of existing parking restrictions might preclude further restriction or removal of on-street parking. (5)

Although transportation planners recognize the

importance of enforcement strategies in the overall transportation program (6), a number of factors make it difficult to define, in a general way, enforcement's role and effectiveness. For example, the objectives of an enforcement strategy will vary from case to case. In Louisville, Kentucky, parking enforcement is used to improve traffic flow along specific roadways; in Arlington, Virginia, and Palo Alto and San Francisco, California, enforcement programs are the key elements of residential parking programs (7,8). Washington, D.C.'s parking enforcement program, one of the most extensive and all encompassing in the nation, grew out of the district's problems with high numbers of illegally parked automobiles (see paper by Meyer and McShane in this Record). Another difficulty in defining the effectiveness of enforcement is distinguishing between the effects of a strategy and the effects of its enforcement. Clearly, enforcement will influence the success or failure of a parking management strategy, but its specific contribution is almost impossible to isolate. This determination is also hampered because enforcement has not been considered an important component of project implementation in recent years; therefore, data on its use are limited.

Despite these difficulties, enforcement programs are starting to receive closer attention along several dimensions. A sample study of two RPPP neighborhoods in Cambridge, Massachusetts, showed that, 1 year after RPPP implementation, the number of cars parked on the street decreased by 31 percent. As shown in the table below (2), enforcement has also had a major impact on parking patterns in Washington, D.C. (9).

Item	Prior to Enforcement	After Enforcement
	Program	Program
Legal hours parked (%)	13	56
Illegal hours parked (%)	84	31
Vacant hours (%)	3	13
Turnover	1.2	2.9

Perhaps of more importance to local officials concerned with municipal finance, more data are available on the impact of enforcement programs on revenue generation. Washington, D.C.'s enforcement program netted an impressive \$14 million in 1979; initial start-up costs were \$776 000. Cambridge, Massachusetts, tripled its enforcement revenues, and in Portland, Oregon, the budget for the traffic engineering department is covered by enforcement program revenues. Thus, enforcement programs serve not only as effective means of achieving transportation and environmental objectives but also produce revenue for the implementing municipalities. However, as will be seen in the following discussion of parking enforcement in Boston, these programs are often difficult to implement and maintain.

## PARKING ENFORCEMENT IN THE BOSTON AREA

Although Boston has a reputation for motorists who show little respect for traffic (and especially parking) regulations, the Boston area uses some of the more innovative parking control and enforcement

techniques in use in the country today (13). In recent years, citywide and neighborhood RPPPs, a center-city automobile-restricted zone, an enhanced ticketing program, towing programs, and the Denver Boot have all been used with varying success to control the use of the automobile in the metropolitan area.

#### Towing and Booting Program in Boston

Boston began its Tow and Hold operation in the early 1970s. Tow and Hold was a minor program until Boston's 1976 fiscal crisis. Then, by using a list of scofflaws, Tow and Hold became a means of collecting millions of dollars of unpaid parking fines for the city. In 1977, to improve the campaign's effectiveness, the city began use of the Denver Boot, a mechanical device that locks the axle of the automobile, and thus immobilizes it. The advantages of booting over towing were numerous: Damage claims and thefts from impounded cars were eliminated, the number of impoundment lots needed was minimized, cars parked in difficult locations for towing could still be immobilized, traffic jams caused by towing operations were eliminated, booting was faster (five boots can be placed in the time it takes to tow one car), equipment was less expensive, and, perhaps most importantly, boots, visible on a scofflaw's car for hours while he or she pays tickets, demonstrated vividly to motorists the consequences of illegal parking and nonpayment of tickets.

The process of booting a vehicle and securing back payment for fines outstanding is quite simple. Meter maids from the Traffic and Parking Department and police officers issue violations. After 21 days, unpaid tickets are turned over to the courts for collection. The courts, after warnings and summonses have been issued and ignored, turn the lists of violators who have five or more tickets over to the city for Tow and Hold immobilization. Scofflaws must pay all outstanding tickets before their cars are released and, in doing so, must often visit several court districts. The time and annoyance involved have become well known and are a deterrent in themselves.

The city averages 140 cars booted per day, at a cost of \$150-\$160/car. Initially, the program averaged \$300/car and yielded about \$2 million for the city during the first year. No detailed evaluation of the program has been undertaken, but city officials feel the program is a great success. One city official estimated that the number of tickets paid today is twice the number paid in 1976. Parking lots in Boston also appear to be more heavily used since the introduction of booting, because motorists have come to learn that illegal parking is more risky than it once was. The impact of booting has thus reached far beyond the scofflaws who owe back tickets.

#### RPPPs

The first RPPP in the Boston area was instituted as a portion of the Boston transportation control plan (TCP) and consisted of a 2-h parking limit and a peak-hour parking ban on nonresident parking throughout Boston. Stickers were issued to city residents that exempted them from these parking restrictions. Enforcement of the peak-hour, nonresident restrictions was straightforward because violations are easily recognized by the absence of a resident sticker. However, enforcement of the 2-h limit was problematic in that the identification of violations requires multiple sightings of a nonresident vehicle in the same location at least 2-h apart. Given limited resources, the police depart-

ment was unable to enforce this 2-h limitation and thus the program rapidly became ineffective.

Cambridge, across the Charles River from Boston, instituted the first neighborhood RPPP in the Boston area in response to parking congestion created primarily by the city's proximity to Boston. In response to neighborhood requests, Boston soon followed Cambridge in implementing neighborhood RPPPs that are in force 24 h/day, 7 days/week, to provide neighborhood residents with spaces reserved exclusively for them. Resident support (15 percent minimum) and precise neighborhood boundary definition were crucial to the successful enforcement of these programs.

#### Institutional Considerations

Although enforcement can contribute a great deal to the successful implementation of parking management strategies, the enforcement process itself is subject to both financial constraints (in the form of start-up costs) and institutional conflict.

The Boston criminal courts play a critical role in the enforcement process, but often they cannot give top priority to parking violations. A slow rate of fine collection has created some tension between the court system and city agencies, as has the courts' reluctance to allocate adequate resources for ticketing. To correct this situation, the city has proposed removing the process from the courts and the creation of a Parking Violations Bureau. Several cities, most notably New York and Washington, D.C., have adopted such a system of administrative adjudication to handle parking violations, but such an approach often encounters many legal, institutional, and political obstacles.

Ticketing agencies are also critical actors in the enforcement process. In most cases, police officials do not consider parking enforcement to be a major task of their agency. Because of this perception, Boston placed enforcement responsibility in the hands of a new Traffic and Parking Department, which used meter maids to distribute tickets. The police still participate in ticketing violations, particularly at night when union rules prevent meter maids from working, but their role is peripheral to the program's operation.

In summary, implementation and enforcement of a new parking management strategy require cooperation, often between several agencies at different levels of government. Police departments; traffic engineering and planning departments; city, county, and state offices and agencies; courts; and community interest groups all have a potential interest and role in parking enforcement programs. Success depends on the participation of all major actors in the planning process and on their subsequent willingness and capability to handle their responsibilities in the program.

#### CONCLUSIONS

Parking management experiences from several U.S. cities have shown the importance of enforcement in the implementation of such strategies. The case studies of parking enforcement programs in Boston have illustrated some of the important characteristics of enforcement strategies.

1. Enforcement of the parking strategy was provided at the beginning of project implementation and applied periodically to reinforce the public perception of serious enforcement commitment to the project.

2. Enforcement strategies have been developed in cooperation with community groups and local offi-

cials so that a constituency for such a program is developed at the local level.

3. The adjudication component of the enforcement process is often a barrier to the overall effectiveness of the program. The courts have other responsibilities that decrease the amount of resources they devote to parking enforcement.

4. Police departments also have other responsibilities that they consider more important than parking enforcement; meter maids can be used effectively in their place to distribute tickets.

5. Revenues from parking enforcement can often be quite substantial, many times more than paying for the costs incurred for program operation.

6. A major obstacle in establishing a parking enforcement program is in obtaining the funds to initiate the program. Currently, the U.S. Department of Transportation provides funds for such a purpose.

In summary, parking management programs are of increasing interest to transportation officials concerned with economic development, congestion, neighborhood amenity, and city finances. The effectiveness of these programs, however, is directly related to the level of enforcement provided during the initial stages and throughout the project's life. To formulate an effective enforcement strategy requires the participation of the police department, local officials, the courts, community groups, and the business community. This process can often be very controversial. However, each of these actors has an important role to play if the enforcement program is to be successful.

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## Enforcement Requirements for High-Occupancy Vehicle Facilities

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Enforcement of high-occupancy vehicle (HOV) traffic restrictions forms an integral and sometimes critical element of HOV preferential treatment projects. This paper summarizes the findings of a research study conducted for the Federal Highway Administration. This research (a) reviewed enforcement on HOV facilities, (b) identified effective HOV enforcement techniques, (c) developed model legislation for effective HOV enforcement, and (d) prepared HOV enforcement guidelines. Sixteen projects in the United States, representative of each type of freeway and arterial treatment, were visited to gain in-depth operational and enforcement data on each project. These projects exhibited varying enforcement programs, deficiencies, and performance levels. Enforcement guidelines have been prepared for each type of freeway and arterial priority treatment of HOVs. In order to improve enforcement of HOV facilities, innovative techniques, involving photographic instrumentation, mailing of citations, tandem (team) patrol, and paraprofessional officers, have been identified within the context of this research. For these innovative techniques to be effective, a compatible legal environment is necessary. This research conducted a legal review of six prominent legal issues posed by these techniques. Model legislation is drafted to provide the proper legal environment for effective HOV enforcement.

A number of high-occupancy vehicle (HOV) projects

have suboptimal levels of enforcement. This is due in part to a lack of engineering concern with enforcement, even though the enforcement issue has a considerable impact on the operational and safety characteristics of HOV projects. As diversification in the design of HOV preferential treatment projects continues, the issue of enforcement of HOV facilities takes on greater importance and the need for developing enforcement strategies becomes essential.

#### ENFORCEMENT PLANNING PROCESS

In selecting a final HOV design strategy for implementation, the enforceability of that concept should be taken into consideration. For each HOV design strategy, the project planning and design team should ask, "How difficult will it be to enforce the restrictions associated with each of these strategies?" Possible modifications to the HOV design strategies should be explored to alleviate as many