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16. Abstract This paper examines the circumstances under which congestion pricing of an HOV lane might be appropriate, as well as the operational, legal, and public acceptance issues that bear on feasibility. Use of the I-10 (Katy Freeway) HOV lane is restricted to vehicles with three or more occupants (HOV3+) during the peak hours daily because the original HOV2+ eligibility produced demands approaching capacity and thus significant loss in operating speeds. However, the HOV3+ restriction results in significant excess capacity. In order to move more people during the peaks, METRO and TxDOT are considering allowing HOV2s to "buy-in." The feasibility analysis shows that there is adequate capacity for up to 600 HOV2s during each peak period. Legal feasibility rested on three issues: 1) authority to toll, 2) authority to enforce, and 3) ability to receive revenues. Critical steps for achieving public acceptance include: 1) understanding historic public feedback nationally, 2) understanding local opinions (both users and general public), 3) developing a public education/information campaign, and 4) developing support among local officials. The approach to establish a pricing policy in Houston involved the following: 1) develop the pricing objectives, 2) determine relevant local mobility prices and related tolling practices, and 3) establish an initial strategy and setting an adjustment policy. The feasibility research has been completed and implementation plan prepared. The transit authority board and the state transportation commission have voted to proceed with a one-year trial beginning in 1997.					
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**FEASIBILITY OF PRIORITY LANE PRICING
ON THE KATY HOV LANE:
Feasibility Assessment**

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IMPLEMENTATION STATEMENT

The primary purpose of this report is to examine the feasibility of implementing the concepts of congestion pricing on the Katy HOV lane and then assist TxDOT and METRO through the development of an implementation plan. Based on the feasibility assessment, both agencies have opted to proceed with the implementation of a priority lane pricing demonstration project on the Katy HOV lane, commencing in the summer of 1997. That demonstration project is expected to provide sufficient insight into operations and public acceptance to allow TxDOT and METRO to decide whether to continue priority pricing on a permanent basis.

In a larger sense this project begins to introduce the concept of congestion pricing to all transportation planners in Texas. As the demands for travel outpace the supply, public agencies will have to identify new methods for attracting travelers into multi-occupant vehicles, thereby making more efficient use of available facilities. The incentives offered by priority lane pricing allow for the provision of premium service at a price, provided that the user is willing to concede to carpooling, thus accomplishing both a personal mobility objective (time-saving) and a corridor mobility objective (increased person-movement). Application of this concept should be tested on a case-by-case basis until all of the ramifications, particularly public acceptance, are understood.

DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Texas Department of Transportation (TxDOT), or the Federal Highway Administration (FHWA). This report does not constitute a standard, specification, or regulation.

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SUMMARY

BACKGROUND

The I-10 High Occupancy Vehicle Lane (Katy HOV lane) was opened in 1984 and, after four years, speeds were slowing significantly as growing demand was approaching practical capacity. HOV lanes must offer a distinctly higher level of service than the adjacent mixed flow lanes to be effective, otherwise the HOV lane becomes less attractive to bus and van pool patrons.

Because the Katy HOV lane accounts for a third of the total person-movement in the peaks, it was essential to preserve the desirable operating speeds; so in 1988 METRO raised the minimum occupancy from two persons to three for the peak hour of the peak period. When the HOV2s were eliminated, speeds and service improved, but there was a significant amount of excess capacity left. It is estimated that by using the available capacity, up to 1200 vehicles could be removed from the mixed flow lanes of I-10, potentially creating a travel time savings for both the HOV lane users and the mixed lane travelers.

In order to make maximum use of available facilities, METRO and TxDOT expressed interest in the use of "pricing" to potentially increase HOV lane use without adversely impacting operating conditions. Pricing would allow a controlled number of HOV2s to pay a fee (or "buy-in") to use the HOV lane during the 3+ restricted period.

Pricing is a mechanism widely used by commercial service providers (long distance, airlines, etc.) that uses market forces to manage demand. METRO and TxDOT, with support from FHWA and FTA, contracted with the Texas Transportation Institute to examine the feasibility of priority lane pricing as a means of managing the demand on the Katy HOV lane.

Purpose of this Report

This report assesses the feasibility of priority lane pricing for the Katy HOV lane. Since there are no direct precedents to examine, the keys to feasibility are derived from experience with the two principal components of priority lane pricing -- HOV lane operations and congestion pricing. From the literature and the experience of the team, sponsors and operating agencies, the deployment of priority lane pricing will be feasible if the following conditions can be satisfied:

- ▶ priority lane pricing is legally permissible with minimal legislative changes,
- ▶ priority lane pricing is operationally achievable without adversely impacting HOV lane traffic or main lane traffic,
- ▶ priority lane pricing as a public policy is tolerable to the public in the Katy corridor and greater Houston, and
- ▶ usage is priced appropriately to control demand, cover operating costs, and be reasonable (tolerable) to the public.

LEGAL AUTHORITY FOR HOV BUY-IN

The priority lane pricing program is legally feasible. While specific statutory authority for this pricing program exists only at the federal level, state law is written sufficiently broadly to accommodate the toll assessment program as contemplated. The Intermodal Surface Transportation Efficiency Act (ISTEA) specifically authorizes the United States Secretary of Transportation to enter into congestion pricing pilot programs, at least three of which involve assessing tolls on components of the federal interstate highway system. The Katy HOV lane is such a component and permission to assess tolls is a feature of the funding agreements supporting this study.

OPERATIONAL FEASIBILITY

Operational feasibility of priority lane pricing turns on three separate issues: traffic, toll collection and enforcement.

Traffic

The impact of priority lane pricing on existing HOV traffic and mixed flow traffic must be minimal. Because the potential benefits of priority lane pricing accrue to only a relatively modest number of travelers, to create a problem for many others would seriously jeopardize the usefulness of priority lane pricing.

The operations analysis shows that the HOV lane can accommodate an additional 600 vehicles in the morning and afternoon peak hours without impacting the quality of service provided to existing HOV lane or freeway users.

Toll Collection

Toll collection must be pragmatic and relatively efficient at low capital cost. Priority lane pricing could function adequately using either manual or automated (electronic) toll collection. Because manually toll "passes" would need to be sold for a specified duration (e.g., a month), their cost would be high enough to exclude some lower income travelers. Since much of the technology required is already in place, it is recommended that automated toll collection be implemented at the outset.

It is recommended that the automated system be as similar to that used by the Harris County Toll Road Authority (HCTRA) as possible. Tracking the HCTRA system has two principal advantages: it is customer-friendly in that users of both systems do not have to incorporate different technologies, and it follows established local precedents for account structure, billing, and other potentially controversial aspects.

Enforcement

Since priority lane pricing adds a new dimension to the task of HOV lane enforcement, it is essential that at least one method of effective enforcement be identified to assure success of priority lane pricing. Working with METRO police, a procedure has been developed that will allow for effective enforcement, though in the initial implementation an additional officer will be needed to assure adequate service to the travelers.

PUBLIC ACCEPTANCE

Public acceptance plays a critical role in the success of a priority lane pricing project. Policy makers must understand that public reaction is based on the *perception* of visible project benefits and costs rather than the *actual* project benefits and costs.

Public acceptance experience from other priority lane pricing projects cannot be evaluated because no identical project exists. The Katy Freeway project is unique in that it is spurred by the underutilization of an HOV lane *and* that it excludes SOVs from participating.

Two focus groups were held, one with Katy Freeway users and one with the general public. The purpose of the focus groups was to get an indication of possible public opinion. A total of 11 participants attended the Katy Freeway user group, and 15 people participated in the general public focus group.

Public Acceptance Challenges

Through the interaction with the focus groups, key issues have been identified that will form the critical backbone of a public information campaign:

- ▶ *Define Problem* -- The problem that priority lane pricing is designed to address, namely, underutilization of the Katy HOV during the 3+ restricted periods, must be clearly defined for the public.
- ▶ *Define Benefits* -- Just as the problem must be clearly defined and understood, the benefits of the project in terms of people movement and improved traffic flow must be explained.
- ▶ *Define Use of Revenues* -- The general suspicion of tolls, the mistrust of the agencies use of additional revenues, and the fear that this project is “anti-transit” is a difficult obstacle to overcome. One way to allay those public fears is to clearly and publicly determine how any excess revenues will be spent. Dedicating any excess revenues to transit operations, coupled with assurances to Katy corridor bus riders that priority lane pricing will not lead to service reductions or fare increases, may help overcome these objections.

PRICE SETTING FOR HOV BUY-IN

In the true vein of congestion pricing, the objective in setting the price for service is to place it at a level that generates precisely the desired demand. To price it too low would saturate the HOV lane or create a waiting list for participation. To price it too high would not take advantage of available capacity. Two alternative pricing strategies are examined: 1) a true market price, and 2) a “break-even” price.

The first alternative strategy is to charge a market price that would draw about 600 HOV2s, and would maximize the net revenues from pricing. Assuming an average value of time of \$10.00 per person per hour, a price of \$3.50 per HOV2 per trip would represent market price.

A second strategy for HOV2 pricing is to simply charge a price that covers the cost of fixed and operating costs, including marketing, for the pricing operation. The break-even charge per HOV2 on the Katy HOV lane would be about \$1.18 per vehicle. This price would seriously undercut park-and-ride fares and create excessive demand for limited space in the HOV lane.

Recommended Pricing Strategy

Since the revenue maximizing price of \$3.50 per HOV2 (one-way) also accomplishes the secondary objective of not undercutting park-and-ride fares, it is recommended that \$3.50 per HOV2 be set as the initial price for service.

REVENUE USE

The requirements of ISTEA limit the use of priority lane pricing revenue to transportation-related activities. Aside from general public mistrust, issues raised by focus groups in Houston and elsewhere are ones that the operating agencies can both anticipate and address to assuage some of the public concern. In general, public concerns will be addressed by putting the revenues to a visible use: something that produces an evident change. Examples could include fare reductions, new service or capital improvements. Whatever the use chosen, it should be visible, and it should be highlighted in public communication. It is recommended that revenues be applied to transportation improvements in the Katy corridor.

CONCLUSIONS

Priority lane pricing has the potential of using market forces to manage demand on HOV lanes. All of the conditions identified for the feasibility of priority lane pricing have been satisfied. Based on this assessment, it is feasible to implement priority lane pricing for the Katy HOV lane, provided that the implementation is carefully designed and deliberately paced to avoid potential pitfalls.

The strengths of the Katy HOV lane project are: the available capacity, the absence of negative impacts, and the very low implementation cost. The weaknesses that should be

recognized/addressed during implementation include: the potential for adverse public reaction, the uncertainty of demand projections, and the potential that travelers could abandon higher occupancy buses for the convenience of the HOV2 buy-in.

Therefore, the implementation plan must:

- ▶ pace the issuance of permits or toll tags to assure that operating conditions in the HOV lane and the adjacent mixed flow facilities are not degraded,
- ▶ specify revenue uses that address both transportation needs and public concerns,
- ▶ provide a mechanism for gauging the price/demand relationship and adjusting accordingly, and
- ▶ include a marketing plan that explains priority lane pricing, addresses public concerns, and touts the activities and benefits of the program.

Finally, the implementation plan must include an evaluation plan that defines the measures to be used to assure that the impact of priority lane pricing is properly assessed.

I. INTRODUCTION

BACKGROUND

The I-10 (Katy Freeway) HOV lane was opened in 1984 and after four years of growing demand was approaching practical capacity by 1988. Central to the long-term effectiveness of an HOV lane is the continued ability to offer a distinctly higher level of service than the adjacent mixed flow lanes, thus attracting travelers to buses, van pools and other high occupancy vehicles. When the Katy HOV lane experienced periods of high demand, operating speeds dropped significantly for all vehicles using the lane. Operating speeds in the 40 mph range were quite acceptable to car pools with two occupants (HOV2) because that was still significantly better than the speeds in the mixed flow lanes. However, the HOV lane can become less attractive to bus and van pool patrons because many may already be sacrificing convenience and flexibility for the speed advantage. Once the speed advantage diminishes, user interest can wane, and ultimately total person-movement declines.

Because the HOV lane accounts for a third of the total person-movement in the peaks, it was essential to preserve the desirable operating speeds; so in 1988 METRO raised the minimum occupancy to three persons for the peak hour of the peak period. After some adjustments, the current restricted periods are 6:45 AM - 8:00 AM and 5:00 PM - 6:00 PM daily. By eliminating the HOV2s, the operating speeds returned to desired levels and have stayed there since. However, as expected, both total vehicles and total person-movement in the AM peak declined, by 59% and 35% respectively.

As overall peak period congestion continues in the Katy corridor, the low vehicle density of the HOV lane has attracted attention, including some from citizens participating in the I-10 Major Investment Study. In response to public concern about the usage of the HOV lane, TxDOT and METRO expressed interest in the use of "pricing" to increase HOV lane use without adversely impacting operating conditions. Pricing would permit a controlled number of HOV2s to pay a fee (or "buy-in") to use the HOV lane during the restricted period.

Pricing is a concept explored nationally and internationally for a variety of purposes, frequently to manage travel demand. For purposes of the Katy HOV lane, pricing is a demand management strategy that offers promise of attracting some of the HOV2s back into the HOV lane, without attracting all of them, and thus improving HOV lane usage without adversely impacting operating speeds. METRO and TxDOT, with support from FHWA and FTA, contracted with the Texas Transportation Institute (TTI) to examine the feasibility of priority lane pricing.

PURPOSE OF THIS REPORT

This report assesses the feasibility of priority lane pricing for the Katy HOV lane. Priority lane pricing for the Katy HOV lane will be considered feasible if there are no impediments that preclude implementation. Because there are no comparable precedents for priority lane pricing, it is very difficult to predict how effective it will be. Some estimates of potential effectiveness are presented

for comparative purposes. Should METRO and TxDOT decide to implement priority lane pricing, a detailed plan to facilitate that implementation will be prepared by TTI.

BACKGROUND OF "PRICING" AS A TRANSPORTATION TOOL

Congestion pricing is the broad concept that includes narrowly tailored applications, such as the proposed priority lane pricing. The purpose of congestion pricing is not necessarily to decrease travel, but to decrease the number of simultaneously occurring trips. Motorists are charged a toll or fee as they travel on heavily used roads during peak periods. Technology allows electronic toll mechanisms to automatically debit a prepaid account without requiring drivers to stop at a booth. To avoid paying the fee, a portion of travelers will shift their mode of travel, travel during non-peak hours, or use alternate travel routes, thereby reducing congestion. Revenue obtained from tolls could then be used to improve transit, highways, or other transportation facilities. Revenues may also be used to subsidize low-income motorists' tolls or reduce taxes.

Congestion pricing is not a new concept; many industries have used this method for decades to efficiently distribute bulk volumes of demand. For example, utility companies often charge higher rates during peak periods, and phone companies offer late night rate discounts to offset daytime phone use. Consumers are generally accustomed to this form of pricing and most understand the need to smooth demand peaks.

The Congestion Pricing Pilot Program, authorized under Section 1012 (b) of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, was developed to encourage experiments with congestion pricing projects in a variety of settings. The Federal Highway Administration (FHWA) is authorized to pay up to 80% of establishment, maintenance, and monitoring costs for up to five state or local government projects. Three of these pilot projects may incorporate the use of tolls on interstate highways.

ISTEA initially provided up to \$25 million per year from 1992 to 1997 for the Pilot Program. However, in 1995, the National Highway System Designation Act redistributed the unused balance of Pilot Program funds to other purposes. Thus, ISTEA funds will not be available for new project starts or for any further implementation projects. The program is still authorized, however, to fund up to three projects involving tolls on interstate highways.

KEYS TO FEASIBILITY OF PRIORITY LANE PRICING

The principal hypothesis of this study is that priority lane pricing will be beneficial if it is feasible to implement. Therefore, the study must identify the keys to feasibility and examine each in detail. Since there are no direct precedents to examine, the keys to feasibility are derived from experience with the two principal components of priority lane pricing -- HOV lane operations and congestion pricing.

From the literature and the experience of the team, sponsors and operating agencies, the deployment of priority lane pricing will be feasible if the following conditions can be satisfied:

- ▶ priority lane pricing is legally permissible with minimal legislative changes,
- ▶ priority lane pricing is operationally achievable without adversely impacting HOV lane traffic or main lane traffic,
- ▶ priority lane pricing as a public policy is tolerable to the public in the Katy corridor and greater Houston, and
- ▶ usage is priced appropriately to control demand, cover operating costs, and be reasonable (tolerable) to the public.

The subsequent chapters address each of these keys individually.

II. LEGAL AUTHORITY

LEGAL AUTHORITY FOR HOV BUY-IN

The priority lane pricing program is legally feasible. While specific statutory authority for this pricing program exists only at the federal level, state law is sufficiently broad to accommodate the toll assessment program as contemplated. State legislative action is recommended for enhancement of enforcement activities.

Authority Under ISTEA and Local Law

ISTEA specifically authorizes the United States Secretary of Transportation to enter into congestion pricing pilot programs, at least three of which involve assessing tolls on components of the federal interstate highway system. The Katy HOV lane is such a component and permission to assess tolls is a feature of the funding agreements supporting this study.

As a matter of state law, METRO has specific authority to assess tolls on its facilities, such as the Katy HOV lane.¹ TxDOT currently has no direct toll assessing authority; however, TxDOT plays an important role in managing the Katy HOV facilities, as well as all other HOV lanes in Houston. The agencies have a cooperative agreement entitled Transitways Master Operations and Maintenance Agreement which states, in part, that all operational rules and procedures to be applied to the Houston HOV lanes must be in writing and agreed to by designees of the two agencies.

Actions Required of METRO and TxDOT

To implement the tolls and all other “rules of the road” for this congestion pricing program METRO must first exercise its authority to establish the tolls and the other rules necessary to administer and control the program and its participants. Rules are needed to govern HOV2 participation in the program, the participants’ responsibilities, toll collection activities, and the civil enforcement program under which privileges may be suspended or forfeited. TxDOT would need to concur in all the rules that would effect HOV lane operations or maintenance, as stated in the Transitway Agreement. The rules and tolls should be formally adopted by the METRO Board of Directors at one of its public meetings.

METRO has no public hearing prerequisite for the establishment of tolls or adoption of rules. Further, there is no statutory directive concerning the methodology for setting the tolls, beyond having them be “reasonable and nondiscriminatory.”² In setting the tolls the Board should be mindful that the agency’s revenue is not to exceed that which is necessary to “meet the obligations of the authority.”³ Secondly, METRO and TxDOT must determine which agency will pay for the initial and ongoing costs of this program and document their agreement on these issues.

Third, net revenues from this program should be dedicated to a specific purpose that is within METRO's powers to fulfill and within ISTEA's directive that revenues from such programs be used for projects "eligible under this Title (Highways)."⁴

Actions Required of the City of Houston

Specific legislative action would be necessary to criminalize nonpayment of tolls or other unauthorized use of the Katy HOV lane as a matter of state law. Without state legislative action, an effective criminal enforcement effort will require coordination between METRO and the city of Houston.

The city has an ordinance which prohibits use or entry onto HOV lanes during the hours when access is restricted by the Texas Transportation Commission. The assessment of tolls on the Katy HOV lane will become one of those restrictions upon the adoption of the tolls and rules by the METRO Board of Directors and the approval of same by TxDOT. However, Article XIII, Section 45 - 337, Code of the city of Houston, is not specific about the requirement to pay a toll as a condition of lawful use of the HOV lane. It is legally necessary to provide sufficient notice of prohibited behavior in order to enforce violations.

An amendment to the ordinance clearly prohibiting the use of the Katy HOV lane without payment of the toll is recommended. The ordinance amendment should be adopted prior to the start date of the priority lane pricing program. Further, a special effort to educate the city of Houston municipal prosecutors and judiciary about this priority lane pricing program and the ordinance amendment should be undertaken in order to ensure awareness of the importance of enforcement of the obligation to pay tolls. Fines paid for violations of the Houston ordinance are, without an agreement between Houston and METRO to the contrary, revenues of the city of Houston and should not be counted as priority lane pricing program revenue.

State Legislative Action as an Enforcement Option

In the event priority lane pricing becomes a widespread feature on HOV lanes, the sponsoring agencies may wish to explore legislation at the state level prohibiting unauthorized use and the use of these facilities without the payment of a toll. The Legislature can direct the payment of tolls and/or fines back to a specified agency and authorize additional enforcement activities that a municipality cannot. For example, the Texas Turnpike Authority has a specific law making it a crime to fail to pay a toll at its facilities and to fail to pay a toll after collection efforts are attempted. This law specifies that the Turnpike Authority is to receive the original toll amount, plus an administrative fee, from the courts in which a prosecution takes place. Further, Department of Public Safety officers are authorized to seize insufficiently funded "transponders" under certain circumstances.⁵ Another approach to enhancing program compliance would be to ask the Legislature to decriminalize the prohibited behaviors and authorize use of innovative technology (such as automatic cameras) to enhance civil fine collection efforts, as is being done in California.⁶

Enforcement will be key to effective operations of the priority lane pricing program. The program is attempting to encourage a controlled amount of additional use of this facility, which is currently free. In order to successfully convert this asset into a buy-in privilege, everyone buying-in needs the assurance that there is no free ride.

ENDNOTES

1. Sec. 451.061, Texas Transportation Code (Vernon's 1996). In Texas, transit agencies may be created under three different statutory schemes. Chapter 451 of the Transportation Code governs metropolitan transportation agencies and the authorities in Houston, San Antonio, Austin, Ft. Worth, and Corpus Christi operate under this statute. Chapter 452 of the Transportation Code governs regional transportation authorities. The Dallas Area Rapid Transit authority operates under this statute. Chapter 453 of the Transportation Code governs agencies which operate as municipal transit departments. El Paso's transit agency is governed by this legislation.
2. Sec. 451.061, Texas Transportation Code. "Reasonable and nondiscriminatory" are not defined terms within the Transportation Code, but are words to be given their technical, legal meaning when used in this statutory context. Sec. 312.002 (b), Texas Government Code. Other Texas statutes and law provide guidance as to the elements of a "reasonable and nondiscriminatory" toll. For example, rates charged for electric and telephone service, as approved by the Public Utility Commission, have been upheld when they featured cost elements such as time of day of use, purpose for which the service is received, differential charges for differing levels of service. Through METRO's rate-setting approval process a public record should be developed which can be used to justify market-driven, time sensitive tolls for the use of the Katy HOV lane. Such a record would be useful in defending the toll rate in the event of a legal challenge.
3. Sec. 451.061 (b), Texas Transportation Code.
4. Pub. Law 102 - 240, Sec. 1012 (b) (3).
5. Secs. 361.252 - 255, Texas Transportation Code.
6. Sec. 23302.5, California Vehicle Code, as amended by Stats. 1995, c.739 (A.B. 1223), Sec. 7.

III. OPERATIONAL FEASIBILITY

Operational feasibility of priority lane pricing turns on three separate issues: traffic, toll collection, and enforcement. The impact of priority lane pricing on existing HOV traffic and mixed flow traffic must be minimal. Toll collection must be pragmatic and relatively efficient at low capital cost. Since priority lane pricing adds a new dimension to the task of HOV lane enforcement, it is essential that at least one method of effective enforcement be identified to assure success of priority lane pricing.

TRAFFIC

The principal goal of priority lane pricing is to maximize the effective use of the Katy HOV lane. In so doing, the change in operations must not have an adverse impact on the operations of either the HOV lane or mixed flow lanes. Because the potential benefits of priority lane pricing accrue to only a relatively modest number of travelers, creating a problem for many non-users would seriously jeopardize the usefulness of priority lane pricing.

Potential Impacts on Existing HOV Lane Traffic

The Katy HOV lane currently moves 34% of all the persons in the corridor during the AM and PM peak periods combined, and 38% during the combined peak hours. The movement of existing HOV3+ vehicles could be impeded (affecting almost 6,000 daily travelers) if too many HOV2s are allowed to enter the lane. Therefore, a careful analysis of the available unused capacity in the HOV lane is essential to both the feasibility and ultimate operations.

Available Capacity

Early operations studies identified ideal capacity of the HOV lane as 1200 vehicles per hour (vph). This definition of capacity is based on the strong commitment to maintain free flow operations for buses and other HOVs. However, in daily operations, free flow conditions have been observed at flow rates as high as 1500-1600 vph on the HOV lanes in Houston. By targeting the ideal capacity in this analysis, there will be substantial room for daily and seasonal variations in travel without compromising the free flow conditions for the higher occupancy vehicles.

AM Peak Conditions

Figure 3-1 shows typical flow rates during the AM peak in 1995. These data indicate that HOV lane volumes drop significantly between 7:00 AM and 8:00 AM, the last hour of the 75-minute restricted period. The first quarter-hour of the restricted period (6:45 AM-7:00 AM) shows considerably higher volumes even though the HOV lane is restricted to HOV3+. Virtually all of the additional vehicles are HOV2s that entered at or near the beginning of the restricted period, but do not reach the count station until midway through the first quarter-hour.

Figure 3-2 provides a view of the AM peak in discreet quarter-hour increments; the flow rates are shown in vehicles per quarter-hour, instead of vehicles per hour. From these data it is clear that the first quarter-hour has no available capacity for additional HOV2s. The other four quarter-hours, though, can accommodate about 150 additional vehicles each, for an hourly total of about 600 vehicles.

Although there is apparently room for 600 additional vehicles during the peak, the arrival time of those vehicles is critical to maintaining free flow operations. Referring to Figure 3-2, if 300 additional vehicles arrived during the 7:00 AM-7:15 AM time period, then overall operations would be significantly degraded, substantially slowing all HOVs. Because the two quarter-hours from 6:30 AM-7:00 AM carry high numbers of HOV2s (see Figure 3-2), it is reasonable to assume that many of those users would choose to buy-in during the restricted period and move their departure time closer to the beginning of the workday. Therefore, the systematic addition of HOV2s to the AM peak should be gradual to assure that no single quarter-hour is significantly overloaded.

PM Peak Conditions

Figure 3-3 shows typical 1995 PM peak flow rates. The pattern is similar to the AM peak, in that there is a pronounced peak in flow just before the 5:00 PM-6:00 PM restricted period. However, as shown in Figure 3-4, the PM peak differs in that the reduced flows begin with the first quarter-hour, and continues throughout the restricted period. Thus, there is unused capacity for 150 vehicles or more during each of the first three quarter-hours, and about 100 vehicles during the final quarter-hour. In round numbers, the available capacity for the entire PM peak is similar to the AM peak at about 600 vehicles, with similar variations within the peak hour.

Potential Impacts on Freeway and Terminus Traffic

Given the preceding analysis and the conclusion that the Katy HOV lane can accommodate 600 additional vehicles in the peak (restricted) hour, the next operational question becomes: "can the entrances and exits to the HOV lane accommodate the additional traffic without creating congestion on the non-HOV facilities?" Figure 3-5 shows the access points to the Katy HOV lane. Assume that the 600 vehicles will be distributed to the access facilities in the same proportion as the normal traffic, then 250 vehicles would enter at the Western Terminus; 250 vehicles at the Addicks Park-and-Ride entrance, and 100 vehicles at the Gessner slip ramp. However, a larger percent of HOV2s are expected to make longer trips and the distribution for this analysis assumes 400 vehicles at the western terminus, 150 vehicles from Addicks, and 50 vehicles from Gessner entrance.

AM Peak Conditions

Traffic at two of the three access points for AM peak traffic can enter the HOV lane from mixed flow at the western terminus and the Gessner slip ramp. Existing flow rates in the inside lane of the eastbound I-10 at the western terminus have been measured at 1719 vehicles per hour (vph) during the restricted period, which produces a level of service (LOS) D conditions. The addition of 400

Note: Flow Rate Volumes = 15 Minute Volume x 4
 Data Collected @ Bunker Hill

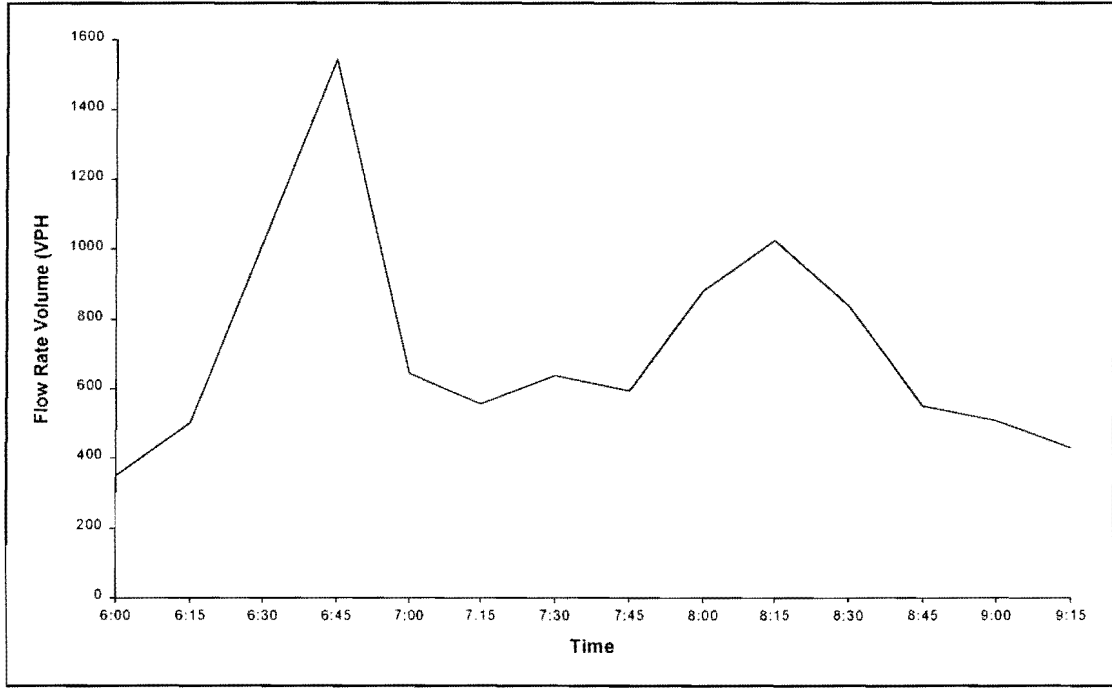


Figure 3-1. September 1995 Katy Freeway AM HOV Lane Flow Rate Volumes

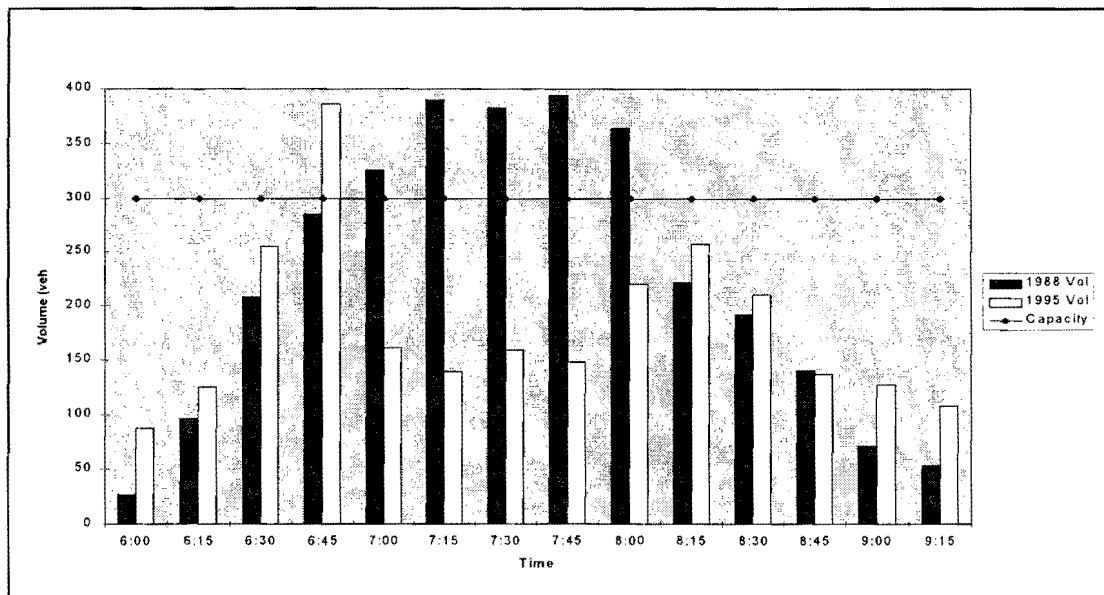


Figure 3-2. AM Peak Volumes for 1988 and 1995, in Quarter-Hour Rates

Note: Flow Rate Volumes = 15min. Volume x 4
 Data Collected @ Bunker Hill

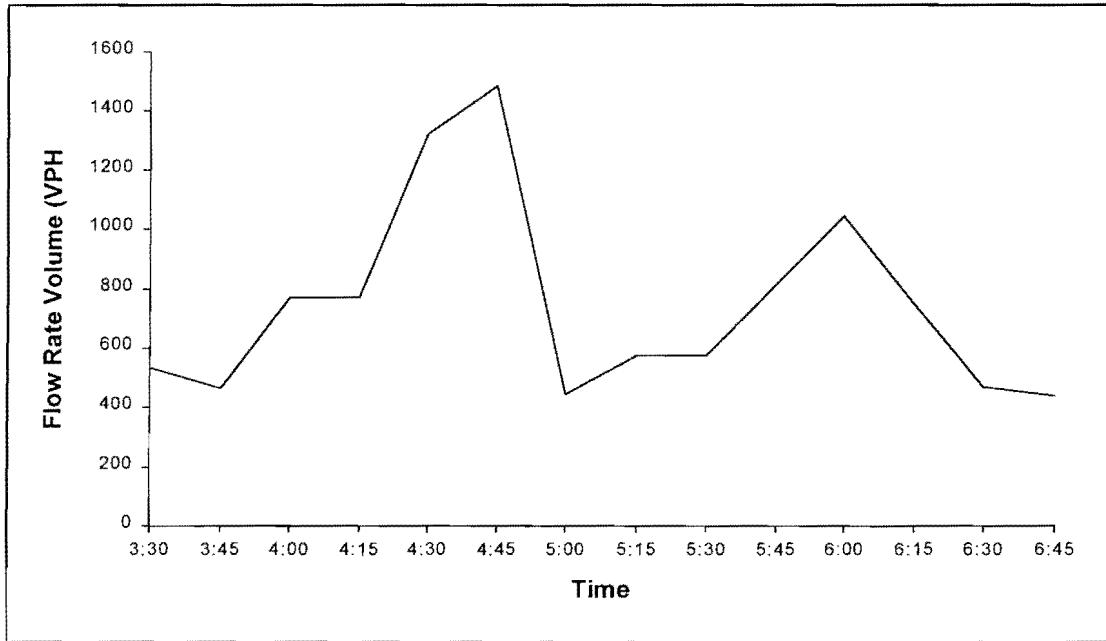


Figure 3-3. September 1995 Katy Freeway PM HOV Lane Flow Rate Volumes

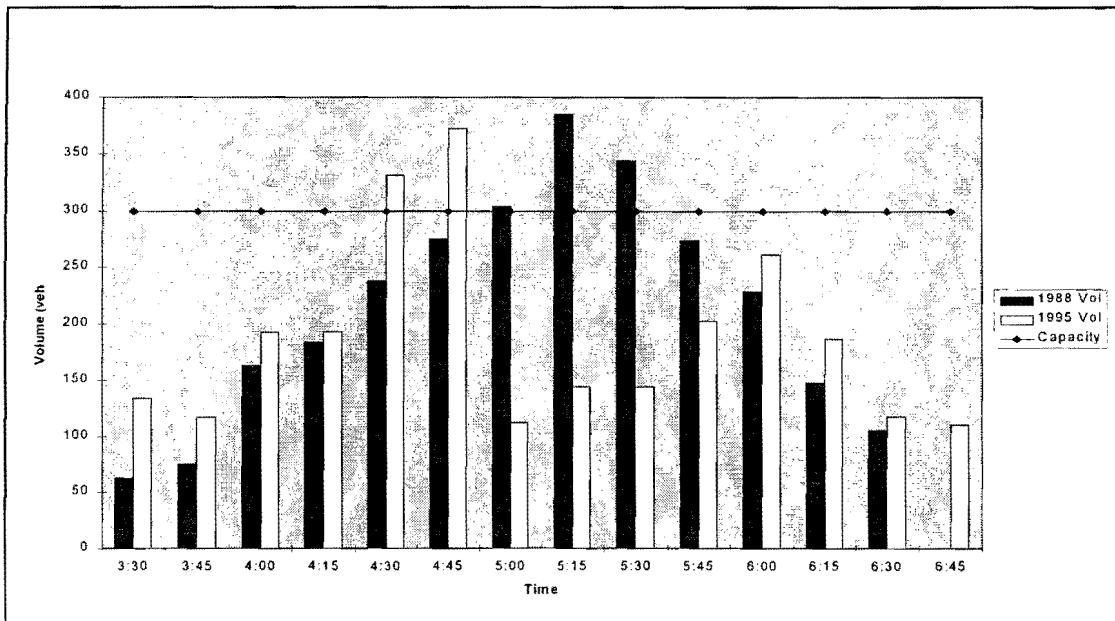
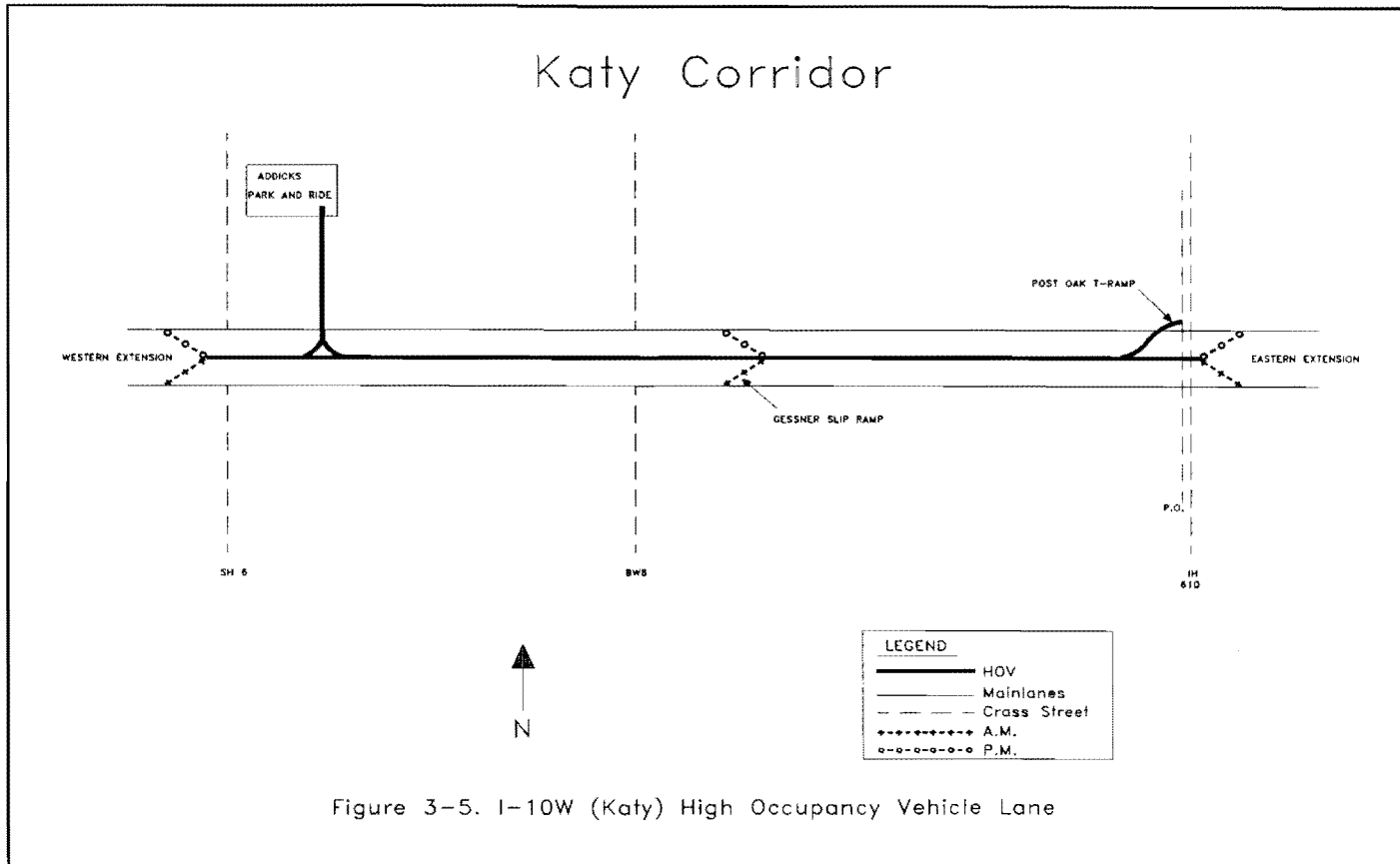


Figure 3-4. PM Peak Volumes for 1988 and 1995, in Quarter-Hour Rates



vehicles spread out over the peak hour would lower the LOS to E if all traffic remained in the inside lane. Typically, the additional load of 400 vph would be distributed across three lanes giving a lane volume of 1842 vph, which is still in the LOS E range. However, another factor to consider is the percentage of the 400 vehicles that are already included in the traffic flow prior to the introduction of the priority pricing operation. It is possible that more than 200 vehicles already approach the western terminus, thereby reducing the additional load on the freeway mainlanes. Under this assumption, the average lane volume would increase from 1719 to 1785 vph. This is a marginal increase that should not impact average hourly operations in the mainlanes. There will be fluctuations in flow rates, however, that might result in short-term congestion on the freeway mainlanes, but the overall impact on travel delays on the freeway lanes would be small.

At the Gessner slip ramp, a similar analysis indicates that the addition of the assumed 50 vehicles would not change the existing LOS C for the freeway mainlanes. In fact, this ramp could accommodate more than 300 vph without a change in LOS, but short-term congestion could be expected on the freeway mainlanes approaching this ramp.

At the eastern end of the HOV lane, traffic exits to two locations: into the mixed flow lanes of I-10 inside of I-610 (Eastern Extension), and into the intersection of Post Oak Road and Old Katy Road. The traffic that uses the Eastern Extension should have no additional impact since the HOV lane becomes an additional mixed flow lane at the terminus. However, the impact on the Post Oak Road/Old Katy Road intersection could be substantially greater. The existing distribution of exiting volumes between these two outlets is 52% to the Eastern Extension, and 48% to the Post Oak location. Assuming that the distribution of the 600 additional vehicles is the same, the added traffic in the Post Oak intersection would be 288 vehicles during the peak hour. That additional traffic would change the LOS for HOV exit ramp from B (existing) to C, based on volumes. Because this ramp is already severely limited due to the geometrics of the ramp, the average speeds in this short section would not be impacted by the additional traffic. The LOS of the intersection would remain at an LOS C. Therefore, the conclusion is that the additional traffic to both of these exits would not impact the mixed flow operations.

PM Peak Conditions

HOVs traveling westbound in the PM peak can enter the Katy HOV lane from mixed flow traffic at two locations: from the inside mixed flow lane of I-10 upstream of I-610 (Eastern Extension), or from the Post Oak Road/Old Katy Road intersection. The addition of a proportionate share of the 600 vehicles to the inside lane upstream will not change the current level of service, E. The reasons for this are listed below.

- A large proportion of the priority lane traffic will not be "new" or additional traffic.
- The total roadway traffic demand for I-10 and the HOV lane can be distributed across three lanes.

- The principal cause of the low existing LOS is the result of five lanes of traffic approaching the I-610 interchange that has a lane distribution of two lanes I-10 westbound and three lanes I-610.

The Post Oak intersection approach has sufficient capacity to maintain the existing LOS B. The LOS of the HOV ramp will continue to be controlled by the geometrics of the design, which has an advisory speed limit of 35 mph.

The westbound HOVs can exit the HOV lane into mixed flows at Gessner and at the western terminus. An analysis of the exiting volumes on the mainlanes at Gessner determined that an additional 127 vehicles can merge from the HOV lane without a reduction in the existing LOS D. Higher volumes can be accommodated on the HOV exit (250 vph) if the mainlane volumes are redistributed across three lanes. Short-term mainlane congestion might be expected with the variability of flow rates of the merging traffic streams, but the overall impact of the expected additional 50 HOV2s would be insignificant to the freeway mainlane operation.

At the western terminus, the traffic demands for the mainlanes are very high as a result of the two consecutive high volume westbound entrance ramps from Eldridge and S.H. 6. It is estimated that an additional 60 vehicles could be accommodated from the HOV lane and maintain the existing LOS E. However, it should be noted that the addition of 200-300 vehicles per hour would increase the per lane volumes by 100 vph, which would cause the section to operate as LOS F. This operation would not be expected to affect traffic upstream of the Eldridge exit ramp, which is a distance of less than two miles. Also, the operational differences between the border line of LOS E and LOS F would be small. Finally, TxDOT is expected to operate a ramp metering system in the area that can mitigate some of the congestion that might result from this operation.

The conclusion of this assessment is that the addition of 600 vehicles to the HOV lane during the restricted period would have minimal impacts in the mixed flow freeway lanes upstream of the entrances and downstream of the exits. In a similar manner, the reduction of freeway mainlane flow rates downstream of the HOV entrances is expected to have minimal impacts on operations.

TOLL COLLECTION

Priority lane pricing could function adequately using either manual or automated (electronic) toll collection. Since there is not adequate space for toll booths, manual toll collection would have to take some form of a pass with a visual identifier, such as a hang-tag, that signified "fees paid" to enforcement personnel. Automated toll collection would most logically follow the existing local practices by the Harris County Toll Road Authority (HCTRA), which uses "EZ tags" to debit the accounts of subscribing patrons. Under either system, participants would have to subscribe beforehand, thus limiting use (at least initially) to those who are knowledgeable about the Katy corridor operations.

Manual Toll Collection

After extensive review of available options, it was agreed that a pass valid for a specific period was the most efficient form of manual toll collection. In order to maintain high speed operations for all participants, enforcement of HOV2 buy-in would need to occur "on the fly," meaning that evidence of payment compliance would need to be visible to enforcement personnel. By using a "hang-tag" in the windshield that was color- or shaped-coded to signify valid dates, enforcement personnel could readily identify and stop violators.

The advantages of a manual toll collection system include the simplicity and the ease of implementation. Aside from some concern about counterfeiting, the principal disadvantage of manual collection is that passes must be valid for a specified period. If a participant used the HOV lane twice daily, then a monthly pass would be worthwhile. However, if the participant used the HOV lane only occasionally, then much of the value of the pass would be wasted. Such conditions are less likely to be attractive to most travelers, and have the potential of creating a substantially negative reaction.

It was concluded that a manual toll collection system could be implemented. It was also concluded that it would be less efficient and probably less popular than an automated system. Primary effort should be focused on establishing the feasibility of automated collection before significant additional effort is spent on a manual system.

Automated Toll Collection

This effort focused on the development of at least one feasible method of automated collection. The system described is a very low cost one, designed around existing technology in place on the Katy HOV lane. In the event that the operating agencies opt to proceed to implementation, this option would be fine-tuned. Aside from the technological requirements, it is recommended that an automated system be as similar to that used by the HCTRA as possible. Emulating the HCTRA system has two principal advantages: it is customer-friendly in that users of both systems do not have to incorporate different technologies, and it follows established local precedents for account structure, billing, and other potentially controversial aspects.

Requirements for Automated Toll Collection

There are several essential elements and considerations in assessing the feasibility of automated toll collection on the Katy HOV lane. Accounts for billing or debiting must be established in advance for each desired carpool/user. Likewise, each user must have an on-board transponder, either one already in place for use on the HCTRA system, or one obtained specifically for the Katy HOV lane buy-in. The HOV lane must be equipped with overhead toll-tag "readers," which record the use of the HOV lane by subscribing customers. Those readers must be able to accurately and reliably record use.

It is envisioned that the establishment of accounts and the distribution of EZ tags would be essentially identical to the methods used by HCTRA. For new users, EZ tags would be provided upon the establishment of an account and the payment of a deposit. For existing EZ tag users, a separate account would be established for Katy HOV lane use.

Users would have the option of establishing either of two types of accounts: prepaid debit or monthly billing. A prepaid debit account requires users to establish a cash account that is debited for each use of the HOV lane. Users agree to have their credit card charged, or have a withdrawal made from their bank account when the available balance drops below a threshold value. The monthly billing system requires users to put down a deposit, and then be billed monthly for actual usage. The deposit would be accessed only if the user failed to pay monthly bills, and their account was involuntarily closed.

Accuracy and Reliability

There are five toll tag readers in place on the Katy HOV lane: two between the Addicks Park-and-Ride connection and the Sam Houston Tollway, one just east of the Gessner entrance and exit, one just west of the Post Oak Road connection, and one at the eastern end of the HOV lane. All users would encounter at least two of these readers. Because the space for the HOV lane is narrow and adjacent mixed flow traffic close, the tag reading software will be designed to eliminate any false reads from adjacent lanes by requiring acquisition by multiple readers along the lane before debiting an account. Although the specific software design will be determined during the implementation phase, preliminary discussions with TTI computer scientists and with Amtech, the supplier of the AVI systems equipment and software, have determined that computer program requirements are not complex and that the costs to acquire "off-the-shelf" commercial programs and/or to develop special software should not exceed the estimates provided in this report.

ENFORCEMENT

Enforcing the priority lane pricing buy-in adds another level of complexity to an already challenging task. Currently, police officers must establish whether a user vehicle meets the occupancy requirements in effect at the time of use. When priority lane pricing is implemented, another category of potential non-compliance, the payment of a fee, will be added to occupancy check as a task to be accomplished while vehicles travel at a high speed.

Strict enforcement of both eligibility criteria is essential. Under current conditions an HOV2 that illegally uses the HOV lane is "getting away" with misusing a free service. Other HOV2s are not willing to run the risk of a citation in order to get the higher level of service. Under priority lane pricing the service is no longer free, and the violator is essentially stealing service -- a situation that paying users are unlikely to tolerate. Thus, the enforcement plan needs to address a rational means of assuring high-probability enforcement without significant additional personnel requirements.

The specific design of the enforcement scheme is still in progress. To simplify the task somewhat, users will be asked to "declare" their participation by using a distinctive hang-tag. Thus, vehicles with hang-tags will assist the officer in checking for occupancy and account validity. All other vehicles will fall under the existing occupancy check. For declared vehicles, the officer will check for occupancy and also get an electronic verification of account validity. It is proposed that the verification will be accomplished by the enforcing officers through the use of portable AVI readers that can access the priority pricing database in real time and provide the officers with the account information in time to complete the enforcement process in the prescribe areas. Failure of the priority pricing participants to conform to the occupancy requirement, or to have a valid account, will be grounds for the issuance of a citation.

CONCLUSIONS REGARDING OPERATIONAL FEASIBILITY

It is possible to implement priority lane pricing for the Katy HOV lane. In addition to the HOV lane capacity constraint of 600 additional vehicles, this analysis has identified other locations in the corridor that could be significantly impacted by the HOV2 buy-in traffic unless that additional demand is carefully monitored. The implementation plan will address specific threshold values for the key entry and exit locations. When enrollment of users reaches the threshold at any one site, further enrollment should be suspended until actual operations can be observed.

IV. PUBLIC ACCEPTANCE

WHY PUBLIC ACCEPTANCE IS IMPORTANT

Public acceptance plays a critical role in the success or failure of a congestion or priority lane pricing project. Policy makers must understand that public reaction is based on the visible project benefits and costs, rather than the total or actual project benefits and costs.

The goal of priority lane pricing is to save time for motorists and reduce air pollution by using existing transportation resources more efficiently. In general, the broad concept of congestion or priority lane pricing accords direct benefits to those who highly value their time and would benefit because the value of time saved is greater than the cost of a toll.

This project seeks to achieve the balance of improving the use of the Katy HOV lane without jeopardizing the public image of the operating agencies. Public acceptance through wide-reaching education efforts will help to ensure that the general public does not dismiss or dismantle priority lane pricing without a fair and objective trial. The elimination of two-person carpools from the Katy freeway HOV lane during the peak hour in 1988 caused a backlash, so every effort is being made to identify and avoid potential negatives that could be attached to priority lane pricing.

The priority lane pricing project, as envisioned for the Katy freeway HOV lane, has no readily identifiable groups that are negatively effected. Because this application is intended to draw at least some vehicles out of the mainlanes and into two-person carpools, priority lane pricing could benefit even those who choose to stay in the mainlanes. Also, as long as HOV lane operations are not allowed to suffer, current HOV users could not be negatively effected. The absence of negative impacts is one of the features that makes the application of congestion pricing principles to HOV lanes attractive.

EXPECTATIONS BASED ON NATIONAL AND INTERNATIONAL EXPERIENCE

Public acceptance experience from other priority lane pricing projects cannot be evaluated because no identical project exists. The Katy freeway project is unique in that it is spurred by the underutilization of an HOV lane *and* that it excludes SOVs from participating. Other priority lane pricing projects are currently being evaluated, but none are yet operational.

Despite the lack of operational experience from other priority lane pricing projects, considerable public opinion research has been conducted on national and international congestion pricing projects. All of the public opinion research heretofore has been on the broader public policy of *congestion* pricing, and none directly on the narrower application of *HOV lane* pricing considered for the Katy HOV lane. The distinction may be significant in that broader application of congestion pricing typically entails disincentives for peak period travel rather than incentives for premium service.

Experiences in Norway indicate that public opinion does not necessarily dictate a project's success. Once a project is in place, positive public opinion may rise as benefits are seen and understood by the public. For example, in Bergen, public opinion rose from 13% favorable to 50% favorable after people experienced little of the anticipated toll booth congestion, utilized toll discounts from season passes, and saw revenue used toward visible road improvements.

In Trondheim, public acceptance for a congestion pricing toll ring was rated at only 7% before implementation. Acceptance rose after the ring opened, but only to 20%. Nonetheless, the Trondheim toll ring has successfully controlled congestion. Since the program went into effect, there has been a 10% decrease in peak period traffic around the city, while non-peak traffic increased by 9%. In addition, weekday bus travel has increased by 7%.

Public opinion research in the United States also provides a basis for priority lane pricing expectations. A Citizens Jury[®] conducted in the Twin Cities by the Hubert H. Humphrey Institute at the University of Minnesota indicated that people disliked disincentives and wanted travel behavior to be a personal decision. The Citizens Jury[®] process involved 24 randomly selected jurors who met for a week and heard testimony from economists, transportation professionals, interest groups, and elected officials. At the end of the week, jurors evaluated the viability of congestion pricing and its potential advantages and disadvantages. They also considered the issue of equity to play a large role in public acceptance. The initial opinion was that congestion pricing would benefit high-income drivers at the expense of low-income drivers. The lack of alternatives or flexibility, predominant in low-income populations, further enhanced the perception of inequity. However, jurors conceded that fairness may be used as a positive selling point: those who cause the need for extra capacity should pay for it. Overall, the Citizens Jury[®] agreed that congestion pricing would be acceptable only as a last resort strategy.

The Hubert H. Humphrey Institute also conducted focus groups in Minneapolis, Minnesota; Portland, Oregon, and Houston, Texas, to explore the institutional and political issues surrounding congestion pricing. The institute interviewed four stakeholder groups separately (transportation representatives, business leaders, community organizations, and elected officials) and discussed issues on public acceptance, potential barriers, social equity, revenue distribution, and evaluation criteria.

In Minneapolis, the Humphrey Institute focus group participants agreed that tangible, positive results are necessary to build public support. The groups in Portland felt that for a pricing campaign to be successful, the public must be well-informed and consulted regularly as the project progresses. The Houston focus groups agreed that they would be more likely to accept congestion pricing if it improved air quality and increased the ease of travel. Participants in Houston also said that gaining political acceptance would be a significant obstacle due, in part, to the fact that people feel that the roads have already been paid for and would not be willing to pay "twice."

Further, focus groups in Boulder, Colorado indicated that people would not modify their travel behavior unless specific inducements were in place. It was also recommended that several alternative strategies be explored and that citizens should have convenient options available before a pricing strategy is implemented.

FOCUS GROUP RESEARCH IN HOUSTON, TEXAS

Two focus group meetings were held for the Katy freeway HOV lane priority lane pricing study on July 30 and 31, 1996, at the facilities in Houston. The two focus groups were divided between Katy freeway users and the general public. A total of 11 participants attended the Katy freeway user group. The recruitment was designed so that the group would have an equal number of representatives for each of the following travel modes: single occupancy vehicle (SOV), carpoolers (HOVs), and transit riders. The transit riders were selected to represent users of a range of METRO (Metropolitan Transit Authority of Harris County) services in the Katy corridor, including express routes and several Park & Ride routes. While those participants confirmed to attend were drawn equally from these groups, the carpoolers ended up slightly under-represented in the group that actually attended.

Sixteen participants attended the general public group. This group consisted of a cross-section of people with varying ethnic background, annual income, home location, and work location. This group specifically excluded regular users of the Katy freeway.

The purpose of the focus groups was to get an indication of possible public opinion on charging a toll for two-person carpools on the Katy freeway HOV lane during weekday peak periods (6:45 AM - 8:00 AM and 5:00 PM - 6:00 PM).

Focus group research is designed to elicit in-depth, unprompted views on complex subjects rather than a statistically valid assessment of public opinion. While focus groups cannot represent the breadth of opinions that surveys can, their purpose is to investigate a topic deeply and in detail. Feedback obtained from the focus groups discussed below will help determine if priority lane pricing on the Katy freeway HOV lane is acceptable to the public, or, if not, how public acceptance could be achieved.

Katy Freeway User Focus Group

The objectives of the Katy freeway user focus group were to:

- ▶ identify current mode of travel and travel habits,
- ▶ explore perception of current restrictions on HOV lane,
- ▶ identify potential users of priority lane pricing,
- ▶ explore acceptable pricing levels for priority lane pricing,
- ▶ identify any social equity issues,

- ▶ investigate acceptable or preferred use of revenues generated by priority lane pricing, and
- ▶ suggest marketing and evaluation procedures for priority lane pricing.

Current Mode of Travel

While the Katy freeway focus group was recruited by typical travel mode, many participants' mode of travel varied during their work week, depending on traffic conditions, work schedules, and the availability of carpool members (generally family). Several bus riders also drove alone or carpooled several days per week. The group included these travel modes:

- ▶ SOV drivers, most of which were not destined to downtown or other major activity centers, making it difficult to use transit or carpool. The SOV drivers were not staunchly opposed to carpooling or transit use but felt that their travel patterns (e.g., Katy to Webster) limited their alternatives. The only SOV driver to downtown was semi-retired and chose to travel during non-rush conditions.
- ▶ Regular carpools, all of whom carpooled with family members (spouse or small children) used the HOV lane. Most carpools were two-person carpools who scheduled their trips to accommodate the peak-hour restrictions on the HOV lane rather than travel on the mainlanes.
- ▶ Transit riders represented the 131 Memorial Express, the 207 West Belt Park-and-Ride, and the 228 Addicks Park-and-Ride. The transit riders were generally happy with the bus, but park- and-ride patrons cited later service (or more frequent evening service) as the most desired service enhancement. In fact, when a transit rider chose to drive, it was usually because he or she anticipated staying at work later that evening.

In addition, some of the regular carpools and transit riders reported that they occasionally participated in "casual" carpools. Casual carpooling occurs when a driver picks up another passenger, usually a park-and-ride rider or other acquaintance, without prior planning.

Restrictions on the HOV

With the exception of a few participants who did not reside in the Katy Corridor area prior to 1988, most of the participants used the HOV before usage was restricted to 3+ for the peak periods. After restrictions were put into place, most drivers simply adjusted their travel times instead of adding another member to the carpool. One of the participants described the pre-1988 congestion on the HOV lane as worse than the freeway. Another participant indicated that it was common for traffic to be backed up to Gessner as motorists tried to get off of the HOV lane (Post Oak terminus only). The participants agreed that the 3+ restrictions during the peak hour were necessary, however, most also agreed that the HOV lane appears to be underutilized during the 3+ periods.

Potential Users

Focus group participants were questioned about their current use of the HOV lane and if they felt they would use the HOV lane if priority lane pricing was implemented. Of the 11 participants, at least six currently use the HOV either as a carpooler with family or as a park-and-ride user. All participants indicated that they would likely use the HOV lane during the peak hours if a toll was assessed, with the exception of one SOV driver. They also felt that a number of other people would be willing to pay, particularly individuals whose employers subsidize their parking. One of the carpoolers, who alternates between 2+ and 3+ carpooling, indicated that she would gladly pay the toll when there are only two people in the car. Currently, she adjusts her travel times to fall outside of the 3+ window when her third carpool member (her husband) is not with her.

Even though most participants said they would be willing to use priority lane pricing, most felt that they would only use it occasionally or in one direction only. None felt that they would use it every day in both directions because of varying schedules and after-work plans. Some of the bus riders felt that priority lane pricing would result in more informal carpooling, which generally draws from bus riders.

Price

Many issues surrounding price were explored, including how much to charge, the method of payment, and frequency of use. In addition, focus group participants were asked to identify the best method to distribute passes if a limited number were available.

Suggestions for the toll included a flat distance rate, \$0.75 for every four to five miles, and \$2.00 one-way. The most often cited “comparable” for setting the price was the toll road charges. Bus riders agreed that the toll charge would have to be more than the cost to use the park-and-ride or bus ridership would suffer. Carpoolers viewed the price as “per car” not “per person,” because the other carpool member is usually a family member or casual carpooler. Drivers feel that the casual carpooler is doing them a favor by riding with them so that they can use the HOV lane; therefore, they would not ask the passenger to share the cost of a toll.

The EZ tag was considered by most to be the best method to collect the revenue for several reasons. First, the cost of building and staffing toll booths would not be required. Second, cars would not have to slow down to pay. Finally, an EZ tag would allow for a one-time collection of money (in advance). However, two of the bus riders who have EZ tags and use the toll road as part of their commute noted congestion on the EZ tag lanes, because the popularity of the lanes increased when the toll charges increased to \$1.00. Participants also pointed out other potential problems associated with the use of EZ tags for priority lane pricing. Primarily, the problems related to enforcement, including transferring the tags between vehicles and problems identifying legitimate two-person carpools during the 3+ restricted times. A lottery was the most popular method for distributing a limited number of passes, which would allow usage for a designated length of time.

Social Equity

Low Income Bias - Social equity is a critical issue facing congestion pricing projects in other parts of the country, where some felt that this type of project discriminates against the low-income traveler. Focus group members did not, however, see fairness as an issue. The SOV drivers felt that it was a matter of supply and demand or economics. Whereas the bus riders felt that this project was just another way of paying for value received. The fact that the Katy freeway would still be available as a free option seemed to be the primary reason that income equity did not seem to be an issue. In addition, this focus group was composed of regular users of the Katy freeway, which are generally employed people who live in a fairly affluent part of town.

Double Taxation - The acceptability of charging the public for roads already paid for with taxes is another critical issue often associated with congestion pricing projects. Most of the participants indicated that the priority lane pricing tolling was acceptable as long as the users were getting additional privileges, such as paying for additional channels on cable television. The idea of double taxation was simply not an issue for this group.

Beneficiaries and Non-beneficiaries - Focus group participants were asked if there was a benefit associated with a pricing scenario. The main benefit cited by SOV drivers and Park & Ride users was time. The HOV user would save a large amount of time by being able to go around congestion on the mainlanes. The non-user (a mainlane driver) would save a smaller amount of time because some cars may be removed from the freeway, reducing congestion. The group seemed to understand, however, that the benefits to the mainlanes would be very small. One participant (an SOV driver) pointed out that efforts should be made to preserve the right of the people driving on the mainlanes (such as ensuring that traffic is not tied up by persons waiting to get on the HOV lane). Other participants saw priority lane pricing as a benefit for everyone because the pricing scheme would increase traffic flow.

The 3+ carpoolers and bus riders both indicated they benefit the least, because the HOV lane would have more vehicles, which could result in a loss of travel time (an erroneous assumption in this case). Most bus riders did not think the pricing scheme would benefit transit because they felt that most priority lane pricing users would be drawn from bus riders rather than from SOVs. The bus riders, who would use priority lane pricing, may have carpooled until the 3+ restrictions were implemented or may be drawn into more informal carpooling. The bus riders feared that any loss of ridership from the buses due to priority lane pricing would result in METRO either raising fares or reducing service.

Use of Revenue

Focus group participants were asked if the pricing scheme should generate revenue or simply cover costs. Most felt that excess revenue should be made and that it should be used to improve transit

service in the Katy corridor (e.g., more evening Park & Ride service) or to improve the HOV lane operations (e.g., a flyover ramp at Gessner). Better signs and Smart Commuter type applications were also mentioned as potential uses for the revenue.

Other Issues and Concerns

SOV Buy-In - When the group was introduced to the idea of SOV buy-in during off-peak hours, the reaction was neutral. The idea of SOV buy-in did not bring up any new concerns of social equity. However, the group also felt that SOV buy-in would be pointless during the off-peak hours because congestion is not high enough to warrant the toll. In addition, the group felt that METRO police generally do not enforce the HOV lanes in off-peak hours anyway.

Enforcement - One topic frequently discussed was enforcement. Many of the participants felt that the HOV is used by 2+ carpoolers during the 3+ window and by SOVs after dark. Most HOV lane users were aware that a policeman writing a ticket cannot stop subsequent abusers and that the policemen do not ticket during inclement weather. The group felt that enforcement of priority lane pricing would be extremely difficult and potentially too expensive.

Other - One bus rider indicated that the pricing scheme has the potential to increase jobs (to run priority lane pricing) but not reduce congestion. Another bus rider suggested that METRO stop trying to accommodate too many people with too few buses and concentrate on getting the commuters downtown.

Consensus of Katy Freeway Focus Group

The group was not asked or encouraged to come to a conclusion or consensus at the end of the discussion. However, they offered their conclusions to the moderator at the close of the discussion as follows. The group recommended against implementation of priority lane pricing because they felt that the effort and cost were not worth the benefits. They felt that METRO should instead be concentrating on how to fill up the HOV lane by improving bus service and improving the HOV lane, primarily by extending it to downtown. As one of the participants stated, “Why not improve or enhance what is already there as opposed to trying to nickel and dime users on the HOV?”

In an abstract sense, the pricing scheme was a win-win-win situation for HOV users (who would receive time savings and convenience), commuters on the mainlanes (who would potentially see fewer cars on the freeway), and the sponsoring organizations (through revenue). However, after thoroughly examining the distribution of passes, collection of tolls, and enforcement, participants felt priority lane pricing would require too much operational effort to justify the end result.

General Public Focus Group

The objectives of the general public focus group were to:

- ▶ identify current mode of travel and travel habits,
- ▶ assess level of importance of transportation issues to Houston-area residents,
- ▶ identify any social equity issues associated with priority lane pricing,
- ▶ investigate acceptable or preferred use of revenues generated by priority lane pricing, and
- ▶ analyze marketing and evaluation procedures for priority lane pricing.

Since time allowed, the following two topics that were pursued with the Katy freeway users group were also discussed:

- ▶ identify potential users of priority lane pricing, and
- ▶ explore acceptable pricing levels for priority lane pricing.

Current Mode of Travel

The focus group consisted of two carpoolers (a third person formerly carpooled), 13 SOV drivers, and one person who did not drive. There were no bus riders in the group. Most participants live in suburbs and work in the city. One lived inside Loop 610 and commuted out of the city, and two lived at or close to their work sites. The group included Caucasians, Hispanics, Blacks, and Asian-Americans.

Transportation Issues

Transportation issues were identified to provide a basis for the discussion and to assess how critical transportation issues were to the group. The importance of transportation issues could affect participants' perspectives of priority lane pricing.

Focus group participants agreed that traffic was a major problem in Houston. They cited three specific problems.

- ▶ Construction blocks too much of the roadway and it never seems to end (especially on I-45).
- ▶ The city didn't plan for the future. Obstacles such as bridges and existing development along roadways will limit future expansion of freeways.
- ▶ Population is growing away from the city. This outward growth makes it harder to accommodate traffic.

Almost all commuters pay to park, not only those who work downtown. Fees ranged from \$3.50 per day (downtown) to \$10 for a semester (University of Houston). Many were subsidized by employers, but they still pay some out-of-pocket expense.

Most thought the HOV lanes were well utilized, especially on I-45 and U.S. 290 corridors. The Southwest HOV lane does not have as much traffic as others, but it is also newer. Almost all of the group used the HOV lanes and toll roads occasionally. Most of the frequent toll road users felt they had a choice and would use the toll roads if they were in a hurry or if traffic reports indicated congestion on alternate routes.

Social Equity

Low Income Bias - Some participants felt that it would be fair to charge a toll in exchange for the convenience and speed. One participant (a carpooler/occasional toll road user) even said all drivers should be charged tolls to distribute costs among users. As with the Katy freeway users group, this group was not concerned about income equity, even though this group represented a much broader range of incomes and ethnic groups.

Double Taxation - While income equity was not an issue with this group, the issue of double taxation was very important. Most felt that tolls are very unfair to drivers, and that people should not have to pay for roads that were built with taxpayers' money. Tolls would be more acceptable on a private road than a state road because taxes are not used for private roads. Past experience with toll roads (examples from Northeast cited by participants) demonstrated that tolls are never removed and always increase. Even though the purpose of priority lane pricing tolls is different from the Northeastern toll roads, they felt it would be better to prevent tolls from being charged to begin with than to deal with the ever-increasing rate.

Despite the above opinion, about half of the participants choose to travel on toll roads for the time savings. The toll road users expressed concern that congestion at toll plazas can reduce or eliminate time savings. However, none of the focus group participants uses the EZ tag. Even though this method helps to eliminate congestion problems, participants elect not to use it because they feel it is difficult to keep track of an EZ tag account balance. Some use tokens rather than EZ tags to save money. Most users take toll roads periodically, according to traffic conditions or if they are in a hurry.

The double taxation issue was raised by participants specifically with respect to METRO. They said that METRO has plenty of money from the one cent sales tax and they do not need to be raising more money with tolls. One participant felt that METRO has so much money it has to look for places to spend it.

Beneficiaries and Non-beneficiaries - The group agreed that if a tolled HOV lane would alleviate traffic on the freeway, people in the mainlanes would benefit. Toll revenues could be used to offset costs for everyone else by reducing taxes or subsidizing vehicle registration fees.

Participants said that HOV3+ travelers would not benefit from priority lane pricing because there would be more traffic in the HOV lane and more congestion than current conditions. It was even suggested that some HOV3+ members may break into two-person carpools as a result.

METRO would also be affected by a decrease in bus ridership. Current bus riders may elect to pay the toll and form two-person carpools instead of riding the bus.

Usage Rationing - Unlike the Katy freeway users, the focus group participants agreed that some form of first-come-first-serve is an equitable way to distribute usage of the HOV lane. An SOV driver even suggested real-time traffic signals to regulate drivers entering the lane.

Use of Revenue

The group felt that priority lane pricing should not make a lot of extra money. Opinions differed as to how much revenue should be generated, but all agreed that administrative costs, emergencies, and some repairs should be covered by the toll. There was a general distrust of METRO and Houston “politicians,” and participants felt that they could not trust policy makers with the excess revenue. The discussion on the use of revenue led back again to the negative feeling toward tolls in general.

If the project did generate revenue, however, they agreed that it should be used to directly benefit the public at large, not just benefit the Katy freeway users (it should be noted that this group did not include any Katy freeway users). Participants suggested reduced taxes, vehicle registration subsidies, and area road improvements as possible uses. The consensus was that people would be more motivated to pay a toll if they knew it would benefit them in some way.

Marketing Message/Evaluation

Participants suggested two ways to evaluate the success of priority lane pricing on the Katy freeway. First, if the extra capacity was filled or “constantly used,” the project would be successful. Second, it should make enough money to cover implementation, administrative, and enforcement costs, and not require extra money from users to cover “emergencies.”

To market a new priority lane pricing strategy to the public, participants suggested advertising on morning television news reports, placing articles in the newspaper, using signs to inform drivers (similar to the campaign used in spring of 1996 to advertise the Hardy Toll Road toll increase), and sending direct mail advertising. They felt that these methods would be effective, but warned that very little money should be spent advertising.

The group also identified ways to determine failure of the project. If priority lane pricing causes safety problems with traffic entering and exiting the HOV lane, it would not be worth implementing. Further, there should be little or no congestion at toll booths which cause safety problems and reduce time savings.

Potential Users

Most participants would be willing to pay a toll as long as it would benefit them in some way, either through time savings or revenue use. One carpooler who currently travels on the I-45 HOV lane said

she would consider paying an HOV toll to continue using it for her two-person carpool (with her husband). The cost of the HOV toll would have to be comparable to the toll roads, however, or she would use the Hardy Toll Road. One carpooler who currently travels on the U.S. 290 HOV lane in a carpool with his wife said he would be willing to pay an HOV toll to travel as an HOV2 instead of finding a third person for the carpool because it would be too much of an inconvenience.

However, priority lane pricing on the Katy HOV would not motivate the SOV drivers to *form* carpools. Only two members currently drive in carpools, both with adult family members who work in the same company or area. One SOV driver used to carpool with a coworker, but it was too much of a burden. SOV participants agreed that carpools usually do not work, because it is too inconvenient to coordinate schedules.

The bus was perceived as an option, but none of the participants felt it was better than their current mode of transportation. The reasons given included: service is too infrequent, route coverage is inadequate, most service goes downtown, and prices are too high. Some conceded that if their current situation changed they may be willing to take the bus to work.

Price

The amount each person would be willing to pay varied, but, like the Katy freeway users, all assumed that the price would be comparable to toll road charges. Also similar to the first group, participants considered the toll as a price per car, not per person since the only two carpoolers drove with a family member and could not split the fare. One SOV driver who used the Beltway 8 bridge and adjacent segment of the Sam Houston Tollway was adamant that the daily \$4.50 toll she paid was entirely too high for any road. Others agreed that they would not be willing to pay \$4.50 per day for a toll. Overall, the amount paid would depend on the time savings and distance traveled.

Other Issues

SOV Buy-In - One participant suggested that a priority lane pricing would be fairer if SOVs were allowed to buy into the HOV lane. The group felt that allowing SOVs to pay for use of the HOV lane during non-peak hours would be acceptable as long as the HOV lane does not become congested. They said that if other drivers are willing to pay, all drivers would benefit from fewer cars on the mainlanes. However, not many SOV drivers would likely choose to buy-in because mainlanes are usually clear during non-peak hours.

The group was emphatic that even though SOV buy-in would benefit some drivers, it would not be acceptable during peak periods. They felt this would defeat the original purpose of having an HOV lane and would encourage more vehicles on the freeway. Concern about air quality was cited by one participant as the reason that additional vehicles should not be encouraged.

Enforcement - As with the Katy freeway users group, this group believed that enforcement would be difficult and costly.

Temporary Situation - Participants suggested that even though Katy HOV use has remained constant since 1988, the population and economy are growing again and the HOV lane might reach capacity during the peak periods at 3+ soon. Thus, they said that the need for priority lane pricing might be temporary and the project may not be worth implementing.

Transportation Policy Implications - Several participants suggested that priority lane pricing does not encourage mass transit. It would be taking a step backward if implemented. Participants cited the experiences of New York City and Los Angeles which use rail, buses, and HOV 3+ to move people rather than encouraging individual cars.

Participants suggested that there were alternatives to priority lane pricing. One SOV driver (a non-toll road user) suggested that Houston have two reversible lanes like Chicago. Reversible lanes would add extra SOV lanes to the highway in the direction needed during peak-hour traffic. Another group member strongly suggested light rail to move more people at a time.

Participants felt that more can be done on mainlanes to reduce congestion and improve traffic flow. Examples given were improved signs for upcoming highway interchanges, changeable message signs to warn of accidents and redirect traffic, additional merge lanes, and more radio traffic reports. In general, they felt that METRO and others should work on the traffic volume on the mainlanes, not the HOV lane.

Consensus of the General Public Focus Group

The group was not asked or encouraged to come to a conclusion or consensus at the end of the discussion. However, they offered their conclusions to the moderator at the close of the discussion as follows. They recommended against implementation of priority lane pricing because charging tolls on a public road is unfair and would lead to more tolling; agencies do not need more money and cannot be trusted to spend additional revenue wisely, and the project “seems to be going in the wrong direction” by encouraging more people to drive.

One participant said near the end of the discussion “now tell me again what the problem is?” He felt that any excess capacity on the HOV lane was not necessarily a problem and should be preserved as a benefit to those who make the effort to carpool with three or more people, or ride the bus. In addition, the group felt that the cost of implementation was likely to be too high, particularly the cost to enforce the HOV lane.

CONCLUSIONS FROM FOCUS GROUP FEEDBACK

If priority lane pricing is implemented, the focus groups have identified areas of public concern to be addressed in a marketing or public information campaign.

Define Problem

The problem that priority lane pricing is designed to address -- namely, underutilization of the Katy HOV during the 3+ restricted periods -- must be clearly defined for the public. The underutilization itself should be explained in terms of how many more cars (and hence people) can be carried on the HOV lane. More importantly, it must be explained why underutilization is a problem.

Define Benefits

Just as the problem must be clearly defined and understood, the benefits of the project in terms of people movement and improved traffic flow must be explained. The description of benefits must go beyond merely filling up excess capacity.

Define Use of Revenues

The general suspicion of tolls, the mistrust of the agencies' use of additional revenues, and the fear that this project is "anti-transit" is a difficult obstacle to overcome. One way to allay those public fears is to clearly and publicly determine how any excess revenues will be spent. Dedicating any excess revenues to transit operations, coupled with assurances to Katy corridor bus riders that priority lane pricing will not lead to service reductions or fare increases, may help overcome these objections.

Establish Effective Enforcement

The public was skeptical of METRO's ability to enforce priority lane pricing. A good enforcement plan should be established and explained as a part of the public information campaign.

Findings From Focus Groups

While some of the concerns identified in the focus group results should not be used alone to determine whether priority lane pricing is implemented, the focus group results should serve as a caution to the sponsoring agencies. The benefits of the project must be sufficient to justify the potential negative public perceptions that could be generated by the project. In addition, the benefits of the project must be sufficient to justify execution of an adequate marketing and public information campaign to attempt to prevent a negative reaction to the project.

MARKETING PLAN

Under the Priority Lane Pricing program, two-person carpools would be charged for using the Katy HOV lane during 3+ hours ("peak hour"). The system would work like the EZ tag program on the Sam Houston Tollway. Infrastructure can be put into place for a one-time cost of \$110,000 and account administration and extra police assigned for enforcement would cost around \$125,000

annually. Based on an expected fee of about \$3.50 per trip, it is estimated that about \$800,000 - \$1,000,000 will be generated annually in revenue.

Results from the focus groups reveal the need for marketing and public outreach to address two issues:

- 1) Information regarding how the project works (hours of operation, where to get EZ tag, etc.), and
- 2) Outreach to address/avoid negative criticism regarding the project (use of public funds to create toll road, not using HOV in the manner in which it was intended, etc.)

The Katy freeway mainlanes carry 5,323 vehicles (5,403 persons) during the peak hour and the HOV carries 845 vehicles (3,377 people) during the peak hour. The goal is to increase peak hour HOV lane usage by 600 vehicles (a 71% increase).

Suggested Marketing and Outreach

Non-paid

- ▶ News releases
- ▶ News/talk interviews with spokesperson/staff

Paid

- ▶ Radio advertising
- ▶ Brochure/pamphlet mailed to addresses in Katy HOV market service area and METRO mailing lists in Katy HOV market service area
- ▶ Newspaper advertising

Freeway Signage

- ▶ Access/egress
- ▶ Hours of operation

Radio Advertising

- ▶ \$5,000 for a 30-second spot production
- ▶ \$100,000 for an eight-week schedule on news/talk, general market, rush hour dayparts only, at net (No commissions)

Brochure

- ▶ \$7,000 for a four-color, 8.5 x 20, folded into five panels, mailable, 25,000 annually

Newspaper Advertisement

- ▶ \$5,000 for 1/2 page advertisement in Sunday newspaper. To start in the *Houston Chronicle*
- ▶ \$75,000 for 1/4 page in the *Houston Business Journal* and *Houston Chronicle* on Mondays and Fridays for eight weeks

Mailing brochures

- ▶ \$8,000 for postage for 25,000 pieces
- ▶ \$1,000 for mailing labels to 20,000 addresses in Katy HOV market service area
- ▶ Distribute brochure through METRO mailing lists in Katy HOV market service area

Miscellaneous

- ▶ \$5,000 for office supplies, delivery, etc. annually

Labor Tasks

- ▶ Project administration
- ▶ Mail brochures
- ▶ Draft/distribute press releases
- ▶ Database management of callers
- ▶ Produce radio advertising
- ▶ Produce newspaper advertising
- ▶ Place radio advertising
- ▶ Place newspaper advertising
- ▶ Create/produce brochure
- ▶ Arrange interviews

Labor Estimate

- ▶ 500 hours annually at \$40/hour=\$20,000

Total Estimated Costs

Table 4-1. Estimated Marketing Costs

Radio Advertising	\$55,000.00
Brochure	\$ 7,000. 00
Newspaper advertising	\$80,000.00
Mailing	\$ 9,000. 00
Miscellaneous	\$ 5,000. 00
Labor	\$20,000.00
Total	\$176,000.00

Percent of sales (POS) is another method that can be used to develop/validate a marketing/advertising budget. If between \$1 and \$2 million are expected to be generated as a result of this project, then using a 15% POS (a generally accepted industry standard), the budget should be between \$150,000 and \$200,000. The above table provides an estimate within this range.

Marketing Schedule

Six weeks prior to effective date:	Brochure/pamphlet is created
Four weeks prior:	Brochure/pamphlet is available for distribution Install freeway signage EZ tag sales begin
Two weeks prior:	News releases begin to flow Paid radio begins for six weeks
Effective date:	Newspaper ad appears Interviews run

V. PRICING OF HOV BUY-IN

OBJECTIVE OF PRICE SETTING

In the true vein of congestion pricing, the objective in setting the price for service is to place it at a level that generates precisely the desired demand. To price it too low would saturate the HOV lane or create a waiting list for authorization. To price it too high would not take advantage of available capacity.

The broader transportation goals in the corridor are targeted at increasing vehicle occupancy, principally in vehicles using the HOV lane. So as not to cannibalize very high occupancy vehicles, such as buses, the price should not be set substantially lower than park-and-ride fares. This is especially important since the focus groups indicated that many travelers vary their modes throughout the week, and expressed concern that overuse of priority lane pricing could result in reduced bus service.

OPTIONAL PRICING STRATEGIES

Evaluation of pricing of the two-person carpool buy-in on the Katy HOV lanes during peak periods included two basic considerations. First, prices charged on other alternatives in Houston were considered. Second, demand schedules were developed considering time savings that are possible on the HOV lane as compared to the main freeway lanes. Based on these analyses, three alternative pricing strategies are examined: two represent different approaches to establishing a “market” price, and a third that simply recovers the costs of the program.

Market Price

“True” Market Price

The basic factors affecting market price are the HOV2 demand during the peak period and the value of using the HOV facility. One primary strategy is to charge a market price that maximizes the net revenues from pricing. Given that the marginal variable cost of an additional vehicle using the HOV lane is relatively low, up to 1,200/1,400 vehicles per hour, the net revenue from pricing is roughly equal to the total revenues generated by pricing minus the fixed cost associated with operating the pricing experiment. Therefore, it is assumed that the market price that maximizes revenues is the optimum price so long as the number of vehicles using the HOV lane is constrained to avoid congestion on the HOV lane.

Market Price Based on Prices Charged for Other Transportation Alternatives

A second approach to market price is one that is consistent with the locally established prices for similar trips.

Fares for Park-and-Ride Buses - METRO park-and-ride fares per one-way trip for adults paying on a daily basis, vary from \$1.50 to \$3.50 with the higher costs being for longer trips. The Addicks Park-and-Ride Lot is located at the western entrance of the Katy HOV lane and the daily adult fare from there to downtown is \$3.00 per person (Table 5-1). The monthly adult fare is \$94.00, or about \$2.61 per one-way trip (assuming 18 two-way trips per month). The annual adult fare is \$846.00, or about \$1.96 per one-way trip (assuming 18 two-way trips per month).

Tolls on Local Toll Roads - Tolls on the Sam Houston toll road are charged by segment and are \$0.75 per segment if an EZ tag is used and \$1.00 per segment if paid in cash. The toll cost per mile varies somewhat depending on the location that a person enters and exits the tollway, but are roughly \$0.14 per mile. Using this rule-of-thumb with the 13.2 mile Katy HOV lane would give a cost of \$1.85 per one-way vehicle trip. In round, convenient numbers, the locally comparable price would translate to \$2.00 per trip.

Break-even Price

A third strategy for HOV2 pricing is to simply charge a price that covers the cost of fixed and operating costs, including marketing, for the pricing operation. This strategy has the advantage of avoiding charges of double taxation of users. Disadvantages include: (1) possible underpricing of the park-and-ride and 3+ carpooling operations; and (2) not having any mechanism to allocate rights to use the HOV2 option to the persons who are likely to benefit the most.

ESTIMATION OF PRICE / DEMAND RELATIONSHIPS

The demand for Katy two-person carpool use during the peak periods is estimated using assumptions about the relative attractiveness of the HOV lane and the main freeway lanes. This relative attractiveness is a function of the total cost of each alternative route (HOV or mainlane) in terms of vehicle operating costs and user value of time. Specific assumptions that are made in deriving the demand are listed below.

- ▶ Time savings are calculated assuming an average speed of 25 mph on the freeway mainlanes and an average speed of 55 mph on the HOV lane. It is recognized that the 25 mph speed assumed for the mainlanes is sometimes exceeded for some time periods and for some segments of the freeway. However, it is assumed that this is offset by other times when there are accidents and incidents on the freeway that reduce speeds below 25 mph.
- ▶ Calculations assume that persons are traveling the entire 13.2 miles of HOV lane.
- ▶ The average value of time for persons traveling during the peak period is assumed to be \$10.00 per person per hour. It further is assumed that the value of time follows a normal distribution and the standard deviation is \$2.50. When two persons form a two-person carpool, however, it is assumed that the second person in the carpool is willing to pay only half as much as the first person; and therefore, two persons forming a carpool for use of the

HOV lane are willing to pay on average \$15.00 per hour with a standard deviation of \$3.75 per car (for the two persons combined). An alternative demand analysis is performed assuming that values of time are only half of that assumed in the basic analysis, with an average of \$7.50 per vehicle hour.

Table 5-1. Daily Adult Peak-Period Fares from METRO Park-and-Ride Lots

PARK-AND-RIDE FACILITY	ONE-WAY FARE TO DOWNTOWN PER PERSON
North Shepherd/TMC (291)	\$ 2.50
Seton Lake (203)	\$ 3.00
Kuykendahl/Downtown (202)	\$ 3.00
Kuykendahl/Greenway - Post Oak (202)	\$ 3.50
Spring (204)	\$ 3.00
Kingwood (205)	\$ 3.50
West Belt (210)	\$ 2.50
Northwest Station (214)	\$ 3.00
West Little York (216)	\$ 3.00
Pinemont (216)	\$ 2.50
Kingsland (221)	\$ 3.50
Katy (221)	\$ 3.50
Addicks (228)	\$ 3.00
Maxey Road (236)	\$ 1.50
Fuqua (247)	\$ 2.50
Bay Area (246)	\$ 3.50
West Loop (261)	\$ 1.50
Aleif (262)	\$ 2.50
Westwood/TMC (292)	\$ 2.50
West Bellfort (265)	\$ 2.50

Source: METRO

- ▶ It is assumed that the inconvenience of forming a two-person carpool is equal to a “penalty” of 10 minutes of delay per person per trip.
- ▶ It is assumed that the hourly one-way volume during the morning and afternoon peak periods when pricing will be used averages 5,400 per hour on the mainlanes. It is assumed that half the mixed flow vehicles are willing to form two-person carpools and pay to use the HOV lane.
- ▶ It is further assumed that their tendency to form carpools is a function of the time savings in the HOV lane.

Using the above assumptions, two demand schedules are developed and shown in Tables 5-2 and 5-3. The demand shown in Table 5-2 is based on a value of time of \$15.00 per vehicle-hour (\$10.00/hour for driver and \$5.00 for passenger). This value represents the value of time that is currently used in benefit-cost studies in Texas.

Table 5-3 was developed using a value of time of \$7.50 per vehicle-hour. This value is used in an alternative calculation since the focus groups indicated that demand may be lower than that derived using the \$15.00 assumption. Although it differs from the time values used in Texas, it does represent a lower limit to be usage and revenues.

In both tables, the first column shows the different hypothetical prices that are evaluated in the demand schedule. The sum of the next two columns represents the total inbound demand at each price, part of which is assumed to be on a waiting list at levels of demand above 600 vehicles of HOV2 use. The fourth column is estimated annual revenue for inbound vehicles, based on 255 revenue days per year. The next three columns present similar estimates for the outbound PM peak HOV2s. The last column is total estimated revenue.

It should be stressed that there is considerable uncertainty in the basic demand estimate. The estimate is based on several assumptions that have not been tested. Having demand for HOV2 use basically means that: (1) persons currently traveling in two-person carpools, either during the peak or in the periods before or after the peak, will have to pay for HOV2 buy-in; and/or (2) persons currently traveling in single occupancy vehicles (SOVs) will have to both form two-person carpools and be willing to pay the price stipulated.

Two critical assumptions are: (1) that one-half of all persons are willing to form two-person carpools and (2) that these persons are willing to form carpools as indicated by the estimated time savings from using the HOV, with values of time as assumed in each analysis.

Table 5-2. Approximations of Demand and Annual Revenue for Assumed Average Value of Time of \$15.00 per HOV2¹

Trip Price	INBOUND DIRECTION (AM)			OUTBOUND DIRECTION (PM)			Combined Annual Revenue
	2-Person Carpool Volume	Number on Waiting List	Inbound Annual Revenue	2-Person Carpool Volume	Number on Waiting List	Outbound Annual Revenue	
\$ 1.50	600	1072	\$ 230,000	600	738	\$ 230,000	\$ 460,000
\$ 2.00	600	1027	\$ 306,000	600	702	\$ 306,000	\$ 612,000
\$ 2.50	600	910	\$ 383,000	600	608	\$ 383,000	\$ 766,000
\$ 3.00	600	674	\$ 459,000	600	419	\$ 459,000	\$ 918,000
\$ 3.50	600	338	\$ 536,000	600	150	\$ 536,000	\$ 1,072,000
\$ 4.00	576	0	\$ 588,000	461	0	\$ 470,000	\$ 1,058,000
\$ 4.50	285	0	\$ 327,000	228	0	\$ 262,000	\$ 589,000
\$ 5.00	111	0	\$ 327,000	89	0	\$ 113,000	\$ 255,000
\$ 5.50	34	0	\$ 48,000	27	0	\$ 38,000	\$ 86,000

Table 5-3. Approximations of Demand and Annual Revenue for Assumed Average Value of Time of \$7.50 per HOV2

Trip Price	INBOUND DIRECTION (AM)			OUTBOUND DIRECTION (PM)			Combined Annual Revenue
	2-Person Carpool Volume	Number on Waiting List	Inbound Annual Revenue	2-Person Carpool Volume	Number on Waiting List	Outbound Annual Revenue	
\$.75	600	1072	\$ 115,000	600	738	\$ 115,000	\$ 230,000
\$ 1.00	600	1027	\$ 153,000	600	702	\$ 153,000	\$ 306,000
\$ 1.25	600	910	\$ 191,000	600	608	\$ 191,000	\$ 382,000
\$ 1.50	600	674	\$ 230,000	600	419	\$ 230,000	\$ 460,000
\$ 1.75	600	338	\$ 268,000	600	150	\$ 268,000	\$ 536,000
\$ 2.00	576	0	\$ 294,000	461	0	\$ 235,000	\$ 529,000
\$ 2.25	285	0	\$ 164,000	228	0	\$ 131,000	\$ 295,000
\$ 2.50	111	0	\$ 71,000	89	0	\$ 57,000	\$ 128,000
\$ 2.75	34	0	\$ 24,000	27	0	\$ 19,000	\$ 43,000

ANALYSIS OF ALTERNATIVE STRATEGIES

Based on the preceding demand analysis and other considerations, it is possible to consider several alternative pricing strategies, depending on the overall goals of the HOV2 buy-in.

Break-even Pricing Strategy

The Break-even Strategy would be a strategy that would seek only to recover the operating costs of the HOV2 buy-in. It is estimated that the operating cost for the first year will be about \$300,000, including a public education effort. (There are other first year costs of about \$200,000 that have not been included as operating costs.) Assuming that enough HOV2s are permitted to result in average daily usage of 1,000 vehicles for inbound and outbound, the break-even charge per HOV2 would be about \$1.18 per vehicle. This price would seriously undercut park-and-ride fares and likely create excessive demand for limited space in the HOV lane.

Market Pricing Strategies

Using the basic demand schedule presented previously in Table 5-2, assuming an average value of time of \$15.00 per HOV2, it is estimated that the “true” market price would be about \$3.50 per HOV2.

Limitations of the “True” Market Price Projections

It is difficult to estimate a priori the average number of HOV2 vehicles that will be willing to pay to use the HOV for any specific number that are authorized. There probably would be less variation in use from day-to-day if passes were sold on a monthly discount basis. It is difficult to estimate daily and annual revenues with any precision, because it is difficult to predict the variability in use when fares are charged on a per-trip basis, and how many HOV2s can eventually be authorized without creating excess congestion on the HOV lane. The demand estimates presented in Tables 5-2 and 5-3 probably overestimate the actual revenues associated with pricing on a per-trip basis for this reason.

Locally Comparable Market Price

Two factors weigh in favor of a market price that reflects similar local transportation costs. First, the “true” market price (\$3.50 per trip) projections are subject to a high degree of vulnerability because demand estimates are very theoretical, and subject to over-estimation. A price comparable to other local per mile fees of say \$2.00 still reflects the local market using one approach and should generate sufficient demand for permits to significantly exceed the 600 vehicles per peak.

The second factor favoring a locally comparable price is public reaction. Even though \$3.50 per trip is an economically derived market value, public reaction may be decidedly negative to this much higher price. A negative public reaction could artificially deter potential users, which would require a price reduction to stimulate demand.

Recommended Pricing Strategy

It is recommended that the locally comparable price of \$2.00 per trip be used for the test period. Should that price generate substantially more demand than can be accommodated, then a price closer to the “true” market price should be considered for the permanent rate.

RECOMMENDED PRICE ADJUSTMENT METHODOLOGY

If demand is higher than expected, indicating that prices could be increased, it is recommended that prices be kept constant to avoid charges of price gouging. A predetermined schedule should be set for reviewing fares and other program rules.

If demand is lower than expected, leaving unused HOV2 capacity, but high enough to cover operating costs, it is recommended that prices be kept constant throughout the experiment but that consideration be given to increasing marketing and publicity. Lowering of the price could have the disadvantage of undercutting park-and-ride and 3+ carpooling. Also, demand can be expected to grow over time as more persons have time to form carpools.

Endnote

1 . Annual revenue is calculated assuming 255 revenue days per year. It further assumes that enough vehicles are authorized to result in 600 HOV2s using the HOV daily.

VI. REVENUE USE

The requirements of ISTEA limit the use of priority lane pricing revenue to transportation-related activities. The FTA has more specifically instructed METRO to apply the revenues to transit-related activities. Under the operating agreement, both agencies must agree on the use of revenues.

Revenue use and trust of transportation agencies to use it properly have been issues in all of the focus groups and other citizen input forums nationwide, including the information solicited from the focus groups in Houston. Aside from general public mistrust, there are factors that the operating agencies can address to assuage some of the public concern, or at least that expressed by the focus groups.

Fortunately for operating agencies, public opinion appears to favor covering operating expenses before addressing other needs with the generated revenues. A subsequent section details the estimated costs of operating the priority lane pricing program. This discussion of revenue use assumes that there are revenues in excess of operating costs.

One of the concerns raised was that the public would never see the benefits of the revenue use, that it would, "...just get swallowed up in a bureaucracy." To address that concern, the revenues need to be put to a visible use: something that produces an evident change. Examples could include fare reductions, new service, or capital improvements. Whatever the use chosen, it should be visible, and it should be highlighted in public communication.

Another concern raised was where the revenues would be used. Although the general public focus group suggested general application to taxes, etc., that is not consistent with other public opinion that suggests the revenues be applied in the corridor collected. Not surprisingly, the Katy corridor focus group expressed interest in seeing a return on their investment in the corridor. It is recommended that revenues be applied to visible transportation improvements in the Katy corridor.

Several preliminary examples of improvement options have been identified for consideration by METRO and TxDOT. If the agencies decide to proceed with deployment, a final revenue plan will be developed in concert with the agencies. Some of the options to consider include: 1) increased bus service, 2) transit or park-and-ride fare reductions, 3) improved ridesharing program, 4) provide discounts to "low-income" travelers, and 5) eliminate bottlenecks.

From this preliminary sample of possible revenue uses, a few conclusions can be drawn. First the total revenues will be modest when considered on an agency-wide scale. Consequently, very high-dollar uses will not be practical. For example, bottleneck improvements in a freeway corridor are frequently very expensive, and net revenues of \$500,000 to \$1,000,000 may not go very far. Furthermore, since the revenue stream is very unpredictable at this point, those revenues would need to be banked before they could be used as the funding source for capital improvements. Before all such projects are dismissed, the possible project lists should be reviewed for viable options.

Other revenue uses could fail the "visibility" test. Upgrading ridesharing activities and providing discounts for low-income travelers would likely be all but invisible to the patrons of the HOV buy-in. Careful consideration should be given before adopting such a revenue use.

Consideration should be given to options that can be quickly adjusted to the available revenue and have apparent visibility to many HOV lane users. An example of that would be park-and-ride fare reductions based on the previous month's HOV buy-in revenues. An "order of magnitude" calculation suggests that a \$.50 discount per boarding would cost less than \$1,000,000 annually. Message boards could tout the nature of a price discount in a way that credits the source and implies the vulnerability of future discounts.

The operating agencies will need to give careful consideration to the revenue plan prior to the initiation of a public education effort.

VII. CAPITAL AND OPERATING EXPENSES

This section of the report provides estimates of the cost of implementation and first year operation. Because there is little direct experience with operating a system such as this, careful monitoring will be required during the first year to produce refined estimates of operating costs.

CAPITAL EXPENSES

The Katy HOV lane is already fairly well instrumented with the types of field devices necessary for automated toll collection. For this reason, implementation of priority lane pricing is expected to be fairly low cost. Capital expenses that would be considered "likely" include:

1. Communication -- HOV lane field devices to TranStar (including redundancy)	\$10,000
2. Account workstation -- for account administration and status	30,000
3. Tag verification equipment -- to facilitate enforcement of toll payments	35,000
Total "Likely" Capital Expenses	\$ 75,000

In the event that the existing toll tag readers are not sufficiently accurate, they would need to be replaced at a cost of up to \$35,000, depending on the number required for needed accuracy.

OPERATING EXPENSES

Operating expenses for the first year include initial distribution of toll tags, maintenance of hardware and software, personnel for account administration and additional enforcement, and marketing. Those estimated costs are as follows:

Toll tag procurement -- 1000 @ \$40 ¹	\$40,000
Equipment (hardware and software) maintenance	20,000
Enforcement -- salary for part-time or overtime officer	30,000
Account administration -- one part-time person	15,000
Indirect expenses -- personnel benefits, office space, telephone, etc.	20,000
Marketing	175,000
Monitoring and evaluation	100,000
Total estimated first year operating expenses	\$400,000

¹ A portion of these costs could be recovered in deposits by or sale to participating travelers.

VIII. CONCLUSIONS

Priority lane pricing has the potential of using market forces to manage demand on HOV lanes. Because the Katy HOV lane has excess capacity during the morning and afternoon peak hours, priority lane pricing should be effective as a tool for improving its people-moving capability. Based on this assessment, it is feasible to implement priority lane pricing for the Katy HOV lane, provided that the implementation is carefully designed and deliberately paced to avoid potential pitfalls.

Strengths of priority lane pricing for the Katy HOV lane include:

- ▶ The overall occupancy in the Katy corridor could increase by using the available capacity in the HOV lane. This action would also move additional people during the peak hour, and provide a premium service to patrons willing to pay for the service.
- ▶ The priority lane pricing scheme does not take away any existing privileges or hinder anyone's travel; therefore, no groups are directly negatively impacted.
- ▶ The costs of implementation on a trial basis are relatively modest since much of the fixed equipment needed is already in place.

The weaknesses of priority lane pricing for the Katy HOV lane include:

- ▶ The public perception of the project can be strongly negative unless a very effective marketing/public education effort precedes implementation.
- ▶ The potential for having a very low demand to cover operating expenses exists although current conditions suggest a fairly high demand for such a service.
- ▶ The new HOV2s attracted to the HOV lane could cause additional freeway congestion near access points, because the Katy freeway is highly congested.

In order to take advantage of the strengths and address the weaknesses, the implementation plan must:

- ▶ pace the issuance of permits or toll tags to assure that operating conditions in the HOV lane and the adjacent mixed flow facilities are not degraded,
- ▶ identify the revenue uses that address both transportation needs and public concerns,
- ▶ provide a mechanism for gauging the price/demand relationship and adjusting accordingly, and
- ▶ include a marketing plan that explains priority lane pricing, addresses public concerns, and touts the activities and benefits of the program.

Finally, the implementation plan must include an evaluation plan that defines the measures to be used to assure that the impact of priority lane pricing is properly assessed.

IX. IMPLEMENTATION PLAN

Successful implementation of priority lane pricing for the Katy HOV lane requires the operating agencies to pay extra attention to the task of managing the HOV lane operation itself and the task of inviting the public to participate in priority lane pricing. In preparation for implementing priority lane pricing, locally called "QuickRide," the following key areas were identified:

- ▶ participant enrollment,
- ▶ electronic toll collection and account management,
- ▶ public information/education,
- ▶ potential construction/operations conflicts,
- ▶ approach signing/driver information,
- ▶ evaluation plan, and
- ▶ schedule.

This implementation plan describes the actions required to accomplish each major element of implementation.

OPERATIONAL CONCEPT

To best understand the implementation challenges and activities, it is essential to understand the basic operation of QuickRide, which can best be described in a series of sequential steps:

1. Customer contacts METRO and sets up a QuickRide account,
2. METRO provides customer with a uniquely coded transponder and "Rules of Operation,"
3. Customer uses the HOV lane during the applicable period,
4. Overhead antennae record the passage of a participating transponder,
5. Overnight, QuickRide transponder IDs are downloaded, and
6. Accounts are debited and monthly statements are sent to participants.

Establishing a QuickRide Account

METRO has established accounting procedures to administer this new type of account. Brochures and enrollment application forms were distributed to the public coincident with the public announcement of the program. Prospective participants returned the completed enrollment form to METRO and accounts were established on a first come/first serve basis. A credit card is required. The enrollment forms were designed to accomplish two primary objectives: first, sufficient personal and financial information to establish a service contract, and second, sufficient information about participant travel behavior to establish a baseline for evaluations at the middle and end of the pilot.

Issuance of Transponders

Once the account has been established, METRO mails the transponder to the customer, along with a shielded pouch and instructions for use. On days when a participant has an HOV3+, they are instructed to place the transponder in the shielded pouch to avoid billing. Some participants also use the "EZ tag" issued by the Harris County Toll Road Authority (HCTRA). If they would prefer to use their EZ tag for the QuickRide program, they can do so by registering that tag ID number when they enroll.

The application form and the Rules of Operation specify the terms of the agreement between the participant and METRO.

Use of the HOV Lane

Customers approaching the HOV lane can observe large digital time displays to know whether QuickRide rules are in effect. Because the Katy HOV lane is a single lane facility, it is not possible to segregate the paying users from the free HOV3+ users as the multi-lane facilities in California can do. Therefore, it is necessary to use some other method to assist METRO police in identifying the QuickRide users. In addition to the transponder, each user is issued a distinctive "hang tag" for their rearview mirror to identify them as a participant. This small additional cue helps the officers in their enforcement task, which also involves counting heads and electronically verifying the validity of the toll tag, all at freeway speeds.

Overhead Antennae Record Transponder

One of the attractive attributes of this project is the hardware that is already in place as part of a system used to report real-time freeway speeds to an Internet page. Five existing toll tag readers are positioned over the Katy HOV lane, with at least one in each segment of the lane (between entrance and exit locations). These readers function as the toll collection mechanism. The existing system on the Katy HOV lane and on local HCTRA toll roads is comprised of Amtech readers and associated software. In order to maintain interoperability, as well as minimize total cost, METRO and TxDOT opted to use the existing readers and procure Amtech compatible toll tags.

There are many toll tags in use in Houston, some from the Harris County Toll Road Authority system, and some from a TxDOT program aimed at increasing the number of probes in the freeway and HOV lane network. Because not all of the users of the HOV lane will be QuickRide participants, the software must be able to screen QuickRide participants from all the tags read. The software must then be able to associate tags with appropriate accounts and produce statements from the accounts.

Downloading of Transponder "Reads"

In addition to the routine testing that any electronic system would undergo, this system has two somewhat unique characteristics that require sufficient testing to assure that the participants are not adversely affected. First, the toll tags are read and data stored on TxDOT computers monitored by TTI; the data are fed to a METRO accounting system to prepare billings and track accounts. Because there are numerous agencies involved, extensive testing was required to insure that the system will appear seamless to the participant and provide accurate data and billings for the agencies.

Second, the Katy HOV lane is very narrow and the readers are mounted overhead. The readers are tuned to minimize the chance of inadvertently reading the toll tag on a vehicle in the inside lane of the freeway and recording it as an HOV lane vehicle. Likewise, the system needs to accurately record all vehicles in the HOV lane to assure that all users receive appropriate billings.

Account Billing, Issuance of Monthly Statements

At the time an account is set up, the participant's credit card is charged a \$15 deposit for each transponder issued, plus \$40 to establish an account balance. As QuickRide trips are reported to the accounting system via downloaded transponder "read" files, a \$2 charge against the balance in the account is posted for each trip taken. When an account balance falls below \$10, that participant's credit card is charged an amount sufficient to restore a \$40 balance. Once each month, a statement is mailed to the participants showing credit card activity, charges incurred for QuickRide trips and the assessment of a \$2.50 monthly service and statement fee.

PARTICIPANT ENROLLMENT

Attached at Appendix A is a copy of the enrollment form. This form is completed separately from the application form. It establishes the frequency and mode of current travel, current schedule (AM and PM peaks), and current locations of entry and exit on the subject section of the Katy freeway or HOV lane. That section is followed by one that asks the participant to anticipate what changes they might make to frequency, schedule, and entry/exit location once they become a participant in the priority lane pricing program.

The final area addressed under Participant Enrollment is the Rules of Operation. These rules, shown at Appendix B, specify the terms of the agreement between the participant and METRO. They describe in detail the anticipated duration of the pilot program, applicable times of day, fees, required equipment on participant vehicle, monthly billing and statements, violations and penalties, and conditions for termination of service.

PUBLIC INFORMATION/EDUCATION

METRO crafted a marketing plan to address both basic information and potential public concerns about QuickRide. Most of the feedback on issues emanated from the focus groups assembled during the feasibility assessment. Issues identified by those groups were added to concerns and issues raised by METRO and TxDOT public information staffs. The focus is on the benefit to be gained by carpooling and using the HOV lane. This was emphasized by publicizing the region's carpool matching service (224-RIDE) as the contact for QuickRide program information.

Media announcement of the QuickRide program began December 30, 1997. It included radio advertisements, *Houston Chronicle* advertisements, press releases, and direct mail out of brochures and applications to households in relevant zip codes. Additionally, QuickRide information is available on METRO's web page.

POTENTIAL CONFLICTS WITH CONSTRUCTION AND OPERATIONS

There is considerable construction underway and planned along the Katy freeway, giving rise to concerns about the potential for conflicts with some aspects of the QuickRide program. One major conflict was identified — construction near the eastern terminus of the HOV lane that would require that the HOV lane be narrowed to accommodate the construction. That construction also eliminates the free lane previously available to HOVs upon exiting the eastern end.

The narrowing of the HOV lane meant that enforcement activities had to be relocated to a less advantageous location farther west along the lane. Although the enforcement will continue, there will be less space available for vehicles to be checked and cited. The change in the free lane meant that a new merge point was created. Based on review of pre-QuickRide operations, there appears to be sufficient merge capacity to accommodate the additional HOVs. However, that point will be continuously monitored to assure that operational limits are not exceeded.

APPROACH SIGNING/DRIVER INFORMATION

The project team originally considered the possibility of modifying approach signing to address the information needs of users. After lengthy deliberation the team decided that the user population was so small that it did not warrant extensive on-freeway signing changes for the pilot program. In order to address the visual clues that participants will need, it was decided to provide those in printed form during the enrollment phase.

FINANCIAL ACCOUNTING

It is anticipated that the revenues of QuickRide will at least cover the actual operating expenses. During the first year the expenses are somewhat higher than in future years because of added costs of marketing and evaluation. All first-year costs will be paid for under the Priority Corridor ITS (Intelligent Transportation Systems) project. Revenues will be captured in a separate account and

managed in accordance with METRO financial accounting practices. At the end of the first year (or other mutually agreeable times) METRO and TxDOT will jointly decide where the funds are best used.

EVALUATION PLAN

One of the keys to the implementation was an evaluation plan. The plan for this project is shown at Appendix D. That plan covers the key areas of impact on the corridor (particularly person-movement), impact on traffic operations, public acceptance, and financial viability. Within those four areas are 13 measures of effectiveness, the results of which will provide some guidance to METRO and TxDOT regarding the continuation of or needed changes in the program.

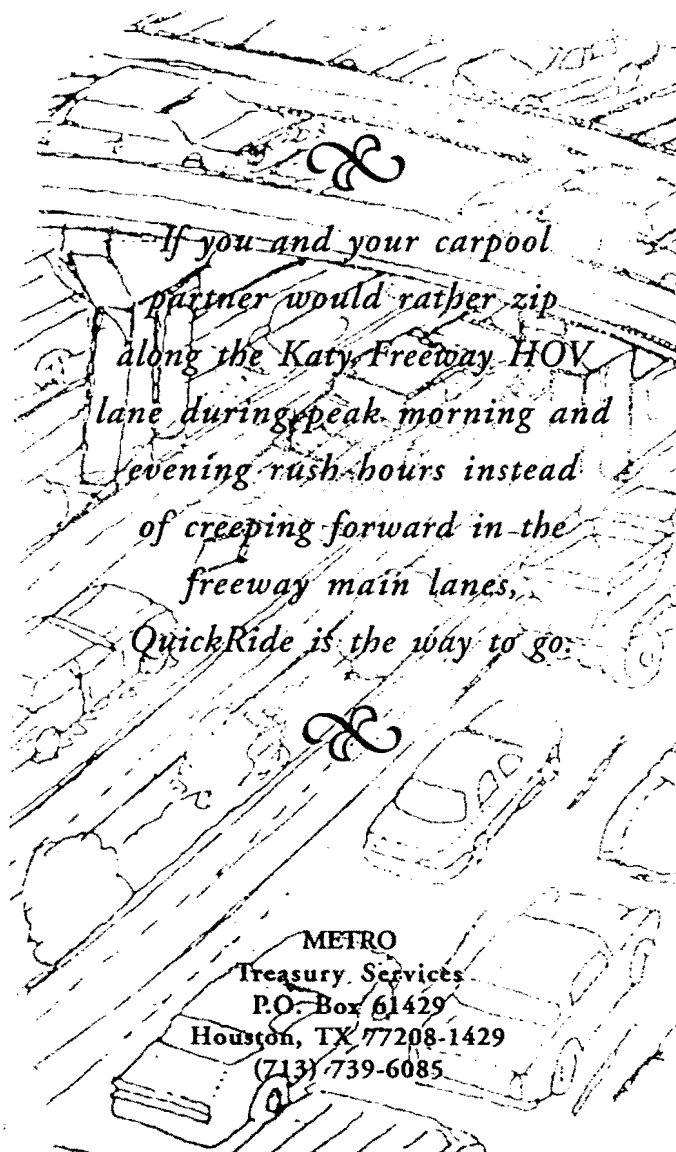
APPENDIX A: ENROLLMENT FORM

Questions and Answers

- Q. What is QuickRide?
- A. QuickRide is a pilot program that allows 2-person vehicles to use the Katy Freeway HOV lane. By placing a credit card sized "transponder" on your windshield and paying \$2 per trip, you and your carpool partner can use the Katy HOV lane during the freeway's peak morning and evening rush hours. Normally, only cars carrying 3 or more people can use the Katy HOV lane during those times.
- Q. What are peak morning and evening rush hours?
- A. Between 6:45 a.m.-8 a.m. and 5 p.m.-6 p.m. During all other times, cars carrying 2 or more people ride in the Katy HOV lane for free.
- Q. Do I have to stop at a toll booth?
- A. No. The transponder "tells" a device at the HOV lane's entrances that you've entered the lane, and it records your trip. Your QuickRide account is charged for each trip.
- Q. How do I pay?
- A. You open an account with METRO's QuickRide program that you secure with a credit card. You begin with a \$40 balance in your account. When your balance falls below \$10, your credit card is charged to restore the \$40 balance.
- Q. Are there other costs?
- A. Yes. There is a one-time \$15 deposit on the transponder and a \$2.50 monthly service and statement fee.
- Q. What if I already have a transponder (like an "EZ TAG")?
- A. You won't be charged for a new transponder, but you must follow the QuickRide application process. Include your unit's number on the application so that we can set up your account. Your QuickRide account will be separate from any EZ Tag account you already have.



Application and Agreement



METRO
Treasury Services
P.O. Box 61429
Houston, TX 77208-1429
(713) 739-6085





Application and Agreement
METRO—Treasury Services
 P.O. Box 61429
 Houston, TX 77208-1429
 (713) 739-6085

Complete and sign **both sides** of application/agreement/user information and mail to the address above.

Personal Information (please type or print)

Last Name _____
 First Name _____ Middle Initial _____
 Home Address _____

 City _____ State _____ Zip Code _____
 Mailing Address _____
 City _____ State _____ Zip Code _____
 Work Phone () _____ Ext. _____ Home Phone () _____

Vehicle Information (for each QuickRide Transponder requested)

Vehicle No. 1 Existing EZ Tag No.
 License Plate (State) _____ (Number) _____
 Vehicle Description (Year) _____ (Color) _____ (Make & Model) _____
 Vehicle No. 2 Existing EZ Tag No.
 License Plate (State) _____ (Number) _____
 Vehicle Description (Year) _____ (Color) _____ (Make & Model) _____

For Office Use Only

Number of QuickRide Tags Requested _____ Account Numbers Assigned _____
 Clerk I.D. _____ Initial Deposit Amount _____
 Credit Card Authorization Number _____ QuickRide Transponder No. 1 _____ QuickRide Transponder No. 2 _____

Public Hearing Notice

Following the QuickRide test project, METRO will conduct a public hearing to obtain opinions and points of view about the QuickRide program.

Credit Card (check one)

- Discover Card
- MasterCard
- VISA

Account No. _____

Expiration Date _____

METRO has authorization to charge my Credit Card account, as necessary, to fulfill the payment for charges and fees authorized by this agreement and to maintain the minimum balance as required.

Signature _____ Date _____

User Information (must be filled out to receive QuickRide materials)

1 How many trips per week do you normally make on the Katy Freeway main lanes or HOV lane?

Morning Peak
6 a.m.–9 a.m.

Afternoon Peak
4 p.m.–7 p.m.

Drive alone	_____	_____
Carpool/Vanpool on freeway	_____	_____
Carpool/Vanpool on HOV lane	_____	_____
METRO bus on HOV lane	_____	_____
Other _____	_____	_____
(specify)		

2 When do you usually enter the Katy Freeway main lanes or HOV lane during morning and afternoon peaks?

Morning peak _____ **a.m.** **Afternoon peak** _____ **p.m.**

3 Describe your typical morning commute naming the cross streets where you enter and exit the freeway and/or HOV lane. If your trip doesn't include the HOV lane, mark it "n/a." I usually:

a.) enter the Katy Freeway at _____ and then _____
Nearest cross street entrance

b.) enter the Katy HOV lane at (circle one) n/a West of Highway 6 Addicks Park & Ride Gessner and then

c.) exit the Katy HOV lane at (circle one) n/a Post Oak East of Loop 610 and then

d.) exit the Katy Freeway at _____ and then _____
Nearest cross street exit

e.) go to my ultimate destination at _____
Ultimate destination

QuickRide Transponder Agreement

THIS AGREEMENT is made and entered into by and between the Metropolitan Transit Authority of Harris County, a body Corporate and politic under the laws of the State of Texas (hereinafter referred to as "METRO"), and by

_____ (hereinafter referred to as "User")
User's Name

1. **AGREEMENT** Subject to the terms of this Agreement, METRO agrees to provide the QuickRide Transponder(s) to User which may be used when accompanied by one passenger to obtain passage on the Katy Freeway High Occupancy Vehicle lane (hereinafter referred to as HOV lane), or for use in such other ways as User and METRO may agree.

2. **USE OF THE TRANSPONDER** User agrees:

A. To use the QuickRide Transponder to obtain passage on the HOV lane. In the event that User has a transponder (EZ TAG) from the Harris County Toll Road Authority or the Texas Department of Transportation, the User must register with METRO and indicate that he/she already has a transponder.

B. To mount, display, and to use the QuickRide Transponder and other vehicle identification tags in accordance with the instructions User receives from METRO.

C. To comply with all applicable traffic laws as well as the rules of METRO. User further agrees to surrender the QuickRide Transponder(s) immediately upon request for the violation of any of the terms of this Agreement.

D. To indemnify and hold METRO harmless for any misuse of the QuickRide Transponder(s) once it/they are in the possession of User and to be fully responsible for any and all charges arising from the use of said QuickRide Transponder(s) until such time as User surrenders the QuickRide Transponder(s) and returns it/them to METRO.

3. **PREPAID ACCOUNT** User agrees to maintain a Prepaid Account with METRO to cover User's applicable charges and fees, as more particularly described in Paragraph 5, below.

4. **MAINTAINING A PREPAID ACCOUNT** User will maintain a Prepaid Account by authorizing METRO to automatically charge User's Credit Card.

A. **PREPAID DEPOSIT FOR CREDIT CARD ACCOUNTS**—A required prepayment amount of \$40 shall be charged against User's Credit Card. When this prepayment depletes to a balance of \$10 or less, a charge shall be automatically placed against User's Credit Card to reestablish the prepayment amount. (Note: Individual usage may require a higher prepayment amount, as herein provided, to reduce the number of monthly replenishing charges to User's Credit Card.)

5. **CHARGES AND FEES** A \$2 fee will be charged each time a QuickRide transponder is used to obtain passage as part of a 2-person carpool on the HOV lane during the hours of 6:45 a.m.—8 a.m. and 5 p.m.—6 p.m. User will pay a charge equal to the applicable amount charged by METRO which will be deducted from the prepaid account. Further, with regard to a Credit Card Account, the following charges and/or fees will be assessed against User's Prepaid Account:

A. **QuickRide Transponder Deposit**—A deposit of \$15 per QuickRide Transponder is required for each issued on a single account. The deposit will be waived if User already has a transponder (EZ TAG) from the Harris County Toll Road Authority or the Texas Department of Transportation.

B. **QuickRide Monthly Service Fee**—A monthly service and statement fee of \$2.50 for each QuickRide Transponder will automatically be charged against User's account. User will be provided with an end-of-the-month statement.

6. **LOST, STOLEN, DAMAGED AND/OR DEFACTED QUICKRIDE TRANSPONDERS** If the QuickRide Transponder is lost or stolen, User must immediately notify METRO Treasury Services at 713-739-6085. Until such time as User notifies METRO that the QuickRide Transponder has been lost or stolen, User will continue to be responsible for any charges accruing as a result of the usage of said QuickRide Transponder and METRO will continue to deduct any fees resulting from the use of said QuickRide Transponder from the User's Prepaid Account. Once User has notified METRO that the QuickRide Transponder has been lost or stolen, METRO will invalidate said QuickRide Transponder. METRO will then issue User a new QuickRide Transponder and deduct a \$25 replacement charge from User's Prepaid Account balance. A \$25 fee will be charged for damaged/defaced QuickRide Transponder(s).

7. **TERMINATION OF AGREEMENT/OWNERSHIP OF QUICKRIDE TRANSPONDER** METRO or User may terminate this Agreement at any time, upon giving the other party written notice of the intent to terminate. Additionally, before User's termination is effective, User must return the QuickRide Transponder(s) to METRO. If the Agreement is terminated by either party and User does not return the QuickRide Transponder(s) to the METRO in good condition, METRO shall deduct \$25 from User's Prepaid Account. Any unused portion of User's Prepaid Account balance will be returned to User within 45 working days from the date User returns the QuickRide Transponder(s) to METRO. The QuickRide Transponder(s) shall remain the property of METRO, under any and all circumstances, and shall be returned to METRO by User if so requested.

8. DEFECTIVE QUICKRIDE TRANSPONDERS If a QuickRide Transponder is defective for any reason, other than abuse or improper use, and said QuickRide Transponder is returned to METRO, METRO will replace it at no charge to User. USER ACKNOWLEDGES THAT METRO HAS NOT MADE AND METRO EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, RELATING TO THE QUICKRIDE TRANSPONDER(S) INCLUDING, WITHOUT LIMITATION, ANY IMPLIED OR EXPRESSED WARRANTY OR MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR CONFORMITY TO MODELS OR SAMPLES.

9. MULTIPLE QUICKRIDE TRANSPONDERS If User registers more than one QuickRide Transponder on a single Prepaid Account, the size of the minimum prepayment balance, the replenishment balance, and charges for monthly statements for Credit Card-based accounts shall be as follows:

No. QuickRide Transponders Issued	Prepaid Deposit Amount	Replenishment Balance	Monthly Service Fee
1	\$40.00	\$10.00	\$2.50
2	\$80.00	\$20.00	\$5.00

Credit card-based accounts shall be charged periodically to replenish the minimum prepayment balance in the Prepaid Accounts when the balance in the Prepaid Account is reduced to the levels as set forth in Paragraph 4 (A). METRO reserves the right to limit the number of transponders registered on a single prepaid account as well as the right to limit the number of prepaid accounts per User, individual or business.

10. MISCELLANEOUS

A. QuickRide utilization may be monitored for further analysis in conjunction with regional studies of traffic patterns, speeds and congestion reduction.

B. User agrees that, except as otherwise provided in this Agreement, METRO shall have no obligation or liability to User with respect to User's use of, or the performance of, the QuickRide Transponder. User agrees to indemnify and hold METRO and the Texas Department of Transportation harmless from and against any and all damage, loss, cost, expense, or liability relating to, arising from, or as a result of the use of, or the performance of, the QuickRide Transponder.

C. It is expressly understood and agreed that User, by executing this Agreement, authorizes METRO to access User's Credit Card and make charges against same and User expressly understands and agrees that METRO and the Texas Department of Transportation shall not be liable to User for any damages resulting from these actions or User's use of the QuickRide Transponder. Additionally, METRO shall not be liable for (a) any incidental, indirect, special or consequential damages, including but not limited to, loss of use, revenues, profits or savings, even if METRO and the Texas Department of Transportation knew or should have known of the possibility of such damages, or, (b) claims, demands, or actions against User by any person, corporation, or other legal entity resulting from the use of the QuickRide Transponder(s), or charging of User's Credit Card.

D. METRO may change the terms of this Agreement at any time by providing written notice to User. If the QuickRide Transponder is used after User receives notice of the new terms of this Agreement, then User shall be bound by the new terms. For purposes of this Agreement, User shall be deemed to have received notice 10 days after the notice is deposited with the United States Postal Service, or in any receptacle hereof, postage prepaid, addressed to User at the last address that appears on METRO's records.

E. User agrees to pay all costs, including attorney's fees, incurred by METRO in enforcing this Agreement.

F. If, for any reason, User's Prepaid Account is insufficient to pay any amounts payable by User to METRO, User will remain liable to METRO for such amounts and User's Account(s) will be terminated immediately. Any costs associated with the termination of User's Account(s) shall be the responsibility of the User.

G. This Agreement shall be binding upon and inure to the benefit of User and User's successors and METRO and its successors and assigns. User shall not be permitted to assign the obligations or benefits of this Agreement.

H. User shall inform METRO, in writing, of any changes in the information set forth in the QuickRide Transponder Application provided herein and, specifically, shall immediately notify METRO of any change in vehicle license plates and/or change in address.

I. For the purpose of giving any and all notice(s) to METRO required under the provisions of this Agreement, User shall use the following address: METRO Treasury Services, 1201 Louisiana, P.O. Box 61429, Houston, Texas 77208-1429.

J. This Agreement shall be governed by and construed in accordance with the laws of the State of Texas and venue for any action hereunder shall be Harris County, Texas.

K. The captions used in this Agreement have been inserted for convenience and for reference only and shall not be deemed to limit or define the text of this Agreement.

L. The provisions of this Agreement are severable, and if any provision or part of this Agreement or the application thereof to any person or circumstance shall ever be held by any court of competent jurisdiction to be invalid or unconstitutional for any reason, the remainder of this Agreement and the application of such provision or part of this Agreement to other persons or circumstances shall not be affected thereby.

I, _____, hereby make application to use the QuickRide Transponder which will allow me to obtain passage on the Katy Freeway HOV lane at designated times via designated QuickRide Transponder lanes if accompanied by one passenger. I acknowledge that I have read, understand, and will be bound by the terms of this Agreement. I have indicated in my Application the Credit Card payment option and further, have provided METRO with my Credit Card number to effectuate the establishment of my Prepaid Account. I hereby authorize METRO to periodically charge my Credit Card for the amount(s) necessary to satisfy my obligations under this Agreement and the Application provided herein, including a monthly service fee.

User's Signature _____ Date _____
 * SIGNATURE NECESSARY TO AVOID PROCESSING DELAYS.

APPENDIX B: RULES OF OPERATION

RULES OF THE ROAD

Strict enforcement of HOV occupancy requirements will be on-going by METRO police personnel. QuickRide participants must declare their participation by displaying the HOV hang tag to the back side of their rear-view mirror. The transponder will be attached to the upper middle section of the front windshield.

When exiting the HOV lane, participants should slow down at least 20 mph when approaching enforcement zones. Officers will utilize handheld readers to verify those paid participants. Failure of QuickRide participants to conform to the occupancy requirement or to have a valid account will be grounds for issuance of a citation with a minimum fine of \$75.00.

If a QuickRide participant meets the 3+ requirement, he should take the transponder out of the vehicle for that travel day so as not to be charged.

SAFETY RULES

If your vehicle becomes disabled or you are involved in an accident, pull to the far right barrier and use your emergency flashers. METRO wreckers will remove disabled and wrecked vehicle for the HOVL to the closest point of reasonable safety. Do not leave your vehicle unattended. If you have a cellular phone, contact METRO police at (713) 635-5550 for assistance; otherwise, METRO bus operators are advised to notify Dispatch of all stalls or accidents on the HOV. Do not attempt to cross freeway mainlanes for assistance.

APPENDIX C: MARKETING MATERIALS

The following pages are samples of marketing materials that will be used for the QuickRide program. The first two pages are a brochure that will be available. The third page is a sample of a newspaper advertisement. The next page contains radio copy for a spot that will run on several radio stations in the Houston area. Last, is a sample hang tag that will hang from the rear-view mirror.

falls below \$10, your credit card will be charged to bring the balance back to \$40. You will receive a monthly statement reflecting all trip costs and credit card charges.

GETTING STARTED.

As we mentioned, once METRO approves your application, we will mail you a transponder and a current hang tag, and more information about the operation of the program. Your account will need to be secured with a credit card, and charges will be billed to your credit card covering the \$15 one-time transponder deposit, \$2.50 monthly service fee and the initial \$40 charge to open your METRO account. Should you already have a Harris County Toll Road

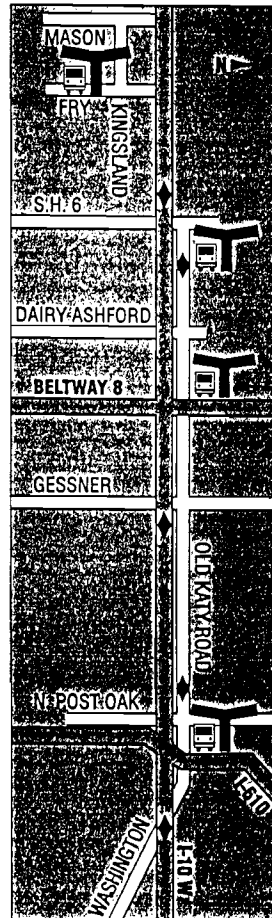
Authority transponder (EZ TAG), you'll still need to follow the same application process, but we won't send or charge you for a new unit. For billing purposes, METRO will need your transponder number so that it can be entered into your METRO account information.

THERE'S NO TIME TO LOSE.

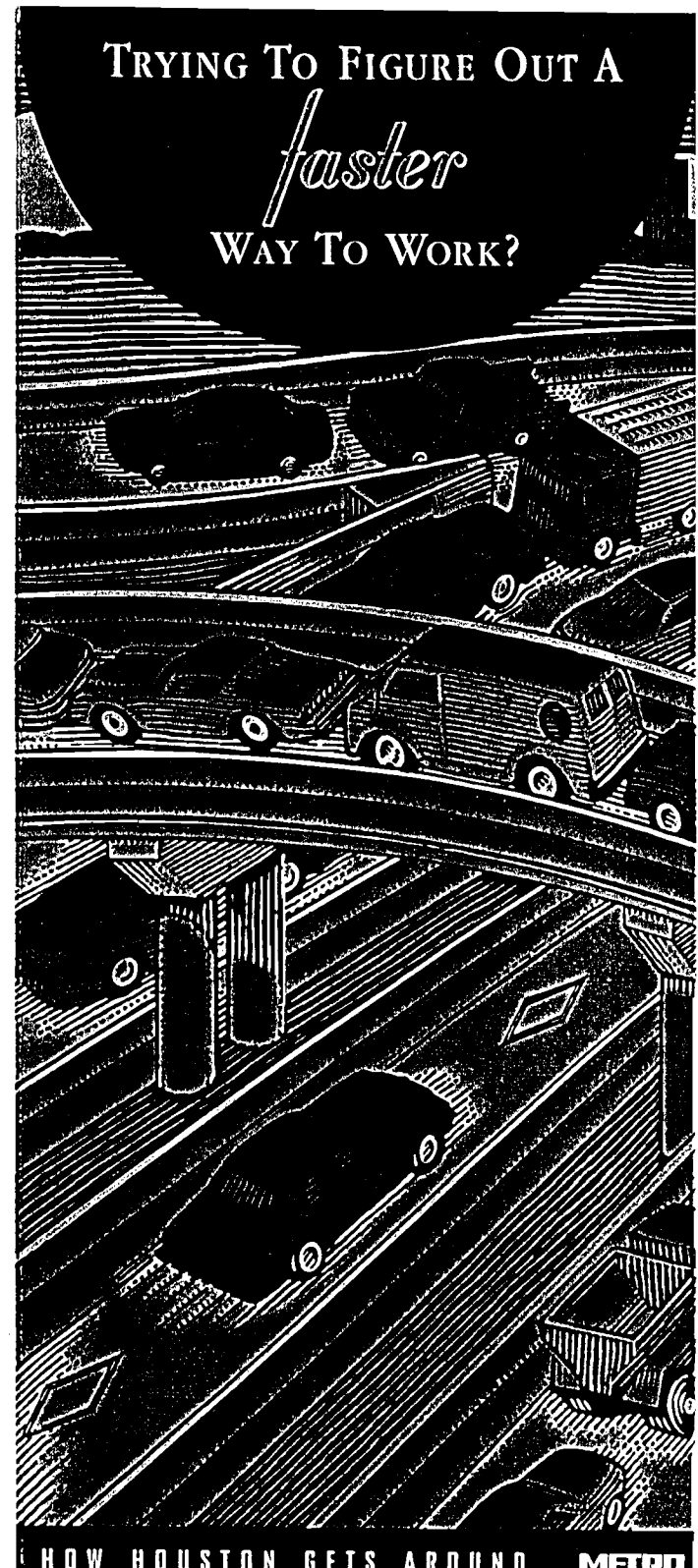
Leave the hassle of solo commuting behind. Be one of the first to sign up for METRO's QuickRide program, and find out how nice life can be in the fast lane. But remember! Only 300 vehicles will be admitted at this time. So act now. Call 713-224-RIDE or toll free at 1-888-606-RIDE for QuickRide information or applications. Do it on the double!

The hours of operation for the Katy HOV lane are as follows:

Days Open	Hours of Operation	Direction	Minimum Capacity
Monday - Friday	5 a.m. to 6:45 a.m.	inbound	2
	6:45 a.m. to 8 a.m. inbound		3
	QuickRide		2
	8 a.m. to 11 a.m.	inbound	2
	2 p.m. to 5 p.m.	outbound	2
	5 p.m. to 6 p.m. outbound		3
	QuickRide		2
Saturday	6 p.m. to 8 p.m.	outbound	2
	5 a.m. to 8 p.m.	outbound	2
Sunday	5 a.m. to 8 p.m.	inbound	2



◆ - Entrance/Exit T - Park & Ride Lot or Transit Center



METRO

HOW HOUSTON GETS AROUND.

**713-224-RIDE
1-888-606-RIDE**

Remember,

TWO HEADS ARE BETTER THAN ONE.

Ride the Katy Freeway HOV lane with a friend for just \$2 each way.

Get to work on the double with METRO's new QuickRide service. Thanks to this special new pilot program, there are now two ways to carpool on the Katy Freeway HOV lane during morning and evening rush hour traffic. Use the lane as part of a 3+ carpool and ride for free. Or, for just \$2 each way, ride to work with just one other person. Use the

**QUICK
RIDE**

inbound entrance between 6:45 - 8 a.m., and the outbound entrance between 5 - 6 p.m. So why ride alone and bother with frustrating commuter congestion? Our QuickRide service lets you beat traffic, skip stress and best of all, gets you to and from work in no time. And since your commute time will be much faster, you can even leave for work *later* and arrive home *earlier*, enjoying more *free* time to boot.

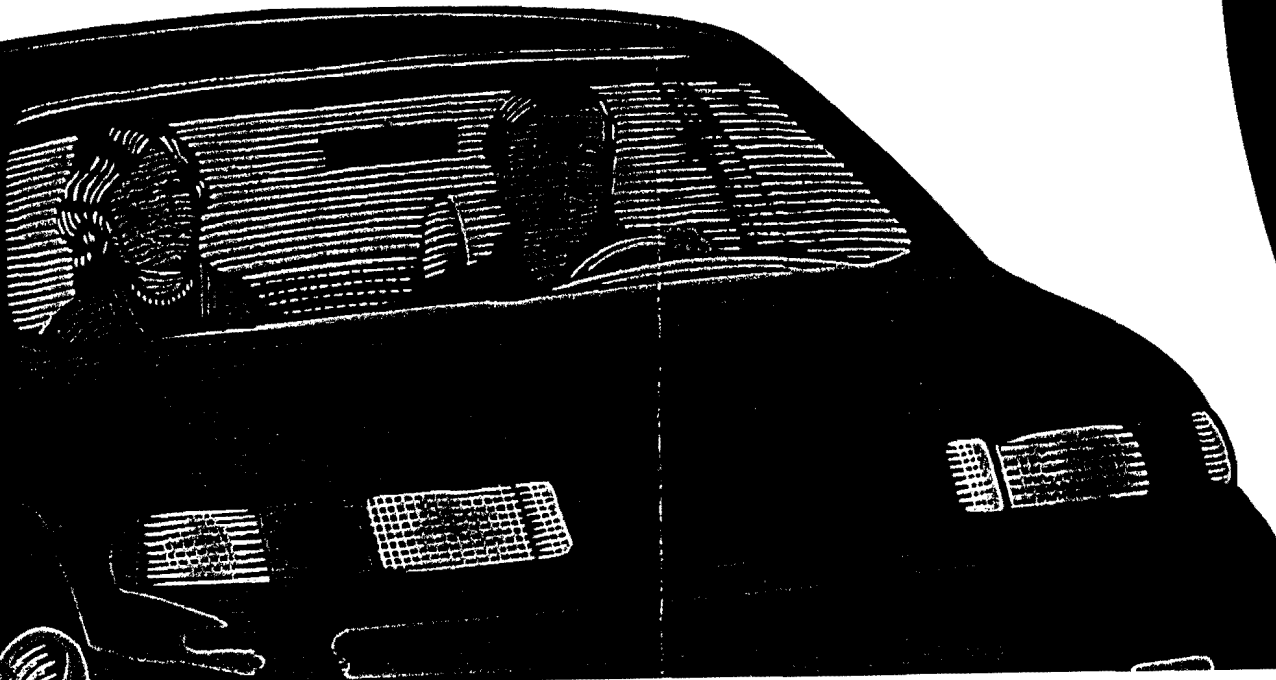
FIRST THINGS FIRST.

Here's how the program works. First of all, find a friend and form a carpool. The QuickRide program is not available to single occupant vehicles. Next, you'll need to fill out an application. If you need an application, just call the METRO RideShare Information Line at 713-224-RIDE, or toll free at 1-888-606-RIDE. Please note: initially, only 300 vehicles will be signed up for QuickRide, and these participants will be selected on a first come, first served basis. So the faster you mail your application to us, the better your chances of getting in. Should we receive your application after the program is fully enrolled, your name will be placed on

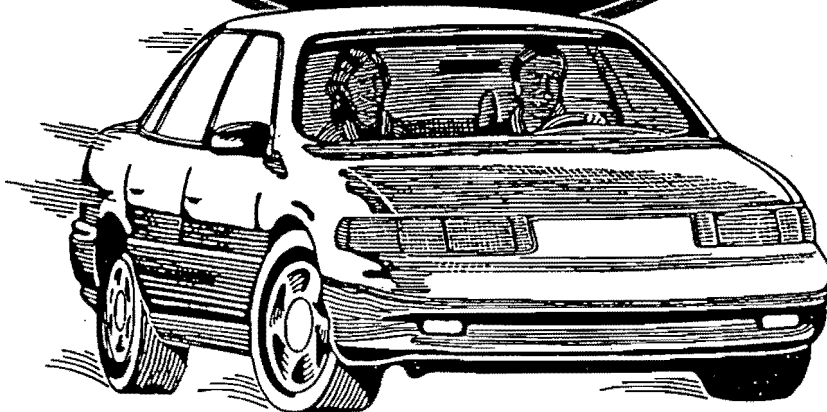
a waiting list in the order your application was received. You will then be notified as soon as our enrollment cap is raised or if spaces become available.

LIFE IN THE FAST LANE.

Once METRO receives and approves your application, we will mail you a rearview mirror hang tag, and a small, credit card-sized transponder which you must attach to the inside of your windshield. The transponder will be "read" each time you use the Katy Freeway HOV lane. An initial balance for our QuickRide service is \$40. The cost is \$2 each way, and will be deducted from your prepaid balance of \$40 as you use it. Whenever your balance



TRYING TO
FIGURE OUT A
faster
WAY TO WORK?
REMEMBER,
TWO HEADS ARE
BETTER THAN ONE.



Now two people are all it takes to ride the
Katy Freeway HOV lane.

METRO's new QuickRide service lets
QUICK RIDE you get to work on the
double. That's right!
Thanks to this special
pilot program, now there are two
ways to carpool on the Katy Freeway
HOV lane during peak morning and
evening rush hours. Use the lane as
part of a 3+ carpool and ride for
free. Or, for just \$2 each way,
QuickRide lets you ride with just

one other person. Use the inbound
entrance between 6:45-8 a.m. Use
the outbound entrance between
5-6 p.m. Hurry and act now! The
QuickRide program will be limited
to 300 vehicles at this time. So c'mon!
Make your morning and evening drives
twice as nice. Call METRO and start
enjoying life in the fast lane. For more
information, call METRO today at
(713) 224-RIDE or 1-888-606-RIDE.



HOW HOUSTON GETS AROUND.

METRO

10"

6 7/16"

AD PRINTS BLACK - ALL ART IS REAL ON DISK

Fogarty Klein & Partners

ADVERTISING & MARKETING

7155 Old Katy Rd., Suite 100 • Houston, TX 77024

(713) 862-5100 • FAX: (713) 869-6560

METRO

Job Number 553CORB7003

Priority Lane Pricing/Katy HOV

4/5/97

- VO: Forget traffic! That's right! With METRO's new QuickRide program and your access tag, you and just one other person can ride the Katy Freeway HOV lane from 6:45 to 8 a.m. and 5 to 6 p.m. Call 224-RIDE for details.
- VO: Time to double up! Ride the Katy Freeway HOV lane with one other person during morning & evening peak rush hours for just \$2 each way. For details, call METRO about the QuickRide access tag at 224-RIDE.
- VO: It just takes two! Now you and a friend can ride the Katy Freeway HOV lane during morning & evening peak rush hours for just \$2 each way. Call METRO about the QuickRide access tag at 224-RIDE.
- VO: There's a new way to get downtown FAST. It's called QuickRide. Now you and a friend can ride the Katy Freeway HOV lane with your access tag from 6:45 to 8 a.m. and 5 to 6 p.m. Call METRO at 224-RIDE for details.
- VO: Great news, commuters! With QuickRide and your access tag, you and a friend can ride the Katy Freeway HOV lane during morning and evening peak rush hours for just \$2 each way. Call METRO at 224-RIDE for details.

JAN 98

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KATY HOV



Texas Department of Transportation

METRO

APPENDIX D: EVALUATION PLAN

QUICKRIDE EVALUATION PLAN

There are several measurements that can, in aggregate, indicate whether the priority lane pricing effort known as "QuickRide" is "successful." The original project objective of improved utilization of the Katy HOV lane is a principal component of "success," but as identified in the feasibility assessment, there are other factors to consider as well. At the end of the pilot effort, the operating agencies will need to decide whether QuickRide should be continued. This evaluation plan is intended to provide them with sufficient information to allow them to make an informed decision.

Four key areas have been identified for evaluation: 1) impact of QuickRide on travel in the corridor, 2) impact of QuickRide on traffic operations, 3) whether actual revenues from QuickRide are sufficient to cover operating expenses, and 4) public acceptance of QuickRide. This plan describes how each of these areas will be measured.

Corridor Improvement

The operating agencies continue to seek ways to improve travel in the Katy corridor, one of the most congested in Texas. It was their pursuit of improvement alternatives that led to the original consideration of pricing as an option. Thus, continued improvement will be an important aspect of the evaluation, and a key indicator to the effectiveness of HOV lane pricing. Following are the specific measures that would be evaluated to assess corridor improvement.

- ▶ Increased Person-Movement -- One of the ongoing objectives of any HOV lane is to increase the number of people moved in a congested freeway corridor. For this pilot, one of the desired outcomes would be that more people are moved in the Katy HOV lane and corridor (peak hour and period) with priority lane pricing. That outcome would be measured using occupancy counts conducted before and after implementation of QuickRide.
- ▶ Increased Average Vehicle Occupancy -- In some respects this is a very similar measure to the above. It is expected that there would be some increase for the corridor as a whole, even if HOV2s formed from the mainlanes are replaced by SOVs. The occupancy counts referenced above would be the data source.
- ▶ Sources of HOV2s -- Part of the overall corridor effectiveness will be dictated by which travelers opt to participate in QuickRide. If a significant portion of the HOV2s are formed from SOVs, then the maximum potential corridor benefit can be realized. The primary means of determining the source of HOV2s will be data from the participant enrollment forms, cross-checked with occupancy counts.

Traffic Operations

The feasibility assessment identifies three traffic operations issues to be addressed during implementation. Those issues relate to assuring that the QuickRide program benefits the participating HOV2s without adversely impacting other travelers in the corridor.

- ▶ Maintain HOV Lane Operating Speeds -- The program is designed to limit the number of HOV2s such that free flow speeds are maintained in the HOV lane. Data available from the automated vehicle identification system (AVI) currently in place will be used for speed measurements.
- ▶ Minimize Adverse Impacts on General Purpose Lanes -- The feasibility assessment identified the interface between mixed flow and HOV lane traffic as the most likely spots for problems to arise. In order to be successful, this interface with additional HOV2s involved would produce no new bottlenecks. Data to estimate the degree to which this potential occurs will be obtained through on-site observation, video from available TranStar cameras and/or AVI speed measurements.
- ▶ Improved Violation Rates -- At present, there are some HOV2s illegally using the HOV lane during the HOV3+ restricted period. By providing a legal opportunity to those HOV2s and increasing the enforcement during the restricted period, it is expected that there would be a significant reduction in the violation rates. The previously referenced occupancy counts and METRO police records would be used to estimate changes in violation rates.

Financial Viability

- ▶ Trip Pricing -- The QuickRide program trip price is initially set at a price that is consistent with other local premium service, such as the Harris County Toll Road Authority facilities. As the QuickRide pilot effort proceeds, the level of usage at the initial price will be evaluated. If the usage is high and the waiting list for permits is long, then a price increase would likely be recommended. Conversely, if the usage is low, then a price reduction should be considered.
- ▶ Usage and Revenue Fluctuations -- It is anticipated that the usage of QuickRide will vary depending on some predictable, and possibly unpredictable factors. As the pilot proceeds, the level of fluctuation in daily usage will be monitored, and related to expected influencing factors, such as mainlane incidents and special events. To the degree that predictable factors do not correlate to usage fluctuations, other factors will be documented, to the extent they can be identified. The primary mechanisms for identifying contributing factors will be questionnaires and telephone surveys, to be administered in concert with METRO and TxDOT activities and schedules.

- ▶ Net Revenues -- This program has been expected to generate at least sufficient revenue to cover the operating expenses necessary for implementation. This evaluation would track expenses and revenues and provide an assessment of the likely long-term financial implications of continuing the program, and recommend any appropriate changes in trip price. Actual costs from the operating agencies, account revenues to be provided by METRO, and number of HOV2s on a waiting list for permits will be used to assess the financial implications of project continuation.

Public Acceptance

This aspect of the project continues to be crucial and unknown, although projects in California appear to have gained at least an adequate amount of public acceptance. In order to gauge the success of the public education campaign and other aspects of public and user acceptance, the following areas will be measured.

- ▶ QuickRide Participants Benefit -- In this measurement, new HOV2s would indicate whether they perceive that they receive a higher level of service, i.e., that the value of the time savings is greater than the toll. Questionnaires sent to participants would be used to measure their satisfaction.
- ▶ Adequacy of Enforcement -- In order to determine whether the enforcement is sufficient, QuickRide participants and other HOV lane users would be sampled by questionnaire to determine if they perceive that there is sufficient enforcement to assure that no one gets a "free ride."
- ▶ Acceptance by Non-HOV Lane Travelers -- In previous studies, there has been some sentiment among non-HOV lane users that the HOV lane is underutilized. The general public travelers in the Katy corridor would be sampled to determine if they perceive better utilization of HOV lane with the QuickRide program in place. This sampling would be done via questionnaire and through use of the Katy Major Investment Study focus groups.
- ▶ Perceived Impact on Katy Freeway Users -- If the QuickRide program is successful in drawing SOVs from the mainlanes, then mainlane users should perceive improved freeway operations. As a minimum, they should experience "no change." The above mentioned focus groups will be sampled, and questionnaires distributed selectively to ascertain this information.

Some elements of this evaluation, such as the operations elements, will be conducted frequently in the early months of the pilot. By conducting the assessments often, it will be possible to detect operational problems that may occur or be the result of QuickRide activities. Particularly important will be the utilization rates of QuickRide permits, which will give an indication of the total number of permits that should be sold. Other elements of the evaluation, such as questionnaires, are more expensive to administer, and will be done only once or twice during the pilot year.

Evaluation results will be reported quarterly, with a final assessment and program recommendations prepared at the end of the pilot year.