DYNAMIC PARKING PRICING IMPLEMENTATION MANUAL

Prepared for:

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By:

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Overview

Traffic congestion is an increasing problem in many metropolitan areas that support large commuter populations. Dynamic Parking Pricing is one proposed strategy to control traffic congestion in these types of areas by providing commuters with financial incentives to change their traffic habits. This method, would vary parking pricing by times of day and provide incentives for drivers to commute in off-peak, shoulder times to better spread the peak of congestion. This project is replicable for other areas; however, a study should be completed to ensure that your planned location would benefit from a Dynamic Parking Program.

For areas considering implementing a similar program, this manual explains the various steps and procedures involved in the proposed methodology by using the example of the "Dynamic Pricing Parking Project" in Tampa, FL. This methodology was applied in Tampa in a study conducted by the Center for Urban Transportation and Research (CUTR). For the benefit of the reader's information, a case study is included that describes what was involved in the project, and what resulted. This case study is indicated by indented paragraphs in a smaller font.

Steps to Developing a Dynamic Parking Project

Developing an effective Dynamic Parking Program is a challenging and involved process. Achieving a successful program that results in less traffic congestion requires many steps. For those of you considering implementing a similar program in traffic-congested areas we recommend the following methodology:

- Form an Implementation Plan
- Gather traffic and parking data for targeted location
- Research through literary sources
- Develop a proposed pricing scale

- Research comparative programs through internet and online sources
- Identify and involve local decision makers
- Project implementations:
    - Pre-project study
    - Project phase
- Develop marketing materials to promote the program

Implementation Plan

Initially, it is important to design an implementation plan that takes into consideration all the research and design necessary for a Dynamic Parking Program. Primary factors considered necessary in designing and implementing a Variable Pricing project include: price structure, technology, develop implementation manual, marketing, information evaluation and location. Although the format may be similar, this plan will vary depending on characteristics of the targeted traffic-congested area.

A research implementation plan was created for the Tampa area in PowerPoint to serve as a graphic representation of the research and design steps included in the Variable Pricing Project. Those steps that were deemed necessary in the planning stages of the project are included in the model so the project is visualized more effectively. The model is illustrated as follows:

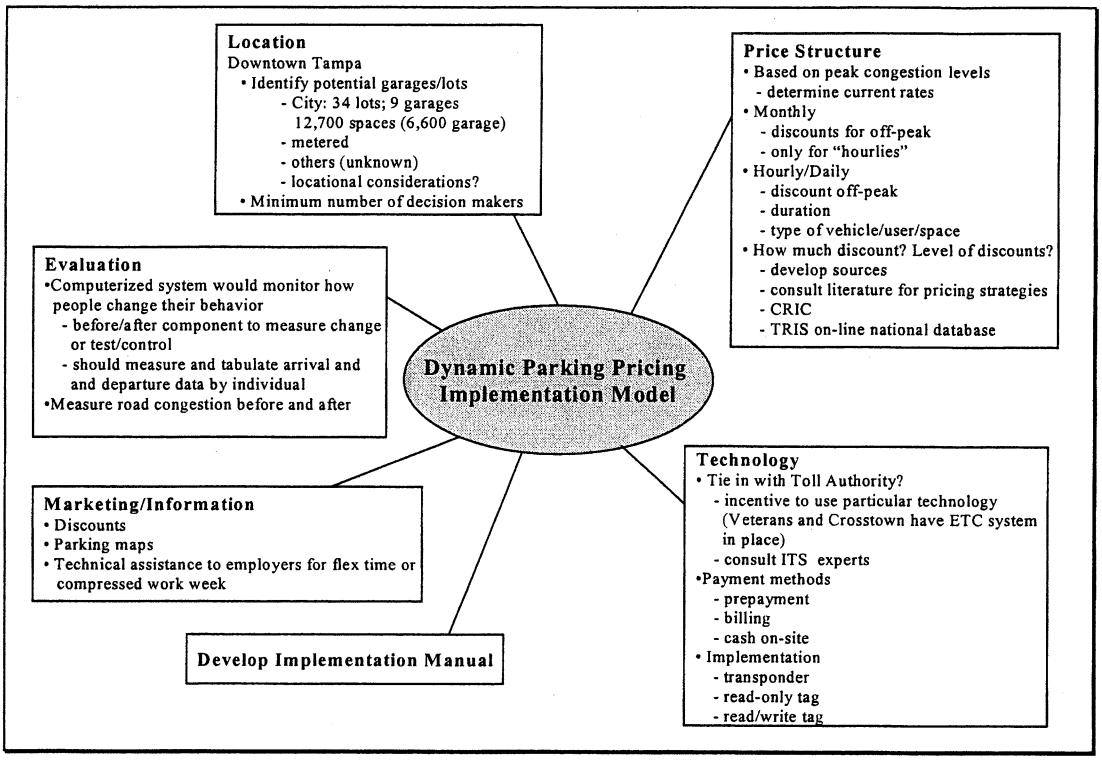


Figure 1 - Implementation Plan

The above categories were considered to be the primary factors in designing and implementing the Variable Parking Pricing project for Tampa. All details known at the time of the creation of the implementation model were included so that a visual plan of what tasks need to be done was easily accessible.

Location

A key step is to identify data that will determine baseline conditions and develop a strong case for the need for implementing Dynamic Parking. Part of this step is determining what locations would make the program most successful. The project must determine what areas have the most congestion and also determine the amount of parking available in those areas. Both of these elements are necessary to make a Dynamic Parking Program work. If there is not sufficient parking to offer parking discounts, then the program will not achieve its goals. Additionally, areas that have do not have abundant parking may not contribute to heavy congestion – and thus implementing Dynamic Parking would not have the desired congestion reduction. Thus, it is important to collect essential data on targeted locations to support implementing a Dynamic Parking Program.

Background information on Tampa

Tampa, Florida, currently has moderate levels of congestion occurring at the AM and PM peaks. The 1999 TTI Congestion index ranks Tampa 26th in the nation in terms of the Roadway Congestion Index, 35th in percent of daily travel in congestion and 22nd in annual delay per capita. By comparison, in 1990 Tampa rated 17th in the nation in terms of the Roadway Congestion Index, 16th in percent of daily travel in congestion and 14th in annual delay per capita. While measures taken to date have obviously been quite effective, current and projected growth figures suggest that traffic congestion along major corridors to employment centers may become an extremely serious regional problem.

Annual Average Daily Traffic Reports

One source of relevant data is facilities leading in to the area, which can provide traffic count data. This will reveal a clearer picture of the traffic situation for the targeted area for the Dynamic Parking Program. The Florida Department of Transportation (FDOT) produces a very useful source, the "Florida Traffic Information" issued on compact disc. This data can be used to summarize current conditions.

(Case study: Downtown Tampa)

The FDOT 1998 Florida Traffic Information compact disc was used to gather historical annual average daily traffic reports from 1991, 1992, 1994, 1996, 1997, and 1998. This data was used to assess the changes in traffic volume over the last decade and assist in determining those locations best suited to further study in the Variable Parking Pricing program, based on their traffic volume. The traffic counts for "Downtown gateway" sites (those located in areas accessing downtown Tampa) are listed on the next page.

Florida Department of Transportation
Transportation Statistics Office

Annual Average Daily Traffic Report

Site	Description	1991	1992	1993	1994	1995	1996	1997	1998	Change from 1992 (1991 if available)
9922	I-275,0.25MI N OF FLETCHER AVE/WIM#22,HILLS. CO.	54,946	56,334	56,513	56,222	56,554	58,311	61,115	61,448	6,502
0194	I75,0.6 M S OF US301,2.3 M N OF I4,HILLSBOROUGH CO	0	61,662	63,020	64,500	66,500	74,626	78,486	83,452	21,790
9926	I-75,1.25MI N OF SR60(ADAMO DR)/WIM#26,HILLS. CO.	0	74,592	73,047	73,978	80,503	82,453	88,479	95,114	20,522
0339	SR60 (CC CSWY), 1996 FT W ROCKY PT DR - HILLS#18	0	0	0	0	0	0	0	54,334	
0162	SR-60,1 MI EAST OF US-41,HILLSBOROUGH CO.	26,539	27,219	29,061	28,764	27,988	29,879	31,311	32,373	5,834
5291	FLORIDA AVE., SOUTH OF BUFFALO AVE.	7,467	8,400	10,500	9,200	9,300	9,700	9,100	9,400	1,933
2015	I-275, EAST OF FLORIDA AVE/SR 685	131,770	120,000	148,500	157,500	159,500	171,000	164,000	164,000	32,230
0029	KENNEDY BLVD. AT HILLSBOROUGH RIVER BRIDGE 3003	18,964	19,500	13,500	13,500	13,500	13,900	23,000	24,000	5,036
5077	NEBRASKA AVE. SOUTH OF COLUMBUS DR.	13,875	16,000	15,000	15,500	15,800	15,400	11,800	17,600	3,725
2024	SR 400/I4, EAST OF SR 599/US 41/50TH ST	81,907	79,500	87,000	89,500	94,000	103,500	99,000	99,000	17,093
5356	SR 60/ADAMO DR, EAST OF 21ST ST/SB BUS US41	22,804	19,000	22,000	22,000	22,000	22,500	21,000	23,500	696
5143	SR 60/MEMORIAL HWY, NORTH OF CYPRESS ST.	99,105	99,000	99,500	108,000	105,000	131,000	115,500	131,500	32,395
5277	SR 618/X-TOWN EXPWY, E OF 14TH ST	32,861	34,500	37,000	38,500	39,500	44,000	43,500	46,000	13,139
5246	SR 618/X-TOWN EXPWY, E OF BAY TO BAY BLVD	26,150	26,000	24,000	24,500	25,500	27,500	27,000	29,000	2,850
2022	SR 93/I-275, EAST OF HOWARD FRANKLIN BRIDGE	72,801	77,000	80,000	81,000	85,000	74,000	119,000	119,000	46,199
2008	SR 93/I-275, NORTH OF SR 574/MLK DR/BUFFALO AVE	128,656	117,500	119,500	132,000	129,500	152,000	124,000	146,000	17,344
2016	SR 93/I-275, WEST OF ASHLEY STREET	145,781	133,000	143,000	163,000	163,000	165,000	179,000	164,000	18,219
5058	SR600/US92/DALE MABRY HWY, N OF COLUMBUS DR/SR 589	76,577	82,000	83,500	85,500	74,000	75,000	79,000	78,500	1,923
5296	TAMPA ST., SOUTH OF SCOTT ST.	8,235	8,900	8,100	7,500	8,600	8,100	8,700	7,700	-535
5052	US 92/DALE MABRY HWY, NORTH OF HENDERSON BLVD	39,334	41,000	36,500	36,500	37,000	41,500	35,000	41,500	2,166

Table 1 – Average Annual daily Traffic report for Tampa

Another key area for gathering essential data is the use of past and recent traffic reports, which reveal the peak periods of traffic for the targeted area. This data can be gathered from numerous sources including telemetered traffic sites leading into the designated area, or sites in within the area itself. Additionally, data from other downtown areas that have similar traffic patterns as the targeted area for the Dynamic Parking Program can be used as a comparison, or in addition to traffic information for the designated region.

Hourly Continuous Traffic Count Stations Surrounding I-275, I-4, Lee Roy Selmon Expressway, and Dale Mabry Highway

Data from the 1998 traffic reports is used in determining those peak periods of traffic that are affected by variable pricing. Hillsborough County has no telemetered traffic count sites (which provide hourly count data) directly in the downtown area. However, several sites on roadways ultimately leading to downtown do have telemetering on the outskirts of the travel areas. Because of their similar patterns of development and dependence upon interstates by commuters, information from Miami-Dade, Broward, and Palm Beach Counties is considered in conjunction with hourly traffic counts from Hillsborough County (See Appendix D) in determining what constitutes the "rush hour." This is necessary so that the parameters of when variable pricing would take effect could be established. Based on the peaking characteristics of these data, traffic rush hours are determined to be from 7-9am and from 4:30-7pm.

Parking Locations

Identifying existing parking locations in the targeted Dynamic Parking area is essential to the assessment phase. Sources of information for identifying all private and public parking areas may include nonprofit organizations, city or county publications or primary data from interviews with private operators. It is helpful to collect information on the total number of spaces available in the targeted area, as well as a list of lots or garages, and the rates charged for parking.

> *Parking Locations-Downtown Tampa*
> The Tampa Downtown Partnership is a non-profit alliance of local businesses with an interest in the downtown area. The Transportation Management Organization (TMO) of the Partnership is concerned with decreasing the traffic congestion and improving mobility in the area, and was able to provide the *Downtown Tampa Parking Inventory*. The document includes a map of the downtown area, showing the location of all private and City parking lots or garages. It also includes a listing of the lots or garages, their operators, the total spaces within that lot or garage, the hourly and/or monthly rate, and the amount of time on the waiting list for that particular location (See Appendix F). From the *Inventory*, the amount and location of parking spaces managed by the City of Tampa is determined. Further, private parking operators are identified and listed according to the number of the parking spaces they manage.

Local Decision Makers

An important part of the process is identifying local decision makers or influences in the targeted area that are beneficial or necessary parties for implementing a parking program. These parties may vary by area but should include governmental offices; this could include several offices at the state, county or municipal level, toll operators and established ETC systems, private parking operators, vendors, and non-profit organizations with similar interests. After

determining which parties are vital to the process, the next step is to develop a forum for communicating with these local decision makers.

Those parties who had an interest in the Tampa project, or were necessary for its implementation, included:

- The City of Tampa, since the plan would presumably impact traffic patterns and would likely involve city-operated parking facilities
- The FDOT Office of Toll Operations (OTO), which currently administers the Sunpass program in Florida
- Private parking operators, since their participation could be a key element in the implementation of this plan.
- The Hillsborough County Expressway Authority (THCEA), which operates services utilizing transponders
- Amtech (formerly an independent company, recently acquired by TransCore), which provides technology products to support Dynamic parking implementation.

The Tampa Downtown Partnership (described under "Parking Locations) was also contacted to provide information about location and pricing of parking in the downtown Tampa area.

FDOT Office of Toll Operations and the SunPass Electronic Toll Collection System

SunPass is the Electronic Toll Collection (ETC) system in place in the state of Florida along most of the toll roads. This system allows patrons with a transponder in their car to pass through a designated SunPass lane at the toll plazas on particular roadways without having to stop and pay cash. The cost of the toll is automatically deducted from a pre-paid account, which the customer may establish on-line at the SunPass website (http://www.sunpass.com) or at various on-site locations.

The goal of the Variable Parking Pricing project in Tampa was to link with SunPass, as it was an established ETC system in place on two major thoroughfares in Hillsborough County, the Veterans' and the Lee Roy Selmon (Cross-town) Expressways. By doing so, patrons already using SunPass on these roads would be set up for use in a parking situation, and those who did not already utilize SunPass were provided two incentives to enroll in the program, as they would have ETC convenience and time and money savings at both parking facilities and toll roads.

In order to obtain more information about how to coordinate with SunPass, Doug Martin of the FDOT Office of Toll Operations (OTO) was contacted for information on system operations. Mr. Martin explained that SunPass had originally been designed with future expansion in mind, and that while variable parking pricing was not specifically identified as a need in the original design, extra memory pages had been designed in the transponders for just such a situation.

In order to establish the link with SunPass, negotiations between the City of Tampa and participating private parking operators and FDOT and Amtech would be necessary to obtain needed equipment and gain access to the system. Mr. Martin further advised that FDOT had established a contract with Amtech to purchase the transponders and that an evaluation should be made as to whether it was more beneficial to the project to purchase the transponders from that contract, provided that it was still valid at the time of purchase, or to obtain them directly from Amtech.

City of Tampa

The City of Tampa is considered to be a critical partner in the planning process of the project. Because the City's parking division is not profit-driven, as are private operators, it is thought that the City may be more amenable to participating in the program. Further, because the Variable Parking Pricing project is a new concept and at the forefront of ETC technology, Tampa has the potential to become a leader in innovative parking and congestion relief strategies. A PowerPoint presentation (See Appendix C) outlining the project and the benefits for the City of Tampa was made to parking and traffic engineering officials. Following the presentation, comments and criticisms about variable parking pricing were solicited. Overall, variable parking pricing receives a favorable response and appears in line with the congestion relief and technological advancement goals of the City. There are concerns related to whether it would stimulate the downtown economy; what kinds of successes the PassKey system (discussed below) has produced; private operator pricing strategies; the effects of the elements on hardware in an open-air environment; and the involvement of private industry, particularly as it relates to employee work schedules. Their comments provide further points of research for the project.

The Hillsborough County Expressway Authority ((THCEA)

Because SunPass (discussed previously) is already in place at tollbooths on the Lee Roy Selmon and Veterans' Expressways, the participation and input of THCEA was

considered important in the early stages of planning the setup of the Variable Parking Pricing program. A modified version of the PowerPoint presentation made to City officials was shown to THCEA to gauge its representatives' opinions of the proposal and to foster a partnership with the agency.

Downtown Tampa Private Parking Operators

A list of affiliated private parking operators was obtained from the Executive Director of the Tampa Downtown Partnership. A small number of these private parking operators were contacted to gauge their interest in participating in the Variable Parking Pricing project and to solicit their input on making the project more attractive to private companies.

A developed script serves as an introduction to the project at the point of initial contact via telephone. The script is designed to appeal to the primary interests of the private parking operators, and it points out that offering variable parking pricing to their customers could make their parking operation more competitive in the Tampa parking market. The fact that participation in the program would remain revenue neutral for the operators is also stressed. The content of the script is presented in Appendix B.

Based on the responses of the few private operators contacted to date, the script is effective in its purpose to introduce the operators to variable pricing. The script was purposely designed to be concise and to allow for interactive responses with the operator rather than a straight reading to him/her. The primary request was for more information regarding the program, and the possibility of being more competitive in the parking market generated the most interest. Although one of the reasons for contacting the private operators was to obtain their input and suggestions regarding the project, those who were interested did not have much to offer in the way of advice, but were definitely interested in having further information.

Amtech

Amtech is the manufacturer of the transponders in use in Florida's SunPass program and the tags used for PassKey in Dallas and Chicago. The link of the Variable Parking Pricing project with the SunPass system would require contact with the designer of the system to work out the programming and acquire the transponders and other hardware necessary for the project. In-house contacts at CUTR were used to determine the best approach in discussing the program with Amtech.

Literature Review: Technology and pricing

A literature search was conducted to identify those sources of information related to variable pricing and AVI/ETC technology. At the time this search was performed (May 2000), no literature was found directly related to dynamic or variable parking pricing. This appears to be a relatively new and ever-changing focus within the parking industry, and the possibility of a larger literature base with a current search certainly exists.

The TRIS on-line database, the CUTR Resource and Information Center, and the University of South Florida Library were all consulted in the attempt to locate relevant literary sources. Searches were conducted using such keywords/phrases as *dynamic pricing, value pricing, variable pricing, parking pricing, early bird parking, ETC, AVI,* and *parking technology.* The following is a summary of those references found to be of relevance to the Variable Parking Pricing project.

Summary of Variable Parking Pricing Literature

Pietrzyk, Michael C.
1994 Electronic Toll Collection Systems. In Curbing Gridlock: Peak-Period Fees to Relieve Congestion.

Electronic Toll Collection (ETC) systems are in place in various metropolitan areas throughout the United States, such as Dallas, Houston, New Orleans, and in other cities around the world. Wireless technologies make automatic vehicle identification (AVI) possible and provide the means for drivers to pass through toll plazas and pay the toll without coming to a complete stop to complete the transaction. Some of the benefits that may be realized by implementing ETC technologies include:

- Reduced traffic congestion at the toll plazas;
- Improved energy efficiency;
- Improved air quality;

- Enhanced economic productivity due to the lesser costs of implementing such strategies as compared to additional road and toll plaza construction;
- Payment alternatives for patrons;
- Reduced operational costs; and,
- Psychological benefits.

The wireless technology utilized in ETC systems is either read-only or read/write, and all present systems are guided by the following steps:

- Intercepting modulated electromagnetic radiation from a vehicle;
- Recovering the information contained in the signal; and,
- Using a computer to identify the tag from a database

The difference among systems arises in the means through which these steps are undertaken. Several technologies are cited, including:

- Inductive loop systems;
- Optical systems;
- Active radio frequency/microwave systems;
- Passive RF/microwave systems; and,
- Surface acoustical wave.

Although no industry standards have yet been established, an ITS committee has been established to explore the issue. At some point there is the need for a certain level of standardization among the communications, software, and hardware industries with regard to ETC technology. The benefits of standardization will include:

- Interchangeability of system components;
- Elimination of unnecessary product development costs caused by changes in product interaction;
- Fostering of area wide deployment;
- Promotion of application stability; and,
- Establishment of a basis for liability limitation.

Prepayment, post payment, methods of payment, and toll fare structures are all issues that should be considered in the implementation of an ETC system. Prepayment involves the establishment of an account from which the tolls are deducted. The method of payment becomes an issue of concern here, as the patron may have the choice of cash, check, credit card, or electronic fund transfer. There is evidence (from Florida) that most patrons prefer the prepayment method; however, there may be a concern of privacy to some.

The costs of this type of operation include the establishment of a location where the accounts would be set up and replenished, construction or lease of a permanent station, and computer and maintenance costs. Even if the system were to be established as a mail-in program, a central location for processing would be necessary. Mobile units are considered an option (or an addition) to permanent locations and would also require advertisement to the public.

Post payment would operate as a billing system in which the patron receives a statement for the cost of actual toll usage incurred during the previous month. Additional operational costs are involved with this type of system, including the account maintenance and statement mailings, and collections on delinquent accounts.

Finally, the tolls may be structured in three separate ways. These include, charging extra for the use of AVI; offering a discount; or keeping the existing toll structure in place. Most ETC systems that are already in place offer a discount as incentive for patrons to utilize the program.

These technologies may be incorporated into a Dynamic Parking Pricing system, with varying degrees of success and feasibility. Similarly, the methods of payment may also be structured to fit a parking situation, perhaps even linking into an existing toll system for road usage. Patrons may receive discounts based

upon their arrival and departure times in the attempt to alleviate traffic congestion during peak periods. An automated system would record and deduct accordingly, and if such a system were partnered with an existing ETC, the transition to an electronic parking system would be made easier.

May, A. D.
1994 Potential of Next-Generation Technology. In Curbing Gridlock: Peak-Period Fees to Relieve Congestion.

The premise of this paper is to identify and discuss those technologies that may be applicable in congestion pricing, particularly as they relate to point and cordon pricing and pricing based on time and distance. However parking pricing is considered as well. Various methods of price structuring are discussed.

The objectives of congestion pricing are identified as follows:

- Congestion relief;
- Environmental protection;
- Accessibility and urban revitalization;
- Equity; and,
- Revenue generation.

The operational criteria, based on a Ministry of Transport (U.K.) report, are identified as the following:

- Charges related to amount of road utilization;
- Varying price structure for different areas, times of day, week, or year, and vehicle class;
- Stable prices known to patrons prior to their trip;
- Possibility of advance payment, including credit facilities;
- Perception of fairness among patrons;
- Simplicity in explanation of price structure to patrons;
- High degree of equipment reliability;

- System reasonably free from deliberate and unintentional fraud and evasion; and,
- System applicable to the entire country if necessary and to a rising vehicle population.

Additional criteria that have arisen since the original outline include:

- Occasional users and visitors should be equipped to use the system rapidly and at low cost;
- System should be designed to protect patrons' privacy and allow them to check the balance of their account and assess the validity of the charges; and,
- System should facilitate technology integration, particularly with those technologies related to driver information systems.

May suggests that charges for vehicle ownership and use have been identified as one possible means of congestion relief; however, in the cases sited here, they have proven to be ineffective in significantly reducing vehicle use and traffic congestion. Increases in fuel tax are also considered, but have had no real impact other than a decrease in off-peak and leisure trips. These taxes are considered to be too indirect in their impact to be an effective means of congestion relief, and fuel taxes, as well as ownership charges, are not given further consideration.

Charges related to patterns of vehicle use are acknowledged as another means of relieving traffic congestion, and include:

- Cordon charges—vehicles incur a charge each time they pass a defined point and the rates vary by
    - Location
    - Direction
    - Time of day
    - Vehicle type;

- Time-based charges—patrons are charged a rate per minute for traveling or parking within a defined area. These rates may vary by
    - Area
    - Time of day
    - Vehicle type
    - Vehicle activity;
- Distance-based charges—patrons are charged a rate based on distance traveled within a defined area and these rates may vary by
    - Area
    - Time of day
    - Vehicle type; and,
- Congestion-specific charges—patrons are charged for each time they take more than a specified time to travel a specified distance. The rates (and possibly the time and distance thresholds) may vary by
    - Area
    - Vehicle type
    - Time of day.

Parking charges are considered separately, and the primary contributors of parking to overall congestion are considered to be the following:

- Use of road capacity for parking rather than movement (in the case of on-street parking);
- Travel to and from the parking space; and,
- Travel during the search for a parking space.

The parking pricing structure may be based upon:

- Arrival charges—patrons are charged each time they park;
- Departure charges—patrons are charged each time they leave the parking area; and,
- Duration charges—patrons are charged a specified rate for the period they have parked.

The rates of charge may be based any of the following criteria:

- Location;
- Type of parking space;
- Time of day; and
- Vehicle (and user) type.

An in-vehicle unit (IVU) is considered to be the most effective and efficient means for the operation and enforcement of the charging system. There are several classes of IVU that may be used, and the text offers a brief discussion and critique of each. These include:

- Paper stickers;
- Read-only tags;
- Read-and-write tags;
- Automatic debiting transponders;
- Cellular-radio-based systems;
- Autonomous in-vehicle meters; and,
- Semiautonomous in-vehicle meters.

Vehicle-to-roadside communication technologies are an integral component in the functioning of an automated system. May offers a brief discussion of five of them:

- Inductive loop;
- Radio frequency systems;
- Surface acoustic wave systems;
- Microwave systems; and.
- Infrared systems.

Vehicle detection and classification are also essential to the successful operation of an automated system. To meet the requirements of single and/or multilane operations, the following combined detection and classification methods are considered:

- Hybrid inductive loop and axle-sensor systems;

- Pulse-mode microwave systems;
- Infrared light-beam systems; and
- Video image-processing systems.

In addition, the two methods of unique vehicle identification, photo logging and video logging, are discussed and critiqued.

With specific regard to parking charges, the aforementioned IVUs can be used for parking automation as well, perhaps with some modification. In addition to these methods, the primary developments in parking technologies have been cashless meters, which are generally operated by a smart card or credit card, pay-and-display machines, or an in-car electronic meter. While there are certainly benefits to the automation of parking pricing systems, such as use of the same smart card for congestion and parking pricing, the primary limitation is considered to be the necessity of manual enforcement, which requires tremendous resources.

Within the options of post payment and prepayment there are several accounting possibilities, including:

- Drawing right accounts—user establishes and an account and agrees to maintain a positive balance;
- User-held credit—patron purchases credit which is stored in a smart card that deducts charges by interacting with the IVU;
- Subscription—patron purchases a fixed number of charges or unlimited use for a specified period;
- Direct debit—patron permits the operator to debit the user's bank account either instantaneously or periodically; and,
- Billing—user is billed periodically for charges incurred over a specified time period.

The methods of automatic billing include:

- Automatic account identification (AAI) with post payment—roadside unit is used to record patron's account identity and time, then patron is debited or billed accordingly;
- AAI with prepayment—similar to post payment method, with the exception of immediate deduction through roadside unit;
- Subscription accounts based on identification—utilizes same data as AAI but roadside unit records the number of deductions remaining in the account;
- Anonymous subscription accounts—permit unlimited use during a specified period with limitations possibly to time of day or area; and,
- Anonymous automatic debiting—utilizes smart cards or the transponder itself to store credit in the IVU.

Of the stated objectives, May identifies congestion relief, environmental protection, and, potentially, revenue generation as the primary foci in assessing the appropriate technologies to be implemented in an automated system. Accessibility, economic regeneration, and equity are considered secondary, and can be achieved by modifying a congestion pricing system designed to achieve economic efficiency.

Cordon- or point-based and distance-based pricing systems appear to perform best and achieve the most benefits. Time-based and congestion-specific pricing are less desirable options due to their unpredictability of charges and therefore a perceived lack of fairness.

With regard to parking pricing as a means of congestion relief, the lack of direct correlation between parking charges and the marginal costs of road use results in a likelihood of parking pricing not performing well in terms of economic efficiency and a perceived lack of fairness.

Hensher, David A. and Jenny King
1999 Parking Demand and Responsiveness to Availability, Pricing and Location in the Sydney Central Business District.

The primary questions with regard to individual parking habits and the availability and pricing of parking within central business districts (CBD) are considered to be the following:

- Do individual parkers relocate to other available parking within the CBD while maintaining or relocating their final destination within the CBD?
- Do they relocate to parking outside of the CBD while maintaining their final destination within the CBD?
- Do they relocate to parking outside of the CBD while relocating their final destination outside of the CBD? Do they switch to public transport and continue to travel to their final destination within the CBD?
- Do they accept higher parking prices if they are imposed and continue to use the current parking facility?
- Do they retime their current activities to limit the amount of time spent parking while still undertaking the same activity but with a reduced duration?

The answers to these questions will depend upon the "parking segment" in which an individual parker belongs, those being casual parkers and permanent parkers. These two categories are further divided into the following groups:

- Casual parkers—individuals not provided with guaranteed parking using a privately registered vehicle with no tax benefits and paying the cost of parking themselves; typically the majority of non-commuters;
- Casual parkers—individuals not provided with guaranteed parking using a vehicle with tax benefits but paying the cost of parking themselves; typically individuals on company business including those who travel as part of work;
- Permanent parkers—individuals provided with guaranteed parking through an employer or by direct arrangements with a parking station

and pay for the parking themselves as a non-tax deductible benefit; typically commuters; and,

- Permanent parkers—individuals provided with guaranteed parking through an employer or by direct arrangements with a parking station and can claim the cost as a tax deduction; typically commuters.

For each parking segment identified, the aspects of interest are the individual parker's:

- Parking decision by parking price;
- Parking location relative to final destination;
- Availability of parking by time of day and duration; and,
- Nature of guarantee of a parking space.

This article focuses upon weekday casual parkers and public transportation users in the CBD of Sydney, Australia. Stated preference (SP) analysis was used to interpret data retrieved through surveys completed by individual parkers in the CBD and face-to-face interviews with public transport users.

The results of the survey indicate that the pricing regimes of interest to respondents are:

- The introduction of a curfew pricing system that prevents casual parking prior to 9:30 a.m. during weekdays at all parking areas in the CBD while maintaining existing charges; and,
- The removal of all curfews prior to 9:30 a.m. and the introduction of increasing parking charges.

Another element of concern is the responsiveness of patrons to changes in the hourly rates of parking across the distribution of hours of parking, with the variable "parking price per hour" being the most significant influence. Elasticity data suggest that a one percent increase in hourly parking rates results in a .541 percent reduction in the probability of choosing to park close in the CBD, a 1.015

percent reduction in the probability of choosing to park elsewhere in the CBD, and a .476 percent reduction in the probability of parking at the fringe. Furthermore, those who choose to park as close as possible to their final destination are in general less sensitive to parking rates.

Of similar interest are the hours of operation and curfews on parking. The implementation of a 9:30 a.m. curfew, as compared to 6:30 or 7:00 a.m., does show a strong downward influence on the probability of parkers choosing to park in various locations in the CBD. However, the influence of the 9:30 a.m. curfew is considerably lower than higher parking rates per hour. The authors conclude that parking pricing is a far superior means of reducing casual parking in the CBD than are curfews.

Overall, those individuals who must pay for their own parking tend to favor parking beyond the fringe of the CBD. Income is a significant influence on parking decisions, with those of higher income levels being more likely to park closer within the CBD. Those on social outings and commuters are less likely to park in the CBD than those attending non-personal business meetings within the area, most likely due to the spare time factor, a higher income, and the tax deductibility of their trips. Those attending personal business meetings are more likely to park beyond the fringe and walk to the CBD or utilize public transportation.

Information on Systems in Other Locations with Dynamic Parking Pricing-type Applications

Research on current efforts for parking programs is an important part in the process for gathering qualitative and comparable data for a Variable Parking Pricing project. Internet search engines offer the flexibility of gathering immediate and current data for the purpose of identifying similar traffic control systems in other areas. However, all data gathered from the Internet should be

verified as an authentic and reputable source. Other sources of information could include private online databases and journals. This information is used to network, brainstorm, and benchmark for the Dynamic Parking Project.

For the Tampa area, an Internet search was conducted to gather information on other systems that may have similar applications to that of the Variable Parking Pricing project in Tampa. Amtech had adapted an ETC system, called PassKey, for various locations in Dallas, Texas and Chicago, Illinois, including select parking garages in the downtown Dallas area. However, at the time of this search, there were no garages or lots that had implemented a variable pricing scale.

The information collected on the PassKey system includes several press releases from the Dallas/Fort Worth Airport and news stories detailing the program (See Appendix E). The PassKey website (http://www.passkey.net) provides details for the customer on how the system works. According to the system website, PassKey offers patrons the ability to:

- Enter and exit airports and parking facilities cash-free;
- Avoid long cash lines at exits;
- Reconcile parking expenses with easy-to-read statements available online anytime; and,
- Conveniently use the PassKey tag for access to local airports, parking facilities and toll roads.

PassKey allows patrons the convenience of signing up for the program on-line and provides all the information necessary to obtain a PassKey tag. The table below presents the costs of setting up a PassKey account, as detailed on the PassKey website.

Item	Cost
PassKey tag purchase	$25.00
Initial prepayment	$50.00
Low-balance level: Airport Parking	$30.00
Low-balance level: City garage parking (DFW area)	$15.00
Replenishment amount	$85.00
Monthly membership fee	$3.00
TollTag activation fee (Dallas North Tollway users)	$2.00
Shipping/handling fee (for every 3 tags)	$4.95

The Amtech website (http://www.amtech.com) provides a detailed PDF document on how the PassKey system works, benefits for customers and parking operators, the hardware and software used, and how the billing may be done (See Appendix F).

Location/Operators of Garages with PassKey

The Central Dallas Association is the organization through which the PassKey program is administered in Dallas, Texas. PassKey is not currently used in parking facilities in Chicago. This organization should be able to provide the names and contact information for those operators currently using the PassKey program. Once this is established, these operators will be contacted to obtain their opinions and advice on using ETC in a parking environment.

Development of Proposed Pricing Scale

Determining an effecting pricing scale is an important part of the project. The goal is to motivate commuters to park earlier and leave later by offering discounted parking. If the discount is not sufficient enough to attract customers, then the program will not be successful. Equally important is to not discount so low as to affect the revenues and profits of parking locations. This would make the project undesirable for both public and private parking locations.

The following is a proposed developed pricing scale that exhibits how a pricing scheme operating under the principles of variable pricing would work. As an added incentive, the combination discount would be received if a patron was to take advantage of both the AM and the PM discounts.

Daily Parking Price	Amount of AM Discount	Amount of PM Discount	Amount of Combination Discount
< $3.00	.15	.30	.50
$3.00-4.99	.25	.50	$1.00
$5.00-7.99	.50	.75	$1.50
$8.00-10.99	.75	$1.00	$2.00
$11.00 >	$1.00	$1.25	$2.50

This pricing scheme was created as a model to demonstrate a possible pricing structure in Tampa, Florida. The individual amounts of discount were selected based on the daily parking price and the minimum amounts necessary to create a change in commuter behavior. This was based on information drawn from the literature review (see above) and on CUTR's study of variable pricing in Lee County, Florida.

Evaluation

Evaluating the project is necessary to ensure the project will actually decrease traffic congestion by motivating commuters to change their commute times. As detailed in the sketch plan presented in Appendix A, the project should be conducted in two phases: a pre-project study and the project phase. The pre-project phase must be carried out to ensure that the project is implemented as smoothly as possible. At this stage, the project managers must determine whether the project design fits its targeted customers. If the commuter using the Dynamic Parking Project finds the changes too difficult they will not use its services. Thus, evaluation must discover if the program customization meets the customer's expectations. The pre-project study involves 5 comprehensive steps to gather the information needed to design an effective Dynamic Parking Project.

In the case of the Tampa project, pre-project study would be conducted wholly by CUTR and would involve the following 5 steps:

1. Focus groups with downtown parkers to determine interest in program and issues relating to implementation
2. Hand-out survey to downtown parkers to quantify issues developed in step 1
3. Development of recommendations for implementation
4. Discussion with downtown parking operators & city officials to determine issues relating to site implementation.
5. Develop customized design elements with program participants and Amtech (or other service provider)

The project phase develops a map or timeline of how to implement the project, which gives the program more stability and flexibility. If the project leaders find that some facet of the program is not working in one step, they have the ability to stop and revise before going on to the next step. Additionally, it allows for easier project budgeting and more cost efficient implementation of the project. The project phase involves 7 steps:

1. Installation of Amtech (or other service provider) equipment
2. Solicitation of current customers to participate in the program and assignment of transponders to those customers
3. Trial period to record baseline data on arrival and departure times
4. Experimental period in which control group remains on existing parking fee schedule but experimental groups receive discounts
5. Analysis of data
6. Follow up discussions with operators and parking customers to determine how the program could be improved in future implementations
7. Final write-up of project conclusions

The evaluation would consist of comparisons of the arrival and departure time changes between those who were included in the program (the "experimental" group) and those who were not included (the "control" group.) Many of the details of the evaluation would be dependent on the precise nature of the equipment available and the method of installation, which will be specific to each site in question.

Marketing / Information

The Dynamic Parking Program will be ineffective if commuters are not made aware of the program and its benefits. Therefore, it is absolutely necessary to market the program in such a way as to create interest in potential customers. Marketing materials should be developed to promote the program and inform potential participants about the benefits. Among the elements of the marketing program would be:

- Maps that indicated the locations of participating parking lots
- Information on the discounts available
- How to get technical assistance to work with employers on the development of flex time and compressed workweek schedules.

For the Tampa Case Study, the final vital element to make the program work is reduction in workweek. It is unlikely that many commuters would be interested in commuting at 6:30 Am and departing at 7:30 PM if they were not able to take advantage of the extra hours by putting in more work, possibly reducing their workday to a 4-day work week. What is more, the 4-day workweek would have the added benefit of reducing congestion on the days those commuters did not come in to their work locations. This would be a particularly effective strategy if employers were made aware of the benefits of moving around which days people did not work, so that not all compressed-work-week participants chose the same day not to commute, thus spreading the benefits to congestion throughout the week.

Information- FHWA Value Pricing Pilot Program

The Federal Highway Administration (FHWA) website (http://www.fhwa.dot.gov/policy/vppp.htm) was consulted for information on the Value Pricing Pilot Program. These documents inform as to the definition of value pricing; where these types of programs have been implemented; what kinds of pricing applications are eligible for funding through the program; what activities may be carried out with the funding; selection criteria; and instructions for applying. All available information on the Value Pricing Pilot Program from the FHWA website is included in Appendix G.

Appendix A: Draft Variable Parking Pricing Project Sketch Plan

Variable Parking Pricing in Tampa, FL
Sketch Plan

This proposed sketch plan for the Tampa Variable parking Pricing Program has been developed in accordance with the application guidelines for the Value pricing Pilot Program authorized by Section 1216 (a) of the Transportation equity Act for the 21st Century (TEA-21) in the federal register Document from October 5, 1998, FR Document 98-26531. AS recommended, this sketch plan has been submitted through the Florida FHWA Division Administrator before a full-scale grant application is developed.

Also included in this sketch plan are estimated expenses for the various tasks outlined below. Note that these are cost estimates and will be refined in the detailed proposal.

1. Congestion problem to be addressed

This proposed variable parking pricing project would provide a parking price discount for customers that parked in selected participating parking facilities in the downtown Tampa area. The discount would be driven by arrival and departure times, which would be set to help have the maximum impact on traffic congestion on major corridors going to and from downtown Tampa and the Westshore area.

Currently the most heavily traveled corridors into downtown Tampa include I-275 from both the North and the South, I-4 from the east, The Courtney Campbell causeway the Lee Roy Selmon expressway, and the Dale Mabry Highway (US 92). Obviously some of these roads spill over into each other, so it is difficult to establish an exact count of the incoming traffic to downtown.

Table 1: Current traffic conditions to downtown Tampa

Site	Description		1998 Direction 1	1998 Direction 2	1998 Two-Way	1991	1992	1994	1996	1997	Change from 1992 (1991 if available) to 1998
9922	I-275,0.25MI N OF FLETCHER AVE/WIM#22,HILLS. CO.	N	31,039 S	30,409	61,448	54,946	56,334	56,222	58,311	61,115	6,502
0194	I75,0.6 M S OF US301,2.3 M N OF I4,HILLSBOROUGH CO	N	41,691 S	41,761	83,452	0	61,662	64,500	74,626	78,486	21,790
9926	I-75,1.25MI N OF SR60(ADAMO DR)/WIM#26,HILLS. CO.	N	48,290 S	46,824	95,114	0	74,592	73,978	82,453	88,479	20,522
0339	SR60 (CC CSWY), 1996 FT W ROCKY PT DR - HILLS#18	E	27,074 W	27,260	54,334	0	0	0	0	0	N/A
0162	SR-60,1 MI EAST OF US-41,HILLSBOROUGH CO.	E	15,430 W	16,943	32,373	26,539	27,219	28,764	29,879	31,311	5,834
5291	FLORIDA AVE., SOUTH OF BUFFALO AVE.	N	9,400	0	9,400	7,467	8,400	9,200	9,700	9,100	1,933
2015	I-275, EAST OF FLORIDA AVE/SR 685	E	82,500 W	81,500	164,000	131,770	120,000	157,500	171,000	164,000	32,230
0029	KENNEDY BLVD. AT HILLSBOROUGH RIVER BRIDGE 3003	E	12,500 W	11,500	24,000	18,964	19,500	13,500	13,900	23,000	5,036
5077	NEBRASKA AVE. SOUTH OF COLUMBUS DR.	N	8,700 S	8,900	17,600	13,875	16,000	15,500	15,400	11,800	3,725
2024	SR 400/I4, EAST OF SR 599/US 41/50TH ST	E	51,500 W	47,500	99,000	81,907	79,500	89,500	103,500	99,000	17,093
5356	SR 60/ADAMO DR, EAST OF 21ST ST/SB BUS US41	E	12,000 W	11,500	23,500	22,804	19,000	22,000	22,500	21,000	696
5143	SR 60/MEMORIAL HWY, NORTH OF CYPRESS ST.	N	72,000 S	59,500	131,500	99,105	99,000	108,000	131,000	115,500	32,395
5277	SR 618/X-TOWN EXPWY, E OF 14TH ST	E	22,000 W	24,000	46,000	32,861	34,500	38,500	44,000	43,500	13,139
5246	SR 618/X-TOWN EXPWY, E OF BAY TO BAY BLVD	E	14,000 W	15,000	29,000	26,150	26,000	24,500	27,500	27,000	2,850
2022	SR 93/I-275, EAST OF HOWARD FRANKLIN BRIDGE	E	61,500 W	57,500	119,000	72,801	77,000	81,000	74,000	119,000	46,199
2008	SR 93/I-275, NORTH OF SR 574/MLK DR/BUFFALO AVE	N	73,500 S	72,500	146,000	128,656	117,500	132,000	152,000	124,000	17,344
2016	SR 93/I-275, WEST OF ASHLEY STREET	E	77,000 W	87,000	164,000	145,781	133,000	163,000	165,000	179,000	18,219
5058	SR600/US92/DALE MABRY HWY, N OF COLUMBUS DR/SR 589	N	38,500 S	40,000	78,500	76,577	82,000	85,500	75,000	79,000	1,923
5296	TAMPA ST., SOUTH OF SCOTT ST.		0 S	7,700	7,700	8,235	8,900	7,500	8,100	8,700	-535
5052	US 92/DALE MABRY HWY, NORTH OF HENDERSON BLVD	N	21,500 S	20,000	41,500	39,334	41,000	36,500	41,500	35,000	2,166

A map showing the traffic counts at various points leading into downtown (in thousands of cars per day) appears below.

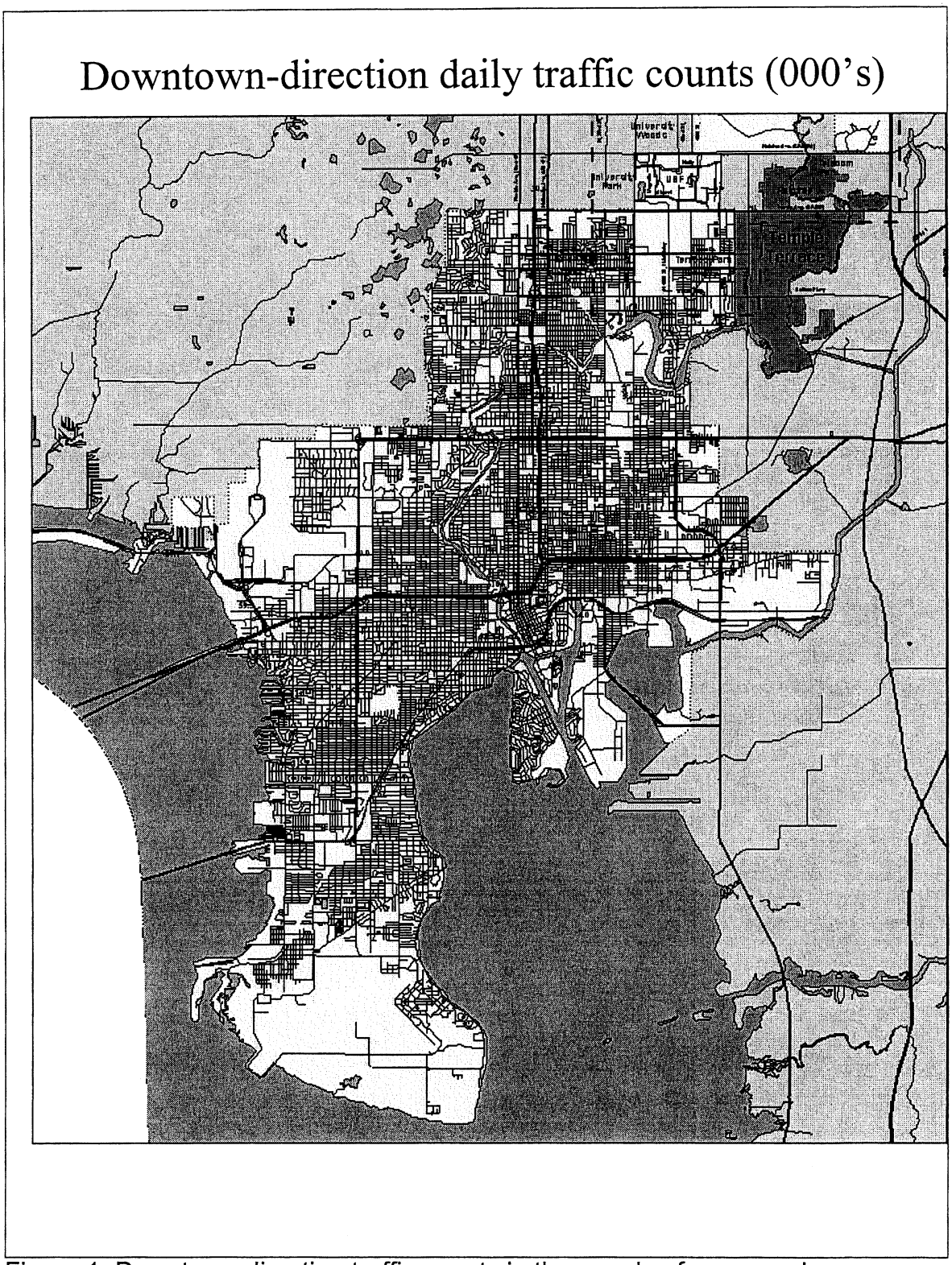


Figure 1: Downtown-direction traffic counts in thousands of cars per day

The purpose of the project in this sketch plan would be to determine the potential of variable parking pricing to provide a suitable incentive for people to change their hours of travel and begin traveling outside of the peak hours. Tampa, Florida would be used as a test site for this application.

2. Nature of the Proposed Pricing Project

Proposed Pricing Project

The focus of this pricing project is to provide discounted parking pricing for travelers to downtown Tampa who arrive and/or leave the parking facilities outside of the peak hours. The size and timing of the discounts has not been finalized but CUTR has prepared and presented the following proposal to several local organizations.

DAILY PARKING PRICE	PROPOSED AMOUNT OF AM DISCOUNT (Discount period to be determined – potentially arrival before 7 AM or after 9 AM)	PROPOSED AMOUNT OF PM DISCOUNT (Discount period to be determined, potentially, departure before 4 PM or after 7 PM)	PROPOSED AMOUNT OF COMBINATION DISCOUNT (meets both Arrival and Departure criteria)
< $3.00	$0.15	$0.30	$0.50
$3.00 – 4.99	$0.25	$0.50	$1.00
$5.00 – 7.99	$0.50	$0.75	$1.50
$8.00 – 10.99	$0.75	$1.00	$2.00
$11.00 >	$1.00	$1.25	$2.50

While it may be possible to vary the times to suit the needs of different parking operators, it is recommended that the same schedule be kept in order to facilitate any regional program promotional efforts.

Overall Project Goals

The primary goal of this project is to demonstrate the potential of variable parking pricing to impact peak periods of traffic congestion on corridors serving major activity centers. This will be done by monitoring the response of program participants and recording arrival and departure times from parking facilities. It is recommended that a control site (where arrival and departure times are monitored but no discounts are provided) also be set up to account for external influences that might impact travel time choices.

Facilities to be Included

The plan would be implemented at a number of municipally operated facilities. However, until specific installation and operational details are confirmed, it will not be possible to determine exactly which facilities will participate. Also, privately operated facilities will be invited to participate but it is again not possible to predict the level of participation.

In total, there are approximately 27,500 parking spaces in the downtown area, of which 8,800 are operated by the city. 7,000 of the city spaces are located in garages, which make them reasonable candidates for this approach. The city has indicated some interest in using this approach at the Fort Brooke garage (2,500 spaces) Additionally, approximately 11,000 of the remaining paces are operated privately in garages. The total number of spaces impacted then could range from 2,500 to perhaps 10,000 spaces.

Typical costs in the city lots range from $5.50-$7 per day, or $60-$80 per month for monthly contracts. Under the proposed pricing approach, the discounts would be about
$1.50 per day per participating parker. Assuming the equivalent of 1,000 full-time participants in the program (which is an extremely high estimate), the total cost of the discounts would be about $90,000 for the entire time period of the project.

The project would require the installation of transponder readers, provision of transponders to participating commuters, and software and linkages to current systems that provide payment information to the parking system. These details need to be discussed with Amtech and city parking officials.

Study and project Timeline

The timeline is based on the timing of approval of the project. All times are based from the provision of Notice to proceed to CUTR and the City of Tampa.

The project would involve 8 steps:

(A) Pre-Project Study (See Section 6)
8. Installation of Amtech (or other service provider) equipment
9. Solicitation of current customers to participate in the program and assignment of transponders to those customers
10. Trial period to record baseline data on arrival and departure times
11. Experimental period in which control group remains on existing parking fee schedule but experimental groups receive discounts
12. Analysis of data

13. Follow up discussions with operators and parking customers to determine how the program could be improved in future implementations
14. Final write-up of project conclusions

All of the above is anticipated to take 24 to 28 months from assignment of the project grant.

Throughout all phases of the project, the project management team will meet by phone to discuss issues as necessary. The project management team will consist of representatives from Tampa City parking, Tampa Traffic Engineering, Florida DOT district 7, Florida DOT Toll operations Office, FHWA Florida Division, FHWA Value pricing Office, the equipment vendor, the Project Managers, and CUTR. Throughout the project the FHWA Value pricing Office and Florida DOT will have the opportunity to review incoming data and survey instruments and discussion guides.

3. Additional Signatories and Project Supporters

At a minimum, the City of Tampa Parking Division and the Florida department of Transportation as an integral part of current variable pricing efforts and the operator of the SunPass system would be signatories of the cooperative agreement with the FHWA for this proposal.

4. Public participation and Equity Concerns

This program would be made available to any patrons of the selected parking facilities. Currently there are many patrons who are on monthly contracts. Those who make daily payments would clearly all be eligible. One alternative to include more potential patrons is to provide rebates on the contracts based on those holding monthly contracts adhering to the discount schedule.

The focus of the program is to provide *discounts* from the currently established parking rates in order to provide incentives for off-peak travel. This should provide ample public incentive. This approach should greatly reduce equity concerns, as no one is being charged a higher price or being in other ways negatively affected by the proposed program.

To date, there has been no specific study on the ability of parking discounts to induce changes in travel times. An extensive literature search in the Transportation Research Information Services (TRIS) database uncovered no published material on this topic. The prevalence of 'early bird discount' programs in municipal parking lots suggests that parking operators have determined that such programs are an effective means of filling their parking lots. Current findings from variable pricing programs also suggest that time-of-day travel shifts can be impacted by differential pricing schemes.

The project would require some assistance for employees to be able to take full advantage of the program. Local Commuter Assistance programs, such as Bay Area Commuter Services, may be enlisted to provide both employees and businesses with methods of managing alternate work hour programs and compressed workweeks.

5. Legal and Administrative Authority required

At a minimum, the City of Tampa Parking Authority and the FDOT office of Toll Operations (OTO) would need to be on board with this project. The parking authority has indicated some interest in the project but has not formally approved implementation. Similarly, the FDOT OTO has indicated that the SunPASS system is capable of handling this type of application and they are looking forward to testing it, but have provided formal approval of the details of this project.

6. Plans for Pre-project study

The pre-project study would be conducted wholly by CUTR and would involve the following 5 steps:

6. Focus groups with downtown parkers to determine interest in program and issues relating to implementation
7. Hand-out survey to downtown parkers to quantify issues developed in step A-1
8. Development of recommendations for implementation
9. Discussion with downtown parking operators & city officials to determine issues relating to site implementation.
10. Develop customized design elements with program participants and Amtech (or other service provider)

7. Proposed Project Tasks, Timeline, and costs

The table below summarizes the approximate dates and costs of the project. Cost estimates are tentative and will be revised during the preparation of the detailed grant application proposal. The FHWA will pay 80% of all costs. The Grant will be managed by FDOT District 7 and the funds should be provided to the district.

Appendix B: Script for Private Operator Contact

Hello, Mr./Ms. _____! My name is _____ from the Center for Urban Transportation Research at USF. Since you manage some of the largest parking areas in downtown Tampa, I was hoping you could spare just a moment to talk with me. I'd like to get your opinion about a unique opportunity for your parking operation to get on board with something totally new and exciting.

Since you manage some of the largest/prime parking areas in the downtown area, your opinion about this project we're working on is very important. I'd like to tell you about a unique opportunity for your parking operation to become involved with a new concept that could really change the parking industry and bring you more customers—and there would be absolutely no cost to you.

I just have a few questions for you first, if that's okay.

How is your fee schedule set up? Is it monthly, daily, or hourly?

Okay, and do you currently have any type of early bird parking specials at your facility(ies)?

*(if no, go to ***; if yes continue here) Why do you have those early birds?*

> *What would you think of a night owl special for those customers who leave after a certain time in the evening?*
>
> *Well, in addition to the early bird that you already do, a night owl discount is something that could help with traffic congestion in and out of the city. Plus, it could possibly draw more customers into your parking lot/garage since they could receive a discount at both ends of the day.*

****We'd like to see what you think of a program that we're in the process of developing.*

Okay, this is how it would work. We could set up a parking schedule for you that gives your customers a price break for coming or going during the off-peak times. So if they arrived before 7 or after 9am or if they left the parking area before 4:30 or after 7pm they would receive a discount.

*Now the discount would come from a federal grant that we are in the process of getting, so there would be no cost to ***name of company****

Also, you wouldn't have to keep track of anything or take on extra work for your employees. We could set everything up for you and maintain all the records.

Now you might be saying to yourself, this is all well and good, but why would any of my customers want to participate? Well, we have an incentive for them as well!

Let me ask you, have you ever driven on the Veterans' or the Crosstown Expressway?

Ever noticed that some cars are able to zip right through the toll booths (on these or other toll areas)?

Those drivers have an electronic device, called a transponder, in their cars that lets them do this. It deducts the tolls from an established account and lets the driver go through the toll booths without having to stop.

Your customers would have this same electronic device in their cars that would link with a main system to record when they come and go from the lot/garage. By signing up they would get the device for free. By having this device, they would be tied in to the statewide electronic toll collection system, which includes the Veterans' and the Crosstown, as well as the Florida turnpike and various other toll roads around the state. That means, any time your customers were on a toll road, they would be able to zip right through the tolls, all thanks to you and your participation in this program!

Now, it's just a feasibility study at this point to see if something like this could work. We're not attempting to actually implement a system like this right now.

*By offering discounts, a program like this could make ***company name*** even more competitive with other parking facilities in the area, so your input is very important at this stage.*

So:

- *there's no cost to your company,*
- *your customers can get access to the statewide toll road system, which allows them to go through the tollbooths without waiting in lines*
- *and they get a discount for arriving or leaving your parking lot at off-peak hours.*

So what do you think of offering this program to your customers?

Do you think your customers would appreciate something like this?

What suggestions do you have on how we could improve the plan or make it more attractive to private operators such as yourself?

Appendix C: PowerPoint Presentation to City officials / THCEA

DYNAMIC PARKING PRICING

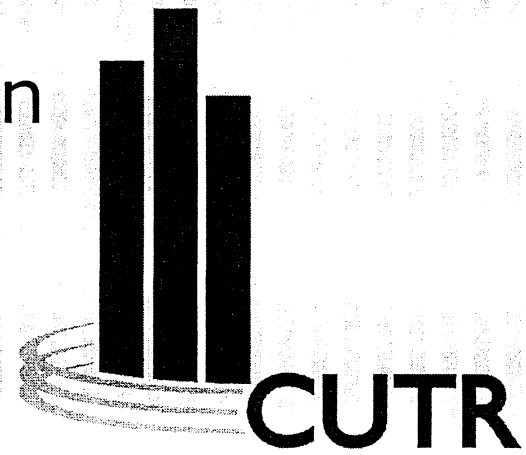
A project funded by the

Florida Department of Transportation's Research Center

Center for Urban Transportation Research

College of Engineering

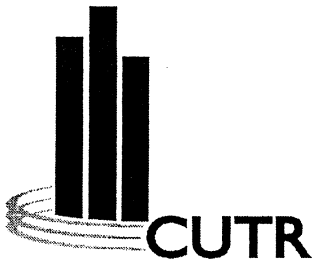
University of South Florida



CUTR

Purpose

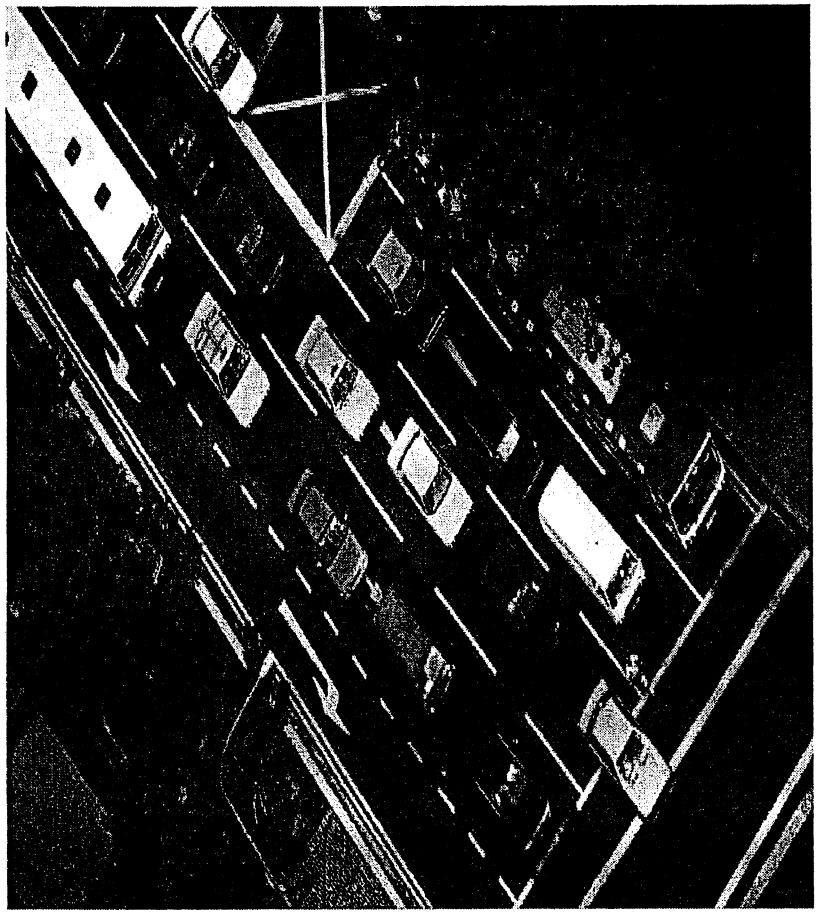
- Update on dynamic parking pricing feasibility project
- Potential of tie-in with SunPass
- Seek local partnerships
- Develop federal demonstration grant application
- Your thoughts?



Overview

- Variable and dynamic pricing
- Advantages of dynamic parking pricing
- Case study: PassKey in Dallas, Texas and Chicago, Illinois
- Proposed application in Tampa, Florida

Project Goals

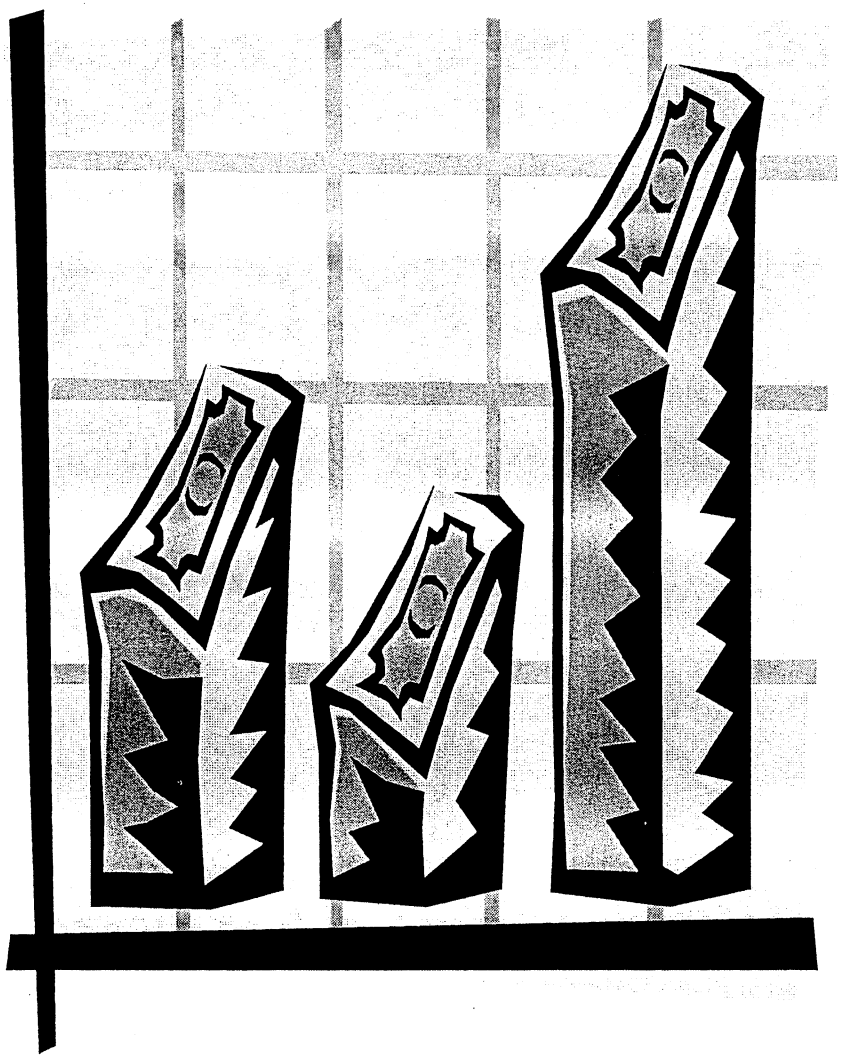


- **Reduce traffic congestion during peak periods**
- **Simulate existence of toll road on major corridor**

Variable Pricing

- Charging more for goods or services during periods of peak demand
- Set toll prices based upon time of day and known peak traffic volumes

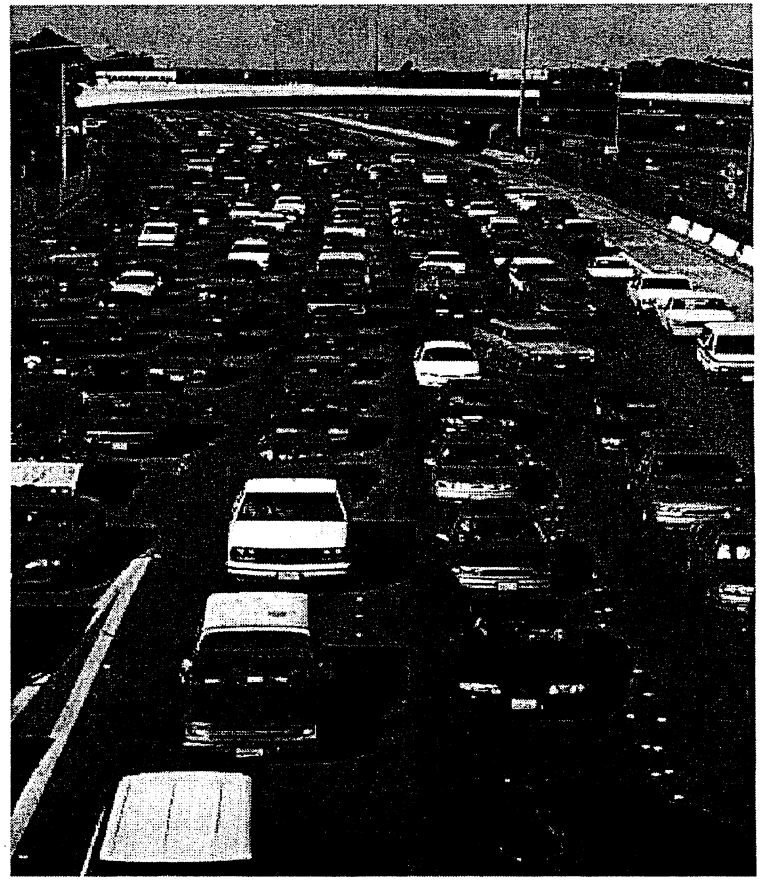
Dynamic Pricing



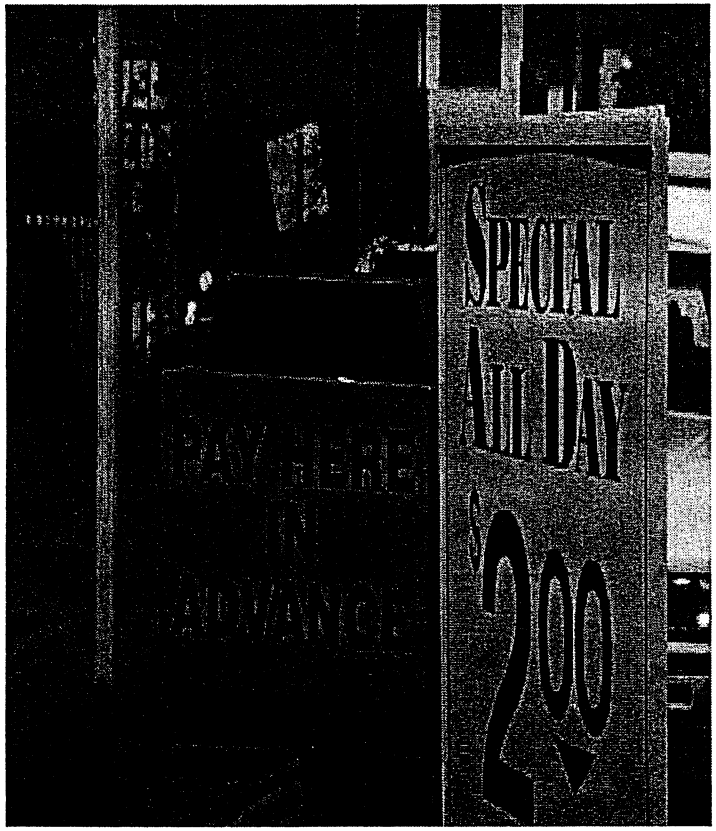
- Currently the only application in transportation is frequent changes in toll road prices based upon traffic volume
- Higher volume = higher toll
- Used to regulate traffic volume and reduce congestion

What is Dynamic Parking Pricing?

Combining Electronic Toll Collection (ETC) technology and the principles of variable pricing as a means of reducing traffic congestion during peak travel times



Factors in Deciding Where to Park



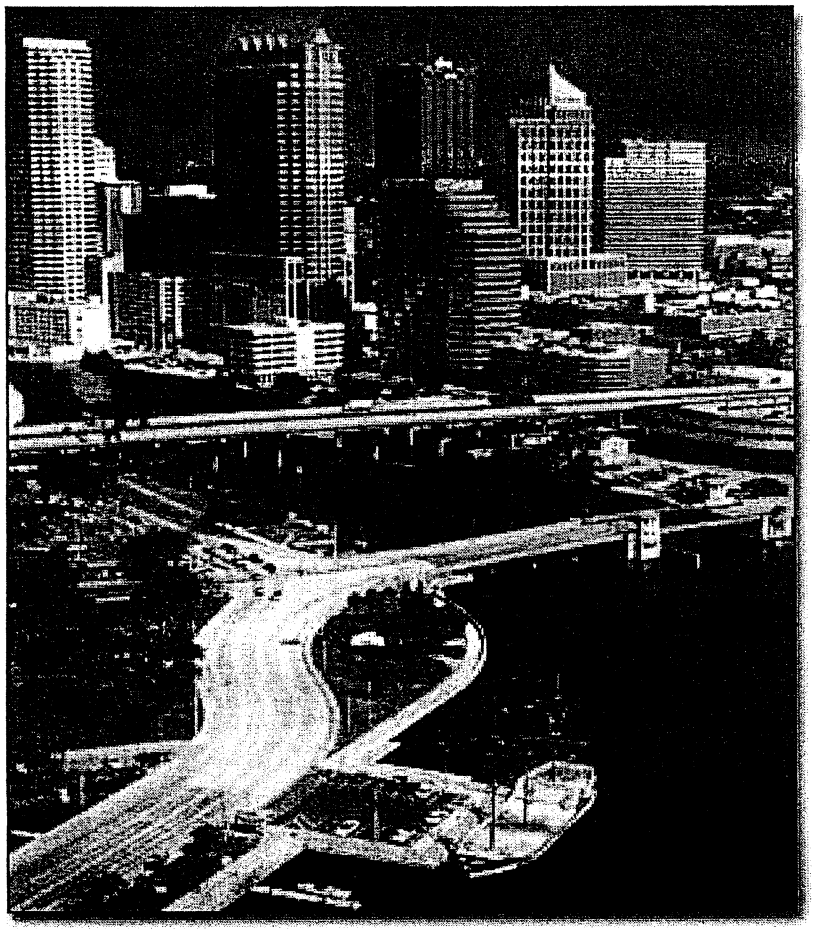
- Contract issues
- Availability of parking by time of day and duration
- Price of parking
- Parking location relative to final destination
- Nature of guarantee of parking space

Advantages of Dynamic Parking Pricing for the Customer

- Potential schedule flexibility
- Money savings
- Payment method alternatives
- Reduced traffic congestion
- Psychological benefits

Advantages of Dynamic Parking Pricing for the Local Community

CUTR



- Reduced traffic congestion
- Tampa becomes a leader in industry technology and a model for other such efforts
- Improved energy efficiency
- A more contented workforce

Advantages of Dynamic Parking Pricing for Parking Operators

CUTR

- Increased patronage of parking facilities

- Reduced operational costs
- Less cash-handling

- Accurate billing
- Greater customer satisfaction

Potential Disadvantages of Dynamic Parking Pricing

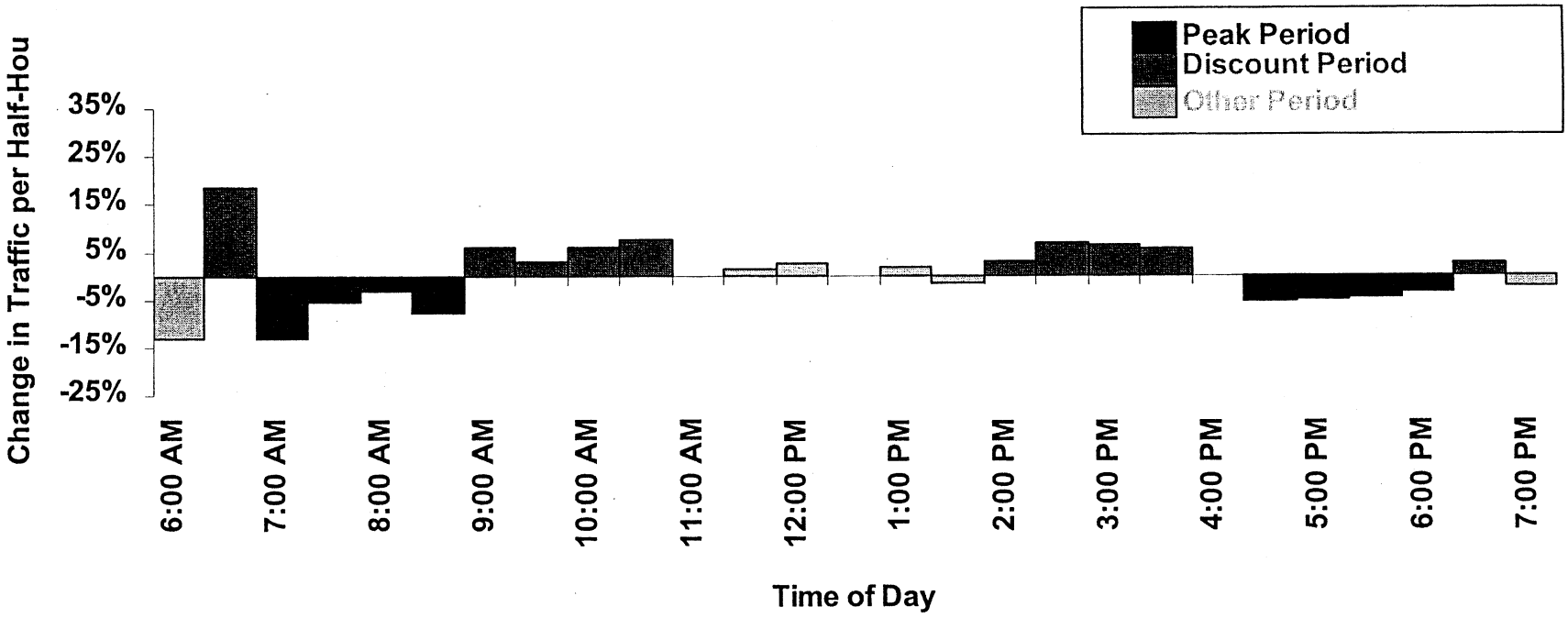
- Potential customer confusion
- Potential loss of parking lot revenue
  - Loss of customers to other facilities
  - Lowered prices
- Equipment cost investment
- Will there be any impact?

Impacts of Variable Pricing in Lee County

CUTR

Traffic Impact of Variable Pricing*

Midpoint Bridge, Eligible Account Patrons Only



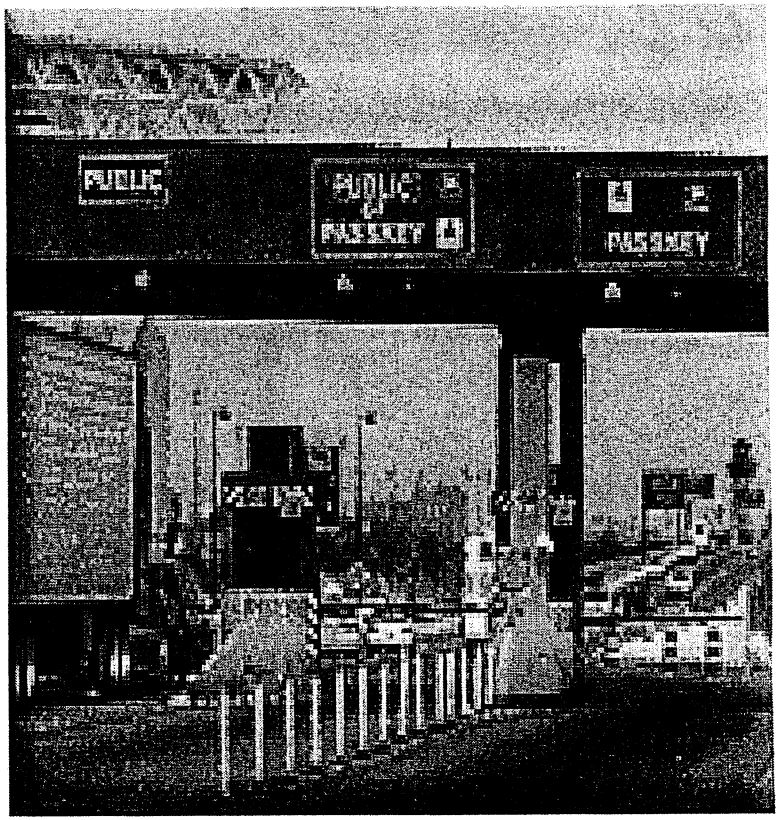
*Change in traffic from January to June 1998 vs. January to June 1999 (normalized)

Application of Electronic Toll Collection (ETC) in Parking

- Parking customer's transponder is read by computerized terminal upon arrival and departure
- Appropriate amount of payment—including applicable discounts—is automatically calculated
- Customer is electronically debited or billed for parking fees or pays cash on-site

Passkey: Dallas-Ft. Worth and Chicago

- Multiple uses
- Easy activation process
- For more information: www.passkey.net



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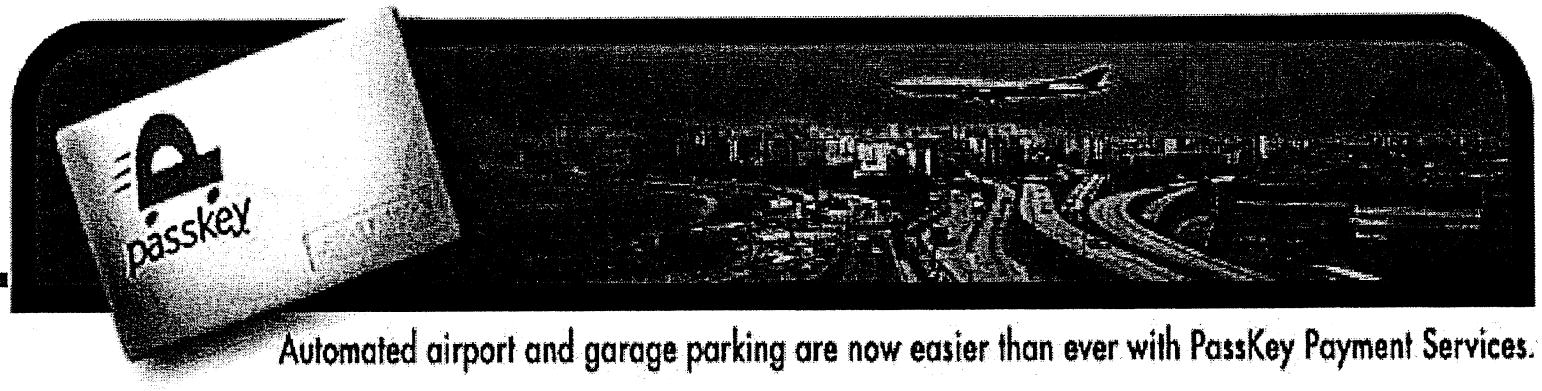


Automated airport and garage parking are now easier than ever with PassKey Payment Services.

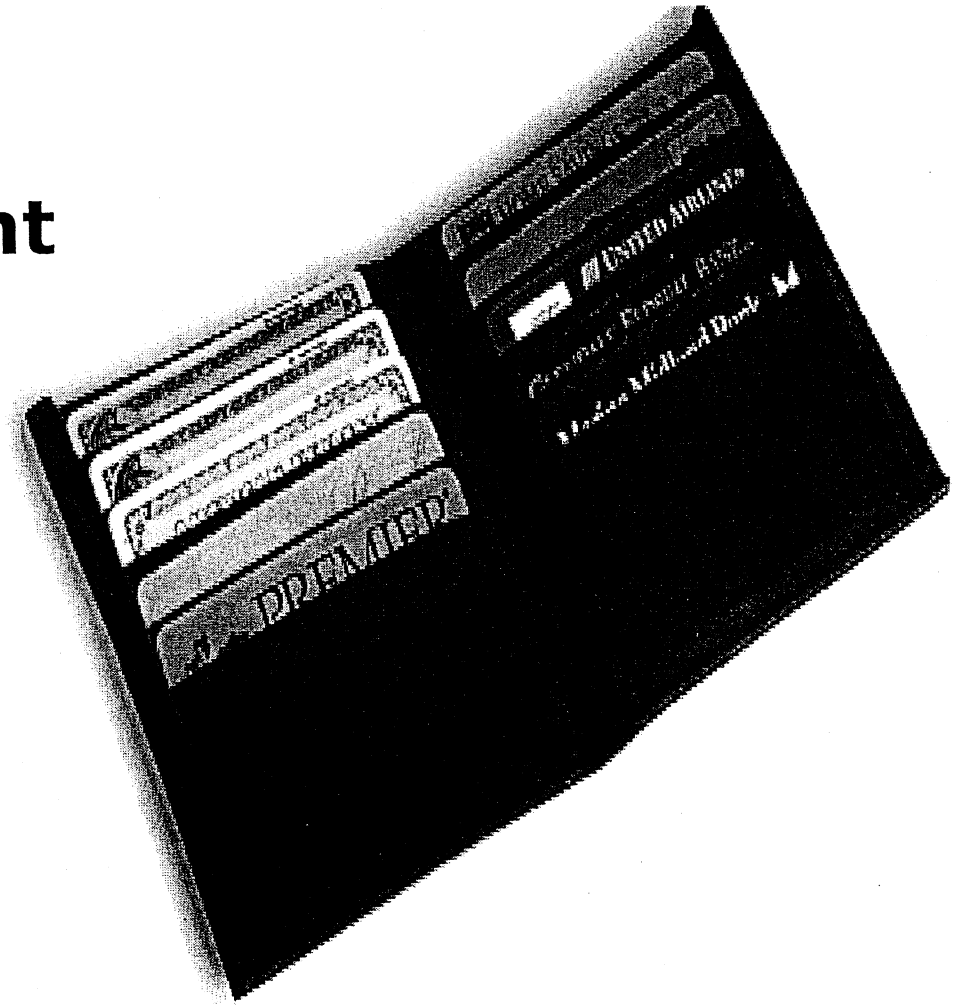
"PassKey gives you hand-free, cash-free access to airports and parking facilities by automatically collecting payment for parking with a small tag inside your windshield.

- **Enter and exit parking facilities cash-free**
- **Avoid long cash lines at exits**
- **Reconcile parking expenses with easy-to-read statements available online anytime**
- **Conveniently use your PassKey tag for access to parking facilities and toll roads "**

--www.pass-key.net

Methods of Payment

- Pre-paid account
- Billing through SunPass
- Cash on-site



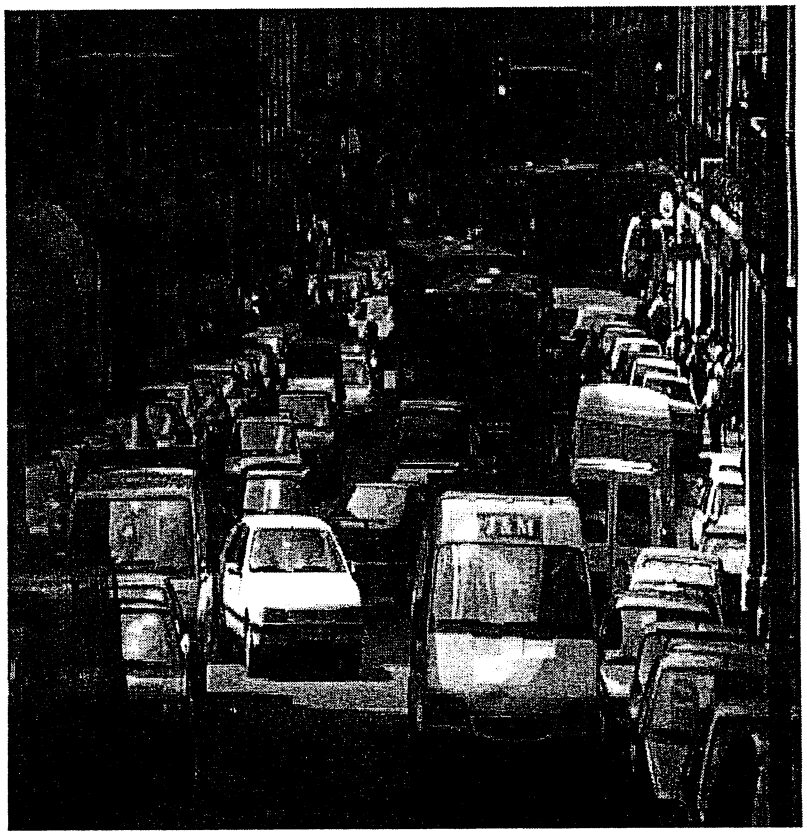
Incentives for Parking Operators

- Potential for more customers
- Discounts
- Revenue neutral
- Customers receive transponders
- Turnkey

Incentives for Commuters

CUTR

- Receive electronic transponder (no additional charge)
- Linked into SunPass system
- Receive discounts for arriving and/or departing during non-peak hours

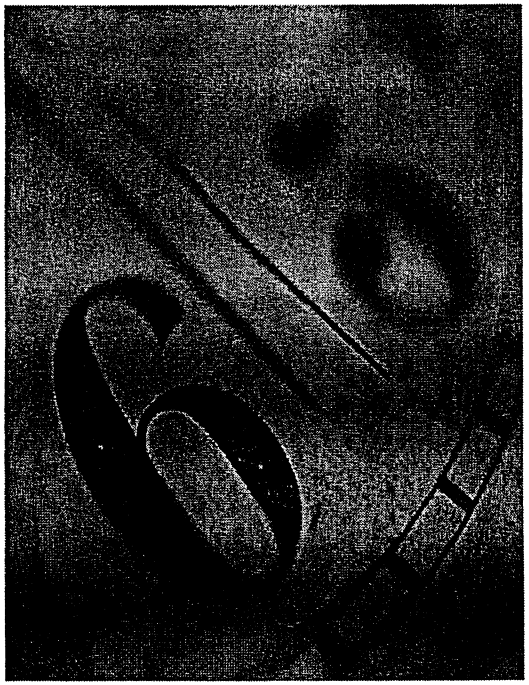


Proposed Application in Tampa, Florida

- Compatible with SunPass system
- Program design
  - Arrival & departure Times
  - Proposed pricing structure

Arrival and Departure Times

- AM discount—arrive at parking facility prior to 7:00 am or after 9 am to receive discount



- PM discount—depart parking facility prior to 4:30 pm or after 7 pm to receive discount
- Participate at both ends of the day to receive a greater discount
- Alternatively, can be linked with expressway peak period

Sample Pricing Scale

Daily Parking Price	Amount of AM Discount	Amount of PM Discount	Amount of Combination Discount
< $3.00	.15	.30	.50
$3.00-4.99	.25	.50	$1.00
$5.00-7.99	.50	.75	$1.50
$8.00-10.99	.75	$1.00	$2.00
$11.00 >	$1.00	$1.25	$2.50

CUTR

"Today's drivers are more demanding, and require services which are more convenient and efficient. The parking industry must keep pace with the technological changes that abound."

- "Wireless AVI Technology: Changing the Way We Park," Mike Bigbee, *Parking* 2000.

Appendix D: Tampa Area Traffic Counts – Permanent Count Stations

Florida Department of Transportation
Transportation Statistics Office

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Annual Average Daily Traffic Report

County: HILLSBOROUGH

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
0001		SR 45/US 41/NEBRASKA, NORTH OF SR 685/BUS 41/FLA	N	17,000 S	17,000	34,000
0002		US 41,SOUTH OF FLORIDA AVE. /NEBRASKA AVE APEX.	N	9,100 S	8,400	17,500
0003		US 41/SR 45/50TH ST, N OF SR 676/CAUSEWAY BLVD	N	10,000 S	10,500	20,500
0004		US 41/SR 45/50TH ST, S OF SR 676/CAUSEWAY BLVD	N	12,000 S	13,000	25,000
0005		SR 45/US 41, SOUTH OF 19TH AVE. SO.	N	7,500 S	7,500	15,000
0006		SR 45/US 41, BRIDGE AT LITTLE MANATEE RIVER	N	6,300 S	6,300	12,600
0007		SR 674, EAST OF US 301	E	5,100 W	4,900	10,000
0010		US 301, SOUTH OF THE INTERCHANGE OF I-4 AND US 92.	N	14,000 S	13,000	27,000
0011		SR 574/ML KING BLVD, EAST OF MCINTOSH ROAD	E	4,500 W	4,600	9,100
0017		SR 674, WEST OF BALM-WIMAUMA RD	E	2,600 W	2,400	5,000
0020		SR 580/HILLSBOROUGH AVE, WEST OF MEMORIAL BLVD	E	22,000 W	22,500	44,500
0021		SR 60/KENNEDY BLVD, WEST OF WESTSHORE BLVD.	E	22,500 W	24,000	46,500
0027		EAST OF MAIN CHANNEL BRIDGE ON COURTNEY CAMPBELL	E	29,000 W	28,000	57,000
0028		SR 600/US 92, EAST OF GANDY BRIDGE	E	15,500 W	16,000	31,500
0029		KENNEDY BLVD. AT HILLSBOROUGH RIVER BRIDGE 3003	E	12,500 W	11,500	24,000
0030		SR 676/22ND ST CSWY, W OF SR 43/US 301 3050	E	9,600 W	9,300	18,900
0033		US 41(BUS)/SR 45/22ND ST CSWY, W OF US 41/SR 45	E	12,500 W	11,000	23,500

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
0034		SR 39/COLLINS ST., SOUTH OF SR 600/BAKER ST.	N	2,800 S	3,000	5,800
0036		SR 600/US 92, WEST OF FALKENBURG RD.	E	7,000 W	6,900	13,900
0037		SR 43/US 301 NORTH OF SR 674	N	3,400 S	3,400	6,800
0038		HILLSBOROUGH AVE. EAST OF HARNEY ROAD	E	20,000 W	21,000	41,000
0041		SR 39, NORTH OF SR 60	N	7,300 S	7,700	15,000
0044		US 301/SR 43, N OF BLOOMINGDALE AVE	N	16,500 S	16,500	33,000
0046		SR 60, WEST OF SR 39	E	10,000 W	9,900	19,900
0048		SR 60/ADAMO DR, E OF FAULKENBURG RD	E	25,000 W	23,500	48,500
0050		SR 41/US 301, AT FLINT CREEK BRIDGE	N	3,800 S	4,000	7,800
0051		SR 45/ US 41, SOUTH OF CR 672 (BIG BEND ROAD)	N	9,500 S	9,300	18,800
0053		SR 600/HILLSBOROUGH AVE., EAST OF SEFFNER ROAD	E	4,700 W	4,700	9,400
0058		SR 574/MLK AVE, WEST OF CR 579/MANGO RD	E	14,000 W	14,500	28,500
0059		SR 41/US 301, N OF SR 400/SR600 INTERCHANGE	N	14,000 S	14,000	28,000
0060		SR 41/US 301, NORTH OF SR 582/FOWLER AVE	N	7,400 S	7,400	14,800
0062		FLORIDA AVE NORTH OF FOWLER AVE.	N	12,500 S	13,000	25,500
0063		DALE MABRY NORTH OF MACDILL AFB.	N	10,500 S	9,900	20,400
0068		SR 39, NORTH OF CR 39B (PARK ROAD EXTENSION)	N	11,000 S	11,500	22,500
0072		SR 582/FOWLER AVE, WEST OF SR 41/US 301	E	7,300 W	7,300	14,600
0080	T	US-92,0.2 MI W. OF TURKEY CREEK RD.,HILLSBOROUGH CO.	E	5,992 W	6,192	12,184
0084		SR 400/I-4, EAST OF PARK ROAD EXCHANGE	E	36,500 W	36,500	73,000
0085		US 301/SR 43, N OF MANATEE COUNTY LINE	N	1,100 S	1,100	2,200
0100		THONOTOSASSA ROAD SOUTH OF I-4	N	8,800 S	8,500	17,300
0104		SR 400/I-4, NORTHEAST OF ORIENT ROAD	E	42,000 W	40,000	82,000
0109		SR 678/BEARSS AVE, WEST OF SR 45/US 401/NEBRASKA	E	24,000 W	23,000	47,000
0113		SR 574/MLK AVE, EAST OF SR 400/I-4	E	12,000 W	10,500	22,500
0114		SR 574/MLK AVE, EAST OF SR 43/US 301	E	8,100 W	7,900	16,000
0115		SR 574/ML KING BLVD, E OF MANGO RD/CR 579	E	9,700 W	10,000	19,700

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
0118		SR 582/FOWLER AVE, AT HILLSBOROUGH RIVER	E	21,500 W	21,500	43,000
0124		NEBRASKA AVE NORTH OF FLETCHER AVE.	N	11,000 S	10,000	21,000
0131		SR 674 WEST OF SR 43/US 301	E	7,100 W	7,200	14,300
0133		SR600/HILLSBOROUGH AVE., WEST OF TURKEY CREEK RD	E	4,700 W	4,500	9,200
0134		SR 600/US 92 AT ATR-80, EAST OF FORBES ROAD	E	6,400 W	7,100	13,500
0139		US 301/SR 43, S OF CR 672/BIG BEND RD	N	4,800 S	5,000	9,800
0140		SR 674, EAST OF US 41	E	5,700 W	5,600	11,300
0141		SR 674, WEST OF SR 93/I-75	E	8,600 W	8,500	17,100
0142		SR 674, EAST OF SR 93/I-75	E	12,500 W	12,500	25,000
0143		SR 93/I-75, SOUTH OF CR 672 (BIG BEND ROAD)	N	24,500 S	25,000	49,500
0144		SR 93/I-75, NORTH OF SR 672 (BIG BEND ROAD)	N	28,500 S	29,000	57,500
0146		SR 93/I-75, NORTH OF GIBSONTON DRIVE	N	28,500 S	31,500	60,000
0147		SR 93/I-75, NORTH OF SR 43/US 301	N	24,500 S	24,500	49,000
0148		SOUTH OF SR 60	N	27,000 S	25,000	52,000
0149		I-75 / SR 93A, NORTH OF SR 60	N	44,500 S	45,500	90,000
0150		SR 93A/I-75, NORTH OF SR 574/M.L. KING (BUFFALO)	N	46,000 S	43,000	89,000
0151		SR93A/I-75, SOUTH OF SR 582 (FOWLER AVE.)	N	38,000 S	35,000	73,000
0152		I-75, SOUTH OF FLETCHER AVE.	N	31,000 S	32,000	63,000
0153		I-75, NORTH OF FLETCHER AVE.	N	26,500 S	25,500	52,000
0154		SR 93A/I 75 N OF BRUCE DOWNS BLVD., HILLSBOROUGH	N	13,500 S	14,000	27,500
0156		SR 678/BEARSS AVE, EAST OF SR 685/FLORIDA AVE	E	23,000 W	23,000	46,000
0162	T	SR-60,1 MI EAST OF US-41,HILLSBOROUGH CO.	E	15,430 W	16,943	32,373
0194	T	I75,0.6 M S OF US301,2.3 M N OF I4,HILLSBOROUGH CO	N	41,691 S	41,761	83,452
0224	T	I75,0.9 MI S OF SR60 AT SR618 O.P.,HILLSBOROUGH CO	N	20,147 S	19,360	39,507
0276	T	SR-674,686' W. OF BALM WIMAUMA RD,HILLSBOROUGH CO.	E	2,457 W	2,384	4,841
0321	T	SR582/FOWLER AV,1450' E OF 15TH ST/TAMPA,HILLS CO.	E	27,313 W	26,874	54,187
0338	T	SR583 (56TH ST), 1216 FT S OF SLIGH AVE - HILLS#03	N	15,093 S	15,735	30,828

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
0339	T	SR60 (CC CSWY), 1996 FT W ROCKY PT DR - HILLS#18	E	27,074 W	27,260	54,334
0341	T	SR674,285 FT W OF CYPRESS VILLAGE BLVD-HILLS#53	E	9,273 W	11,918	21,191
0342	T	SR45/US41, 574 FT N OF TRANTON ST - HILLS#58	N	11,003 S	11,189	22,192
2001		SR 93/I-275, NORTH OF BEARSS AVE	N	13,000 S	13,000	26,000
2002		SR 93/I-275, NORTH OF SR 579/FLETCHER AVE	N	29,500 S	28,000	57,500
2003		SR 93/I-275, NORTH OF SR 582/FOWLER AV 7041,7042	N	39,000 S	39,500	78,500
2004		SR 93/I-275, NORTH OF SR 580/BUSCH BLVD	N	55,000 S	51,500	106,500
2005		SR 93/I-275, NORTH OF BIRD ST 7029,7030	N	62,000 S	62,500	124,500
2006		SR 93/I-275, NORTH OF SLIGH AVE 7025,7026	N	58,000 S	57,000	115,000
2007		SR 93/I-275,N OF SR600/US92/HILLSBORO AV7019,7020	N	69,500 S	68,000	137,500
2008		SR 93/I-275, NORTH OF SR 574/MLK DR/BUFFALO AVE	N	73,500 S	72,500	146,000
2009		SR 93/I-275, S OF BUFFALO AVE/ML KING BLVD/SR 574	N	69,000 S	71,500	140,500
2010		SR 93/I-275, NORTH OF SR 400/I-4 7001,7002	N	56,000 S	57,000	113,000
2012		SR 93/I-275, N OF PALM AVE 3113,4016	N	62,500 S	65,000	127,500
2015		I-275, EAST OF FLORIDA AVE/SR 685	E	82,500 W	81,500	164,000
2016		SR 93/I-275, WEST OF ASHLEY STREET	E	77,000 W	87,000	164,000
2017		SR 93/I-275, WEST OF ARMENIA AVE.	E	71,000 W	73,000	144,000
2018		SR 93/I-275, WEST OF DALE MABRY	E	68,500 W	72,000	140,500
2019		SR 93/I-275, EAST OF WESTSHORE BLVD.	E	70,000 W	78,000	148,000
2020		SR 93/I-275, EAST OF MEMORIAL HWY ON I-275	E	66,500 W	58,000	124,500
2021		SR 93/I-275, WEST OF MEMORIAL HWY ON I-275	E	55,000 W	56,000	111,000
2022		SR 93/I-275, EAST OF HOWARD FRANKLIN BRIDGE	E	61,500 W	57,500	119,000
2023		SR 400/I4, EAST OF SR 574/MLK BLVD	E	41,500 W	41,000	82,500
2024		SR 400/I4, EAST OF SR 599/US 41/50TH ST	E	51,500 W	47,500	99,000
2026		I-4, EAST OF 40TH STREET	E	59,500 W	54,000	113,500
2027		SR 400/I-4 EAST OF SR 585/22ND ST	E	54,500 W	53,500	108,000
2028		I-4, EAST OF SR 45/NEBRASKA AVE.	E	62,500 W	57,000	119,500

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
3048		FRANK ADAMO DRIVE WEST OF SR 43, US 301 5257	E	20,000 W	21,000	41,000
3054		SR 574/MLK AVE, AT HILLSBOROUGH RIVER	E	17,500 W	19,000	36,500
5005		SOUTH COLLINS ST. SOUTH OF REYNOLDS ST.	N	4,400 S	4,100	8,500
5008		SR 600/US 92/BAKER ST, W OF MARYLAND AVE	E	6,400 W	6,500	12,900
5011		SR 600/US 92 EB/REYNOLDS ST, E OF SR 39/WHEELER ST	E	8,900	0	8,900
5013		BAKER ST., US 92 WB, EAST OF ALEXANDER ST.		0 W	6,000	6,000
5014		BAKER ST., US 92 WB, WEST OF ALEXANDER ST.		0 W	13,500	13,500
5015		THONOTOSASSA RD.,US 92 EB, WEST OF ALEXANDER ST.	E	11,500	0	11,500
5016		THONOTOSASSA RD., US 92 EB, EAST OF ALEXANDER ST.	E	5,800	0	5,800
5017		REYNOLDS ST. EAST OF RITTER ST.	E	5,000 W	4,500	9,500
5019		SR574/REYNOLDS ST, BETWEEN LEMON ST. & FIGG ST	E	4,900 W	4,300	9,200
5021		REYNOLDS ST. EAST OF ALEXANDER ST.	E	2,600 W	2,100	4,700
5022		SR 600/US 92 EB/REYNOLDS ST, E OF DAVIS ST	E	9,300	0	9,300
5029		BAKER ST. WEST OF THONOTOSASSA RD., SR 566	E	5,500 W	6,300	11,800
5038		PARK RD. SOUTH OF I-4, SR 400	N	8,400 S	8,200	16,600
5042		REYNOLDS ST., US 92 EB, SOUTHWEST OF BAKER ST.	E	8,400	0	8,400
5048		SR 573/DALE MABRY HWY, SOUTH OF GANDY BLVD 3014	N	16,000 S	15,500	31,500
5049		US 92/DALE MABRY HWY, NORTH OF GANDY BLVD	N	15,500 S	15,500	31,000
5051		SR 600/US 92/DALE MABRY HWY, N OF BAY TO BAY BLVD	N	19,000 S	18,000	37,000
5052		US 92/DALE MABRY HWY, NORTH OF HENDERSON BLVD	N	21,500 S	20,000	41,500
5055		SR 600/US 92/DALE MABRY HWY, NORTH OF CYPRESS ST	N	25,000 S	26,500	51,500
5056		SR 600/US 92/DALE MABRY HWY, NORTH OF SPRUCE ST	N	46,500 S	46,500	93,000
5058		SR600/US92/DALE MABRY HWY, N OF COLUMBUS DR/SR 589	N	38,500 S	40,000	78,500
5061		FLORIDA AVE. NORTH OF LINEBAUGH AVE.	N	10,500 S	10,000	20,500
5063		FLORIDA AVE. NORTH OF WATERS AVE.	N	12,000 S	12,500	24,500
5064		SR 685/BUS 41/FLA AVE, S OF WATERS	N	10,000 S	11,500	21,500
5065		FLORIDA AVE. SOUTH OF BROAD ST.	N	10,000 S	10,500	20,500
5067		FLORIDA AVE. NORTH OF HILLSBOROUGH AVE.,SR 600	N	7,400 S	7,400	14,800

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
5068		SR 685/FLORIDA AVE, S OF HILLSBORO AVE/SR 600 3032	N	7,700 S	7,500	15,200
5074		NEBRASKA AVE. NORTH OF CASS ST.	N	4,500 S	5,100	9,600
5077		NEBRASKA AVE. SOUTH OF COLUMBUS DR.	N	8,700 S	8,900	17,600
5078		NEBRASKA AVE. SOUTH OF LAKE AVE.	N	9,100 S	9,300	18,400
5082		NEBRASKA AVE. NORTH OF SLIGH AVE.	N	10,000 S	11,000	21,000
5088		NEBRASKA AVE. SOUTH OF FOWLER AVE., SR 582	N	13,000 S	12,500	25,500
5090		US41(BUS)/SR45/22ND ST CSWY,S OF SR618/X-TOWN EXPY	N	9,100 S	9,300	18,400
5095		SR 585/22ND ST, SOUTH OF SR 574/M.L.KING AVE.	N	6,300 S	6,200	12,500
5099		SR569/40TH ST, SOUTH OF US92/HILLSBOROUGH AVE	N	12,000 S	11,500	23,500
5102		SR 569/40TH ST, SOUTH OF SR599/MELBOURNE AVE	N	9,000 S	8,800	17,800
5104		50TH. ST. NORTH OF ADAMO DR., SR 60	N	15,500 S	15,500	31,000
5107		50TH. ST. SOUTH OF COLUMBUS DR.	N	20,500 S	19,500	40,000
5108		US 41/SR 45/MELBORNE ST, NW OF 48TH ST.	E	26,500 W	24,000	50,500
5109		US 41/SR 599/MELBURNE BLVD, W OF 44TH ST	E	3,200 W	3,200	6,400
5110		SR 574/MLK AVE, EAST OF SR 599/US 41/40TH ST	E	6,200 W	5,800	12,000
5123		ADAMO DR. EAST OF 50TH ST., SR 599/US 41	E	15,500 W	16,000	31,500
5124		ADAMO DR. WEST OF 50TH ST., SR 599/US 41	E	14,500 W	16,000	30,500
5126		SR 60/ADAMO DR, BTWN 22ND ST & 28TH ST, W OF US41	E	11,500 W	12,000	23,500
5131		KENNEDY BLVD. WEST OF 13TH ST. 3007	E	4,700 W	5,100	9,800
5136		KENNEDY BLVD. WEST OF WILLOW AVE.	E	15,000 W	16,000	31,000
5139		SR 60/KENNEDY BLVD,E OF SR600/US92/DALE MABRY BLVD	E	16,000 W	19,000	35,000
5143		SR 60/MEMORIAL HWY, NORTH OF CYPRESS ST.	N	72,000 S	59,500	131,500
5144		MEMORIAL HWY. SOUTHEAST OF EISENHOWER BLVD.	N	57,500 S	56,500	114,000
5145		COURTNEY CAMPBELL CSWY. WEST OF EISENHOWER BLVD.	E	36,000 W	32,000	68,000
5147		BOYSCOUT BLVD, WEST OF DALE MABRY HWY	E	20,500 W	20,000	40,500
5152		SR 585/HENDERSON BLVD, NE OF SR 600/DALE MABRY HWY	E	8,300 W	9,600	17,900
5161		HILLSBOROUGH AVE. E. OF DALE MABRY HWY.	E	21,500 W	21,000	42,500
5163		HILLSBOROUGH AVE. E. OF FLORIDA AVE., SR 685	E	17,000 W	15,500	32,500

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
5164		HILLSBOROUGH AVE. W. OF NEBRASKA AVE., SR 45	E	17,000 W	17,000	34,000
5165		HILLSBOROUGH AVE. E. OF NEBRASKA AVE., SR 45	E	20,000 W	22,000	42,000
5167		HILLSBOROUGH AVE. E. OF 22ND. ST., SR 585	E	20,000 W	20,000	40,000
5169		HILLSBOROUGH AVE. EAST OF 40TH ST., SR 599	E	20,000 W	18,500	38,500
5171		SR 582/FOWLER AVE, EAST OF SR 45/US 41/NEBRASKA AV	E	22,500 W	25,000	47,500
5179		SR 583/50TH ST, N OF US 41/SR 599/MELBURNE BLVD	N	13,500 S	13,500	27,000
5180		J. F. KENNEDY BLVD. WEST OF MEMORIAL HWY., SR 60	E	10,500 W	10,500	21,000
5182		SR 569/39TH ST, N OF SR 60/ADAMO DR	N	8,400 S	8,900	17,300
5184		SR 580/BUSCH BLVD, EAST OF ARMENIA AVE.	E	26,000 W	26,500	52,500
5188		SR 574/MLK AVE,E OF SR600/DALE MABRY	E	16,000 W	16,000	32,000
5190		SR 580/BUSCH BLVD,WEST OF SR 45/US 41/NEBRASKA AVE	E	24,000 W	25,000	49,000
5191		SR 580/BUSCH BLVD, EAST OF SR 45/US 41/NEBRASKA AV	E	26,500 W	27,000	53,500
5193		SR 580/BUSCH BLVD, WEST OF 30TH ST	E	26,500 W	26,000	52,500
5204		SR 582/FOWLER AVE, WEST OF 50TH ST	E	26,000 W	28,000	54,000
5206		DALE MABRY HWY. NORTH OF BUFFALO AVE.	N	33,500 S	36,000	69,500
5207		DALE MABRY HWY. NORTH OF BUSCH BLVD.	N	36,000 S	33,500	69,500
5210		SR 580/HILLSBORO AVE, EAST OF TOWN & COUNTRY BLVD	E	21,500 W	22,500	44,000
5212		SR 580/HILLSBOROUGH AVE, WEST OF WESTSHORE BLVD	E	27,000 W	25,500	52,500
5214		SR 582/FOWLER AVE, WEST OF SR 45/US 41/NEBRASKA AV	E	22,500 W	22,000	44,500
5215		SR 582/FOWLER AVE, WEST OF SR 685/FLORIDA AVE	E	14,000 W	12,500	26,500
5219		SR 579/FLETCHER AVE, WEST OF SR 45/US 41/NEBRASKA	E	23,000 W	23,500	46,500
5220		SR 579/FLETCHER AVE, EAST OF SR 685/FLORIDA AVE	E	19,500 W	18,500	38,000
5225		SR 589/EISENHOWER BLVD, SOUTH OF HILLSBOROUGH AVE.	N	20,500 S	19,500	40,000
5226		SR 580/BUSCH BLVD, WEST OF OVERLOOK DRIVE	E	18,000 W	18,500	36,500
5227		SR 583/56TH ST, SOUTH OF SR 600/US 92/HILLSBORO AV	N	17,000 S	17,500	34,500
5230		SR 583/56TH ST, S OF SR 582/FOWLER AVE	N	18,000 S	17,500	35,500
5237		NEBRASKA AVE. NORTH OF FOWLER AVE., SR 582	N	11,500 S	12,000	23,500
5238		DALE MABRY HWY. NORTH OF HILLSBOROUGH AVE. SR 600	N	37,000 S	38,000	75,000

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
5239		SR 583/56TH ST, AT HILLSBOROUGH RIVER BRIDGE	N	21,500 S	21,500	43,000
5243		SR 618/X-TOWN EXPWY, E OF US 92/SR 600/GANDY BLVD	E	9,200 W	10,500	19,700
5244		SR 618/X-TOWN EXPWY, W OF EUCLID AVE	E	9,700 W	9,800	19,500
5245		SR 618/X-TOWN EXPWY, W OF MACDILL AVE	E	11,500 W	13,000	24,500
5246		SR 618/X-TOWN EXPWY, E OF BAY TO BAY BLVD	E	14,000 W	15,000	29,000
5248		SR 618/X-TOWN EXRWY, E OF SOUTH BLVD	E	13,500 W	14,000	27,500
5249		SR 618/X-TOWN EXPWY, W OF HILLSBORO RIVER	E	15,000 W	15,500	30,500
5250		SR 618/X-TOWN EXPWY, W OF FRANKLIN ST.	E	13,500 W	15,500	29,000
5251		GANDY BLVD. EAST OF CLARK AVE.	E	21,000 W	21,000	42,000
5252		SR 580/BUSCH BLVD, EAST OF SR 599/DALE MABRY HWY.	E	19,500 W	20,000	39,500
5253		SR 60, WEST OF LAKEWOOD DR.	E	36,000 W	33,000	69,000
5254		SR 60, WEST OF PARSONS AVE. (BRANDON AREA)	E	30,500 W	31,500	62,000
5256		SPRUCE ST, WEST OF WESTSHORE BLVD.	E	17,500 W	20,000	37,500
5258		SR 45/US 41, SOUTH OF 676A (MADISON AVE)	N	9,300 S	9,400	18,700
5259		US 301/SR 43, S OF SR 676/CAUSEWAY BLVD	N	13,500 S	13,000	26,500
5260		SR43/US 301, S OF SR 618/CROSSTOWN EXPWY	N	14,000 S	15,000	29,000
5261		SR 41/US 301, SOUTH OF SR 582/FOWLER AVE.	N	5,400 S	5,300	10,700
5262		SR 41/US 301, NORTH OF CR 582/HARNEY RD	N	6,200 S	6,100	12,300
5264		SR 618/X-TOWN EXPWY, E OF 26TH ST	E	21,000 W	22,500	43,500
5265		SR 618/X-TOWN EXPWY, W OF 50TH ST	E	22,000 W	22,500	44,500
5266		SR 618/X-TOWN EXPWY, E OF 50TH ST	E	16,500 W	19,000	35,500
5267		SR 618/X-TOWN EXPWY, S OF PALM RIVER RD	N	15,500 S	17,000	32,500
5269		SR 574/MLK AVE,EAST OF SR685/FLORIDA AVE	E	17,500 W	17,000	34,500
5270		SR 574/MLK AVE, WEST OF SR 45/US 41/NEBRASKA AVE	E	13,500 W	14,500	28,000
5271		SR 574/MLK AVE, EAST OF SR 45/US 41/NEBRASKA AVE	E	11,500 W	12,000	23,500
5273		SR 574/MLK AVE, EAST OF SR 585/22ND ST	E	9,500 W	9,400	18,900
5275		SR 618/X-TOWN EXPWY, NE OF MORGAN ST	E	15,000 W	15,000	30,000
5276		SR 618/X-TOWN EXPWY, S OF JACKSON ST	N	19,000 S	16,500	35,500

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
5277		SR 618/X-TOWN EXPWY, E OF 14TH ST	E	22,000 W	24,000	46,000
5279		SR685/BUS 41/FLORIDA AVE., N. OF SR 580/BUSCH BLVD	N	13,000 S	12,000	25,000
5281		FLORIDA AVE. NORTH OF FLETCHER AVE., SR 579	N	7,700 S	7,800	15,500
5283		FLORIDA AVE. NORTH OF BEARSS AVE., SR 678	N	8,100 S	9,500	17,600
5289		BAKER ST., US 92 WB, WEST OF COLLINS ST., SR 39		0 W	9,300	9,300
5290		BAKER ST., US 92 WB, EAST OF COLLINS ST., SR 39		0 W	8,500	8,500
5291		FLORIDA AVE., SOUTH OF BUFFALO AVE.	N	9,400	0	9,400
5292		TAMPA ST., SOUTH OF BUFFALO AVE.		0 S	6,400	6,400
5294		TAMPA ST., SOUTH OF HENDERSON AVE.		0 S	8,700	8,700
5295		FLORIDA AVE., SOUTH OF SCOTT ST.	N	16,500	0	16,500
5296		TAMPA ST., SOUTH OF SCOTT ST.		0 S	7,700	7,700
5298		SR 685/BUS 41/TAMPA ST(SB), N OF SR 60/KENNEDY		0 S	12,500	12,500
5299		SR 45/BUS 41/22ND ST, S OF SR 60/ADAMO DR. 3069	N	13,500	0	13,500
5300		SR 585(SB)/21ST ST, NORTH OF ST 60/ADAMO DR 3070		0 S	11,000	11,000
5301		SR 585(NB),N OF SR 60/ADAMO DR.	N	9,300	0	9,300
5305		SR 585(NB)/22ND ST, N OF BROADWAY AVE	N	17,000	0	17,000
5307		SR 585(NB)/22ND ST,S OF SR 585(NB)/21ST ST	N	5,400	0	5,400
5309		SR 60 EB, JACKSON ST, WEST OF NEBRASKA AVE	E	8,400	0	8,400
5316		SR 60 WB, KENNEDY BLVD., WEST OF FRANKLIN ST.		0 W	12,500	12,500
5320		SR 618/X-TOWN EXPWY, E OF US 301/SR 43	E	19,500 W	19,000	38,500
5321		SR 618/X-TOWN EXPWY, E OF FAULKENBURG RD	E	9,200 W	10,500	19,700
5323		SR 43/US 301, NORTH OF RIVER VIEW DR	N	14,500 S	14,500	29,000
5325		SR 43/US 301, SOUTH OF PALM RIVER ROAD	N	15,000 S	15,500	30,500
5326		SR 43/US301, NORTH OF SR 60	N	17,000 S	18,500	35,500
5327		SR 43/US301, SOUTH OF SR 574	N	16,000 S	16,500	32,500
5333		SR 685/BUS US 41, FLORIDA AVE, N OF LOUISIANA AVE	N	9,400	0	9,400
5334		SB SR 685/BUS US 41, HIGHLAND AVE, N OF SR 574		0 S	6,600	6,600
5341		NEBRASKA AVE/SR45/US41, S OF GENESSEE ST.	N	11,500 S	12,000	23,500

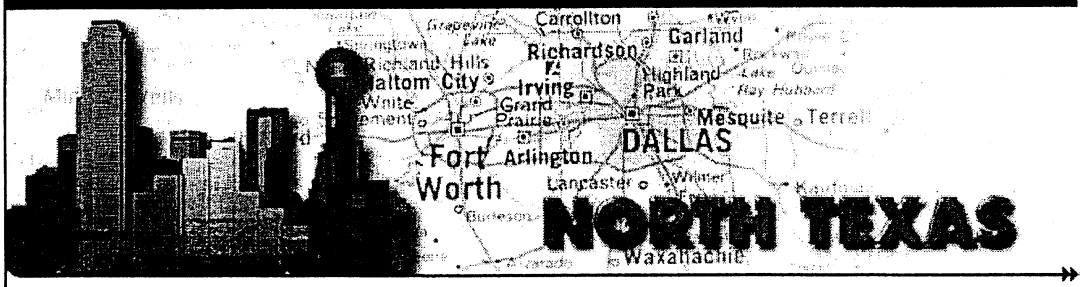
Site	Site Type	Description		Direction 1	Direction 2	Two-Way
5345		39TH ST/SR 569, N OF SR 618/CROSSTOWN EXP	N	2,300 S	2,500	4,800
5346		SR 45/US 41, NORTH OF CR 672 (BIG BEND ROAD)	N	7,200 S	7,600	14,800
5349		SR 60/BRANDON BLVD, WEST OF VALRICO RD.	E	19,500 W	20,000	39,500
5350		SR 569/39TH ST, N OF SR 400/I-4	N	7,900 S	7,800	15,700
5352		SR 93/I-275, EAST OF 7TH AVE	E	80,500 W	78,000	158,500
5354		SR 597/N. DALE MABRY HWY., NORTH OF LAKEVIEW	N	21,500 S	22,000	43,500
5355		SR 60/KENNEDY BLVD, WEST OF MACDILL AVE	E	18,500 W	18,000	36,500
5356		SR 60/ADAMO DR, EAST OF 21ST ST/SB BUS US41	E	12,000 W	11,500	23,500
5360		SR 60/MEMORIAL HWY, NORTH OF SR 60/KENNEDY BLVD	N	19,000 S	17,000	36,000
5361		SR 580/N. DALE MABRY HWY, SOUTH OF WATERS	N	40,000 S	39,000	79,000
5362		SR43/US301, SOUTH OF SYMMES ROAD	N	16,500 S	19,000	35,500
5370		SR 597/N. DALE MABRY HWY, NORTH OF FLETCHER	N	35,500 S	35,000	70,500
5501		SR 580/HILLSBOROUGH AVE, WEST OF PISTOL RANGE RD	E	16,000 W	17,000	33,000
5506		SR 41/US 301, SOUTH OF PASCO COUNTY	N	3,800 S	3,700	7,500
5507		SR 580/HILLSBOROUGH AVE, E OF PINELLAS CO. LINE	E	19,500 W	18,500	38,000
5508		SR 60, WEST OF POLK COUNTY LINE	E	9,100 W	9,000	18,100
5600		SR 45/US 41, NORTH OF MANATEE CO. LINE	N	3,200 S	3,200	6,400
5601		SR 93A/I-75, NORTH OF MANATEE CO. LINE	N	18,000 S	20,000	38,000
5602		SR 674, WEST OF POLK CO. LINE	E	800 W	750	1,550
5603		SR 39, SOUTH OF PASCO CO. LINE	N	3,000 S	3,000	6,000
5604		SR 600/US 92, WEST OF POLK CO. LINE	E	4,800 W	4,500	9,300
5606		SR 60/ ADAMO DR, WEST OF GRAND REGENCY BLVD.	E	42,500 W	43,000	85,500
5607		SR 60/BRANDON BLVD, WEST OF MULRENNEN RD	E	15,000 W	15,000	30,000
5608		SR 597/NORTH DALE MABRY,NORTH OF LUTZ-LAKE FERN RD	N	10,500 S	11,000	21,500
5609		SR 93/I-275,JUST WEST OF HIMES AVE.	E	77,000 W	88,500	165,500
5610		SR 39/NORTH WHEELER ST,NORTH OF CHAPMAN RD.	N	4,800 S	4,800	9,600
5612		SR 45/US 41, SOUTH OF PASCO COUNTY	N	7,200 S	6,900	14,100
9922	T	I-275,0.25MI N OF FLETCHER AVE/WIM#22,HILLS. CO.	N	31,039 S	30,409	61,448

Site	Site Type	Description		Direction 1	Direction 2	Two-Way
9926	T	I-75,1.25MI N OF SR60(ADAMO DR)/WIM#26,HILLS. CO.	N	48,290 S	46,824	95,114

Site type: T = Telemetered; <blank> = Portable

Appendix E: Dallas/Fort Worth Passkey System Information

passkey.net



ABOUT PASSKEY

Cash-free, Card-free, Hands-free

No more fumbling to get your parking ticket, rolling down your window, or searching for change. With PassKey® , you can pay for parking without ever stopping your car. PassKey Payment Services' cash free, card-free, hands-free service is convenient and easy to use. Through the use of wireless communications, PassKey provides automatic payment services for your parking needs throughout the PassKey network.

Here is how it works

A small tag is mounted on the inside of your windshield. When you enter a PassKey-equipped facility, a reader will instantly identify your tag. When you exit the facility through a designated PassKey lane, PassKey calculates the appropriate amount and deducts it from the PassKey account. PassKey will provide a detailed monthly statement reflecting your activity within the PassKey network for easy review and expense report reconciliation. It's that simple.

- Enter and exit airports and parking facilities cash-free, card-free, hands-free
- Avoid long cash lines at exits
- Reconcile parking expenses anytime with easy-to-read statements that are available online
- Conveniently use your PassKey tag for access to airports, parking facilities and toll roads

About Getting Your Account and Tag(s)

You can use your PassKey® tag for convenient, cash-free access to D/FW and Love Field Airport and for parking at facilities around the Metroplex. If you currently have a TollTag, you can activate your existing TollTag account for PassKey service in 3 easy steps and less than 5 minutes.

If you are a Dallas Tollway user, you **must** have your TollTag number, which is located on your TollTag (see

North Texas PassKey Poll

Where do you want to see PassKey in the future?

- ☐ Texas Stadium
- ☐ Reunion Arena/American Airlines Center
- ☐ The Ballpark in Arlington
- ☐ DFW Airport remote & infield parking
- ☐ Lone Star Park

Vote!

TollTag number, which is located on your TollTag (see image on sign-up page).

Upon receipt of your tag or email confirmation (for TollTag users) you can immediately begin using your tag at the following facilities:

- Dallas/Fort Worth International Airport
- Love Field Airport
- 411 Akard - downtown
- The Crescent
- Chase Tower
- 2100 McKinney

PRICING

PassKey tag purchase	$25.00
Initial prepayment	$50.00
Low-balance level: Airport parking	$30.00
Low-balance level: City garage parking (DFW area only)	$15.00
Replenishment amount	$85.00
Monthly membership fee*	$3.00
TollTag activation fee**	$2.00
Shipping/handling fee (for every 3 tags)	$4.95

* There is a monthly membership fee of $3. For customers who use DFW Airport only, the membership fee will be charged only during months of activity.

** To activate your TollTag for use at PassKey-equipped facilities (required for Dallas North Tollway TollTag users) you will be charged a one time activation fee of $2 for every 3 tags. (Example: You have 4 TollTags, so the charge is $4.)

- A tag is required to utilize the PassKey service. PassKey tags cost $25 each, plus shipping and handling. A PassKey tag is required unless you already have a TollTag.
- In the DFW area, a TollTag can be activated to work with the PassKey system in place of a PassKey tag. To activate your TollTag for the use at PassKey equipped facilities (required for Dallas North Tollway Tag users) you will be charged a one-time activation fee of $2 for every 3 tags. (Example: You have 4 TollTags, so the charge is $4.)
- There is a monthly membership fee of $3. For customers who use DFW Airport only, the membership fee will be charged only during months of activity.
- Cars with metallic coated windshields require license plate tags. License plate tags cost $35.
- An initial payment of $50 will be charged to your credit card to establish your initial account balance (in addition to tag charges).
- Each time your account reaches the low balance level, your credit card will be charged the replenishment amount of $85.

Note: Pricing is subject to change upon written or supplemental notice.

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PRICING

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Note: Pricing is subject to change upon written or supplemental notice.

passkey.net

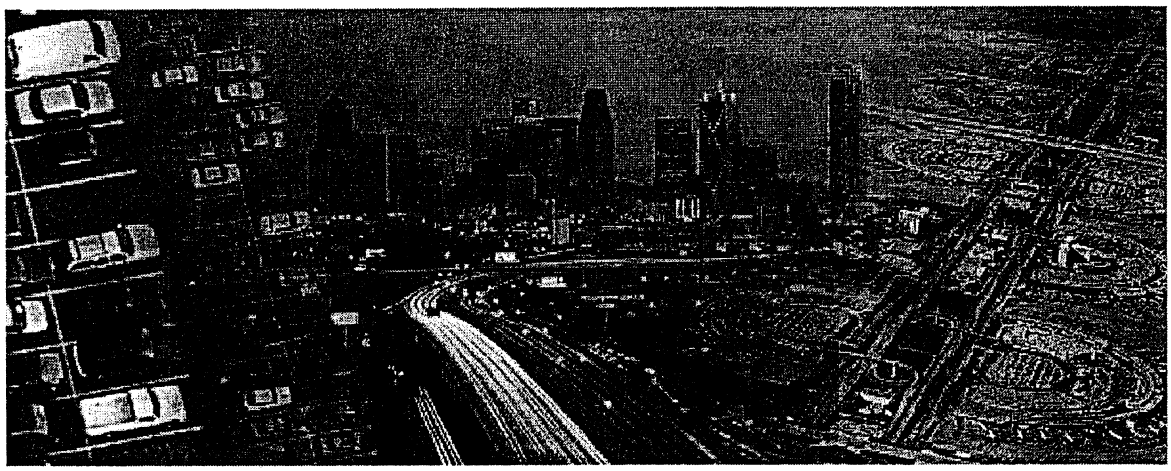
FREQUENTLY ASKED QUESTIONS

If you don't find the answer to your question on this page, please click here for Customer Service.

1. What is PassKeyÆ Payment Services?	PassKey is a new payment service that creates a cash-free, card-free, hands-free way to pay for parking and airport access.
2. How do I get a PassKey-registered tag?	A PassKey Tag can be obtained quickly by completing an application online at www.passkey.net or by calling 1-888-269-2811 to request a fax application.
3. How can I pay for my account?	You can pay by using a credit card (Visa, MasterCard, Discover, Diner's Club, or American Express).
4. How do I receive my PassKey tag?	Regular delivery is by U.S. mail.
5. When can I start using my PassKey tag?	PassKey-registered tags are valid for use as soon as you receive them.
6. Where can I use my PassKey-registered tag?	PassKey can be used at any PassKey-equipped facility including DFW, Dallas; Love Field, Dallas; O'Hare, Chicago; and Midway, Chicago airports and parking garages in the PassKey network.

7. Can I use my PassKey registered tag in more than one vehicle?	Each tag is uniquely assigned to a vehicle. You are responsible for notifying PassKey Payment if you switch the tag to another vehicles.
8. What do I do if my PassKey registered tag is lost or stolen?	Contact PassKey Payment Services via **www.passkey.net** or call 1-888-269-2811 **as soon as you discover your tag is lost or stolen.** You will be responsible for all fees incurred for the use of your tag until the tag has been deactivated.
9. How do I check my PassKey Payment Services Account?	After the registration process is completed, you can access your secure account information at **www.passkey.net** or call 1-888-269-2811.
10. What would keep an unauthorized person from accessing my account?	All customers will be required to choose a unique PIN (personal identification number) when registering a PassKey account. This PIN is required in order to obtain any information about your account.
11. What if I forgot my PIN?	Go to **www.passkey.net** and supply your e-mail address. Your PIN will be immediately e-mailed to the e-mail address on your account. You may also call PassKey Payment Services at 1-888-269-2811.
12. How do I close my PassKey account?	Call PassKey Payment Services at 1-888-269-2811.
13. I already have a TollTag. Do I have to get a separate tag to use the PassKey system?	No. You can use the same tag, but you do have to register it with us. There is a one-time activation fee. Go to "**SIGN UP NOW**" by clicking the button at the top of this screen and complete the application online. You will need to supply your TollTag number to activate the tag to work in the PassKey network.
14. What are the rates at PassKey facilities?	All PassKey rates are set by the individual facilities. Contact the location at which you wish to park and to inquire for rates.
15. How do I check my PassKey Payment Services account?	Access your secure account information at **www.passkey.net** or call 1-888-269-2811.
16. How can I get a receipt for expense reports?	All PassKey users will receive a detailed monthly statement reflecting activity within the PassKey network. For immediate information, you can review your accounts online at **www.passkey.net**. Transactions are posted the following business day.

Appendix F: Pricing and technical Information from Amtech



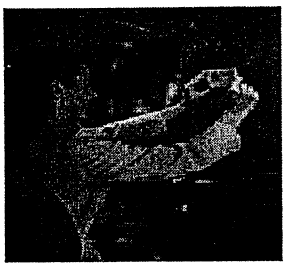
SOLUTIONS FOR TODAY'S PARKING REVENUE COLLECTION

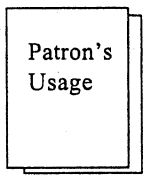
In today's fast-paced, competitive world, companies need to keep things moving, know where things are, and keep accurate accounts – and airports and parking businesses are no exception. Traditional manual or mechanical transactions require drivers to stop, roll down the window, fumble in a purse, pocket, or glove compartment for change, or swipe a magnetic stripe card, wave a proximity card, or punch a keypad to gain access. How can a modern parking facility improve customer satisfaction while reducing congestion, lowering operating costs, and maintaining accurate billing? Amtech has the solution.

THE PASSKEY℠ PARKING SYSTEM

The PassKey Parking System is a robust and unique part of Amtech's parking and revenue collection solution. Patrons using the PassKey Parking System are offered the ultimate in customer service — cash-free, card-free, and hands-free parking. The parking system can also be combined with the power of the PassKey℠ Clearinghouse System for an end-to-end revenue collection system. The Clearinghouse, an automated accounting service, provides the operator with an efficient, effective accounting of the facility's daily and monthly transactions, accounts, and revenue.

The Customer's Point of View — How it Works





A patron establishes a PassKey account and a PassKey-registered AVI tag. The tag is placed on the inside of the car's windshield.

The patron parks in a PassKey-equipped facility. At the end of each day, the facility sends information electronically to the PassKey Clearinghouse System.

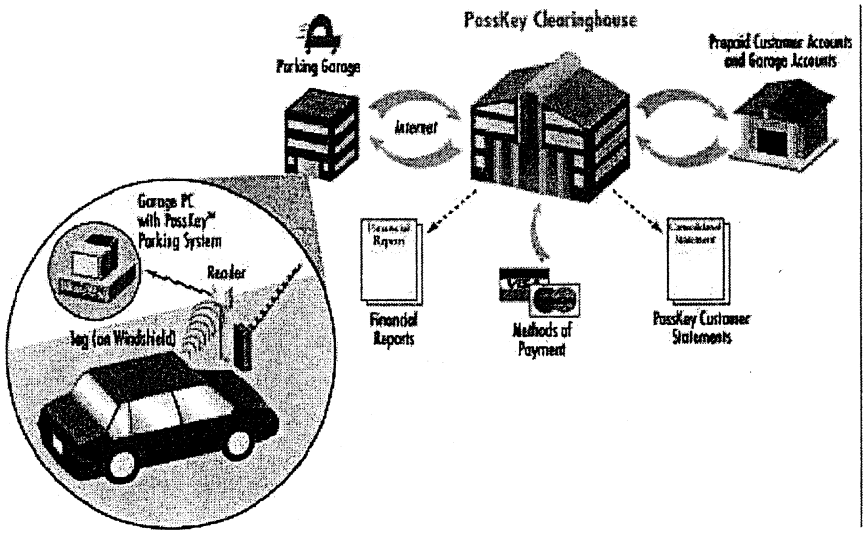
The PassKey Clearinghouse collects and processes the information. At month-end, the patron gets a PassKey statement via e-mail. During the month, online usage reports are available at www.passkey.net

The Parking Operator's Point of View — How it Works

A reader at the front gate recognizes a customer's PassKey-registered AVI tag and validates the identification number, transmits the data to a PC server, notes the time and date of entry, and automatically opens the gate.

Subsequently, when the customer departs, another tag reader reads the customer's identification number, transmits the data to the PC server, notes the time and date of exit, and lifts the gate to allow exit.

Using parking rates set by the parking operator, the PassKey Parking System calculates the appropriate charges and, at the end of the day, forwards the transaction to the PassKey Clearinghouse System.



The Clearinghouse receives the data, debits the customer's PassKey account, and credits the garage's bank account for the appropriate amount. The Clearinghouse generates a Daily Authority Transaction Summary for each garage (a report of all PassKey transactions submitted to the Clearinghouse for that day) and transmits it to the garage. At the end of each month, the Clearinghouse sends a statement via e-mail to each customer detailing all PassKey activity for that time period.

Parking Operator Benefits	
Administers parking or usage fees accurately	Reduces maintenance costs
Eliminates time-consuming accounting and administrative tasks	No ticket machines to jam or repair
Reduces cash handling and streamlines back-room operations	Flexibility to offer discount plans to encourage customer loyalty
Works with a gated or ungated system	Minimizes overhead costs
Greater opportunity for increased revenue	Reduces vehicle emissions in the garage
Increased convenience attracts additional parkers	Eases congestion in and out of garage

Combine the PassKey Parking System with the Power and Convenience of PassKey Clearinghouse Services

Amtech's PassKey Clearinghouse System can dramatically improve a parking facility's revenue control and reporting. Here's how these two powerful systems perform together.

PassKey Parking System

Amtech's PassKey Parking System allows vehicles to flow quickly through gates and controlled entrances. Quicker entry and exit from the facility means more convenience for customers and a greater opportunity for increased revenue for the parking operator.

At the end of the day, the PassKey Parking System software connects via the Internet to the PassKey Clearinghouse System and securely transfers the facility's transactions and data.

PassKey Clearinghouse

When the PassKey Clearinghouse receives parking transaction data via secure protocols, it accurately debits the customers' PassKey account and credits the facility's bank account for the appropriate amount.

The following paragraphs describe the hardware and software components of the PassKey Parking System.

PassKey Parking System Hardware

The PassKey Parking System is made up of the following four hardware components:

SmartPass® Reader —The SmartPass reader is about the size of a pizza box and has a highly reliable read range of 10 feet or more. Each reader system contains a radio frequency transmitter/receiver, antenna, reader logic board, and data storage circuitry — all in one compact, weatherproof unit.

SmartPass is inexpensive and easy to install, operate, and maintain — it requires little or no routine maintenance. Unlike card reader or ticket systems that require user interaction, SmartPass does not project into the access lane where collisions can damage either the equipment or patrons' vehicles.

Amtech AVI tags — The tag is used by the system to identify and track the vehicle. Tags designed for internal mounting in a vehicle are packaged in a credit card-sized, sealed, UV-stabilized polycarbonate case. Amtech also offers a tag designed for external mounting requirements, which is packaged in a durable, weatherproof UV-stabilized polycarbonate case.

PC workstation — Each PassKey facility includes at least one workstation to collect and process data. At a minimum, the workstation should contain the following components:

- Latest available Pentium class processor, 128 MB RAM minimum
- 4 GB hard drive minimum
- CD ROM
- 15-inch color monitor (1024 x 768 resolution)

Server — Each PassKey facility must include one server. In large PassKey deployments, separate machines can be used for the database and lane controllers. At a minimum, the server should contain the following components:

- Latest available Pentium class processor, 128 MB RAM minimum
- 8-GB hard drive with two 4-GB partitions minimum
- 24x CD ROM
- 128 MB RAM (256 MB preferred)
- ZIP drive
- 56K bps modem
- 17-inch color monitor
- I/O board to interface with Amtech AVI readers
- Microsoft Windows NT, 4.0
- IBM Universal Database
- PassKey Parking System software

While other hardware configurations may function, the fastest available hardware is recommended to ensure the best performance of your PassKey system.

Parking operators can add additional PassKey workstations to allow for enhanced administrative access to rate structures, accounts, and information.

PassKey Parking System Software

Amtech's unique PassKey Parking System software works with the SmartPass reader to verify PassKey tags, control access gates, and calculate the correct parking charges based on the parking operator's defined rate tables. The software generates numerous reports to help track parking trends, estimate peak traffic flow, determine current occupancy, and can even locate the identity of a vehicle owner by the license plate. PassKey Parking's nesting feature allows the separation of the parking facility into rate areas, which can allow patrons to park in privileged parking areas. This nested parking feature allows for flexible rate structuring to maximize revenue.

The PassKey system can support both personal and corporate accounts. Personal accounts are for individual parkers who park in a facility. Corporate accounts are for corporations that want to pay for parking for a specific group of parkers who are assigned to that corporate account.

The PassKey Parking System is pre-installed by an Amtech-certified PassKey dealer to ensure turnkey installation.

Software Features

The PassKey Parking System offers a powerful arrangement of features and benefits for the parking operator.

Here are just a few of the many functions the software allows the parking operator or facility manager to accomplish:

- ✓ View facility occupancy at any given time
- ✓ View and print monthly billing or lane activity information for an account
- ✓ Validate parking
- ✓ Access detailed account information easily
- ✓ View and print a summary of communications to and from the PassKey Clearinghouse
- ✓ Add, change, and delete rates, as needed (higher security level required)

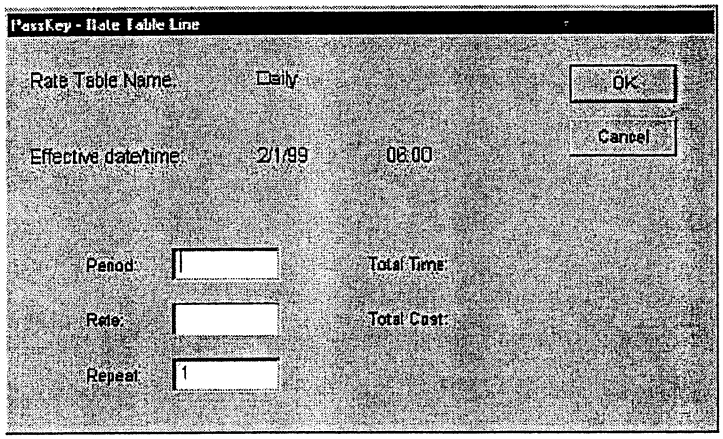
Additional information on two of these features – rate tables and validations – is included on the following pages.

Rate Tables

The facility manager uses rate tables to define the parking rates for the facility. The facility manager can add, edit, and delete rate tables at any time. A rate table is made up of defined rate lines (see window below). For example, if a facility charges $2.00 for the first hour, $1.00 per hour for the next three hours, then $0.50 per hour thereafter, the rate table for these rates only needs three rate lines.

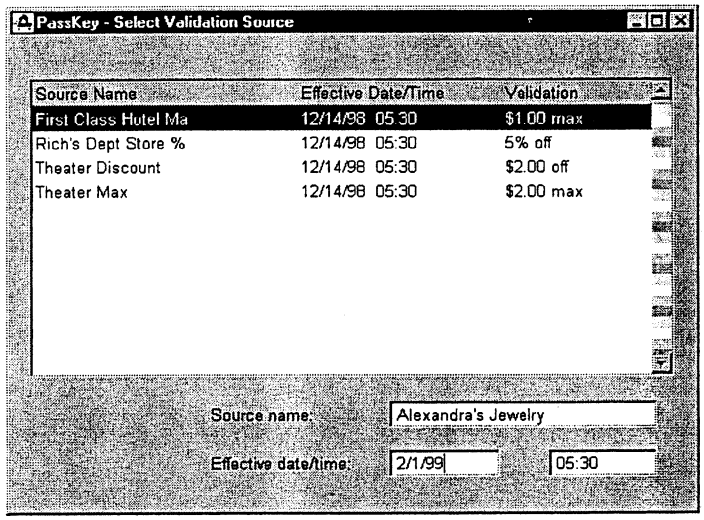
Optional date lists are used to allow different parking rates for specified calendar dates. For example, a facility may want to offer special rates on holidays or for special events.

A monthly parker typically pays a flat rate for the month, and all visits to the facility are covered by the monthly rate. The typical daily parker is charged on a per-visit basis. Upon the patron's exit from the parking facility, PassKey uses the patron's parking privilege (pricing structure), the date and time of entry and exit, time zone, rate tables, and rate lines to calculate the cost of the visit.



Validations

The parking system software is capable of parking validation and/or balance adjustment, if the facility manager elects to provide these features. Validation enables merchants to reimburse a customer who is parking in a PassKey parking facility for some or all of the parking cost. As shown in the figure to the right, each validation source (merchant) has a name, an effective date and time, and a validation type and associated rate.



The facility manager defines how a parker presents validation authorization to the parking facility. The parking operator will manually enter the validation information into the PassKey system. The next time transactions are transferred to the Clearinghouse, the validated amount is reimbursed to the parker's account and debited to the parking facility's account. The Clearinghouse then notifies the parking facility of the acceptance or rejection of the validations. The parking facility must then obtain reimbursement from the merchant.

Balance adjustment enables the operator to adjust charges made to a patron's account when necessary.

PASSKEY CLEARINGHOUSE (OPTIONAL SERVICE)

Amtech's PassKey Clearinghouse System has many time-saving capabilities that provide a total turnkey service. Amtech's Clearinghouse can act as the operator's ***customer service center*** (CSC), which is a focal point for distributing tags, setting up customer accounts, and resolving any customer inquiries. The PassKey Clearinghouse also performs ***account management services***, serving as centralized account management center that receives data from all participating PassKey parking facilities, including both commercial garage operators and airport operations. The Clearinghouse offers the operator's customers access to **www.passkey.net**, designed for quick online convenience for enrolling in the PassKey system and for maintenance of accounts, plus a state-of-the-art ***voice response system*** for 24-hour customer convenience.

Customer Service Center

Amtech is at the forefront of providing CSC operations. In the early 1990s, Amtech pioneered the "tag store" concept through the ownership and operation of CSCs in Louisiana, Dallas, Oklahoma, Houston, and Hong Kong.

Services Performed at the CSC

Services that Amtech's professionally-trained customer service representatives (CSRs) provide at the CSC include:

- ✓ Enroll patrons in PassKey
- ✓ Provide patrons access to their account balance information
- ✓ Handle customer inquiries
- ✓ Resolve disputed items in a timely manner
- ✓ Accept and process payments
- ✓ Provide patrons copies of account statements
- ✓ Close accounts
- ✓ Issue tags

Patrons will be required to establish an account before they receive tags. During the enrollment process, patrons can choose the most convenient method of payment for their account. Patrons can establish their account by using electronic funds transfer (EFT), cash, check, or credit card (MasterCard, Visa, American Express, Discover, or Diners Club). Enrollment application forms can be received from the patron in person, at www.passkey.net, by mail, or by fax. The following information provides additional details about the methods of processing an application.

- **Internet** — Patrons can enroll by visiting www.passkey.net and receive their tags by mail. This web service center empowers patrons to help themselves, which results in high customer satisfaction and frees CSRs to address account or billing questions and other important issues.
- **Mail** —The CSC will process mail-in applications and will mail the tag to the patron.
- **Fax** — Applications received via fax will be handled in the same manner as mailed-in applications.
- **Voice response system**—The voice response system (VRS) is accessible anytime for patron use, with full service available in both English and Spanish. The VRS is integrated with the Clearinghouse patron database to allow users to conveniently and quickly access account information, transaction history, request an application via fax, leave a voice message, or request to speak directly with a CSR.

Account Management

The PassKey Clearinghouse is the centralized account management center that receives data from all participating PassKey parking facilities, including commercial garage operators and airport operations. It debits the customer's PassKey account and credits the facility's bank accounts for the appropriate amount via ACH. The Clearinghouse keeps all records, accurately accounting for transactions by facility and disbursing revenue appropriate to that facility.

PassKey Clearinghouse is the heart of the account and funds management solution.

- Produces reports on customer account management
- Provides automatically generated letters and statements for customers
- Provides a clear audit trail for all transactions
- Tracks detailed patron information
- Provides patron vehicle information

The Clearinghouse manages, maintains, and updates accounts and other patron account information. Patron account data can be retrieved, viewed, and printed on demand on the web, which makes the system highly convenient for PassKey users.

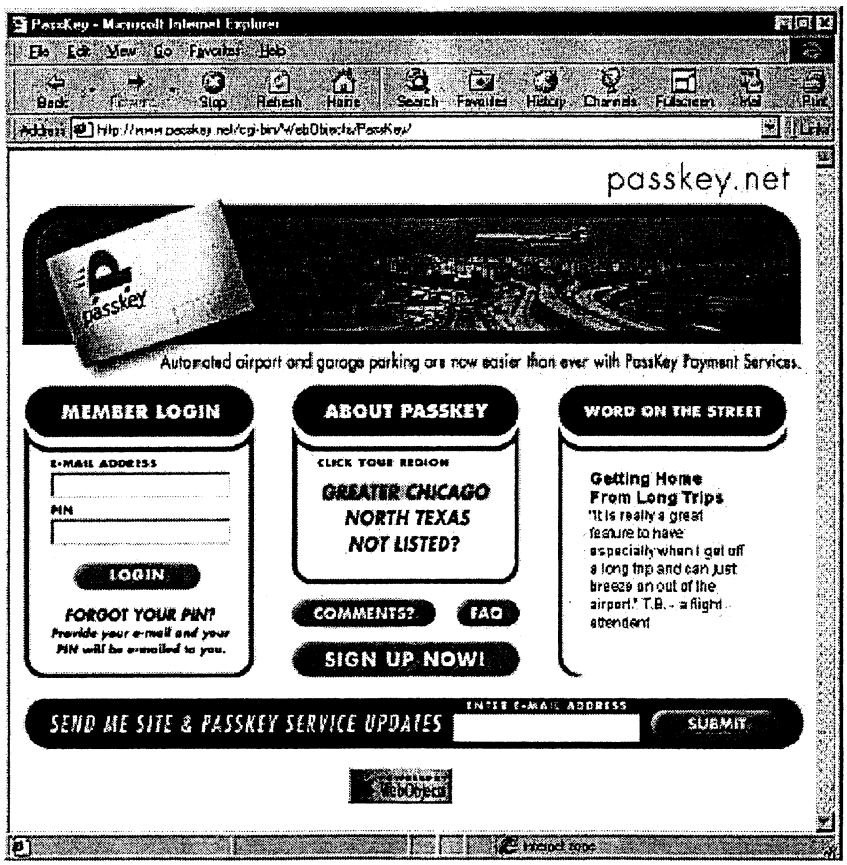
Patrons will be able to monitor their account balance in three ways: (1) contacting the CSC by phone during normal business hours, (2) using the VRS at any time, or (3) logging onto www.passkey.net. Secure access to account information via the VRS and web is by customer-supplied password only.

Online Customer Support

As an additional service in Amtech's Clearinghouse customer service center, Amtech offers its PassKey Web Services. At www.passkey.net, customers can perform account management functions in a secure online environment. Patrons can enjoy the immediacy and convenience of online account updates and information.

This web service operates in a secure environment based on web application server technology. The following features are available:

- **Sign Up** — provides a simple four-step process to complete and submit an application form.
- **PassKey Report** — allows PassKey-registered patrons to obtain account information.
- **Order More Tags** — a quick and efficient way to order more tags.
- **My Account Info** — provides up-to-date patron account information.
- **Update Account** — allows patrons to update their account information, such as new mailing address, license plate, credit card expiration date, phone number, or e-mail address.
- **Lost Tag** — report lost or stolen tags quickly.
- **Customer Service** — allows customers to communicate directly with PassKey staff to report problems or offer suggestions.
- **FAQs** — a list of frequently asked questions with answers.



Voice Response System

Amtech's Clearinghouse services also offer the latest in automated voice response systems. Our solution includes a highly sophisticated telephone system that uses an automated voice response system (VRS).

Automated call processing for the VRS uses software that offers a wide range of interactive information exchange capabilities, services, and solutions:

- ❑ Automatically answers all calls with a friendly voice
- ❑ Accesses patron account information with appropriate password
- ❑ Provides account information to authorized callers
- ❑ Switches to attended call support, if requested
- ❑ Provides information via fax for customer convenience and reduced waiting time
- ❑ English and Spanish prompts

Through the VRS, patrons can leave messages 24 hours a day for customer service action. The VRS is capable of handling large volumes of calls and provides convenient access to information. The VRS offers patrons a choice of English or Spanish menus.

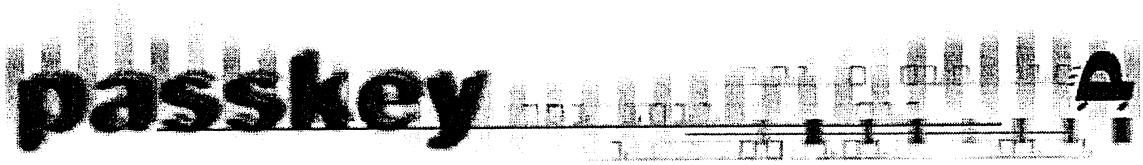
PASSKEY — MAKING YOUR CUSTOMERS HAPPY

Customers today expect and demand excellent customer service. With the PassKey Parking System installed in your facility, the operator can offer customers what they want — speed, convenience, and security.

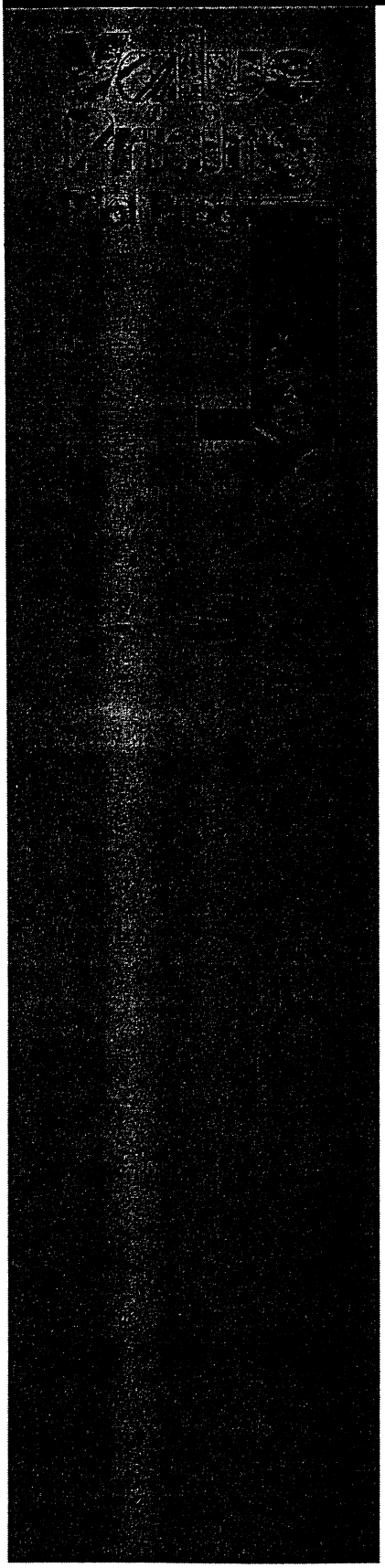
Imagine a PassKey-enhanced parking revenue collection system:

- ❑ Safety: No rolling down windows and increased personal security
- ❑ No money to handle
- ❑ No magnetic card to swipe
- ❑ No ticket to take
- ❑ No keypad to punch
- ❑ Protected from the weather
- ❑ Hands-free operation
- ❑ Convenient access for the disabled

For additional information on Amtech and our entire line of products and services, please visit our website at www.amtech.com.



Appendix G: FHWA Value Pricing Website information



Value Pricing Pilot Program

Notice of Grant Opportunities

The Federal Highway Administration (FHWA), has funds available to support the development, operation and evaluation of pilot tests of innovative road and parking pricing projects. Public agencies interested in implementing and evaluating certain innovative pricing programs are eligible to apply for grants under the Value Pricing Pilot Program authorized by Section 1216(a) of the Transportation Equity Act for the 21st Century (TEA-21). The program's intent is to demonstrate and evaluate road and parking pricing concepts that achieve significant and lasting reductions in highway congestion.

Congress has mandated this program as an experimental program to learn the potential of different value pricing approaches for reducing congestion. The grant program supports efforts by State and local governments or other public authorities to establish, monitor and evaluate value pricing projects, and to report on their effects. A pricing project under this program may include tolls on Interstate highways. Funds in the amount of $7 million in FY 1999 and $11 million per year for FY 2000 to FY 2003 are available to support costs of implementing up to 15 new State and local value pricing programs. Federal funds can be used to support pre-implementation costs, including costs of public participation and pre-project planning for up to 3 years, and to support project implementation costs for up to 3 years. The Federal share payable for such costs is 80 percent.

What Is Value Pricing?

Value pricing, also known as congestion pricing and peak-period pricing, is a way of harnessing the power of the market and reducing the waste associated with congestion. It entails fees or tolls for road use which vary with the level of congestion. Fees are typically assessed electronically to eliminate delays associated with manual toll collection facilities. This concept of assessing relatively higher prices for travel during peak periods is the same as that used in many other sectors of the economy to respond to peak-use demands. Airlines offer off-peak discounts and hotel rooms cost more during peak tourist seasons. Road-use charges that vary with the level of congestion provide incentives to shift some trips to off-peak times, less-congest-ed routes, or alternative modes, or to cause some lower-valued trips to be combined with other trips, or to be eliminated. A shift in a relatively small proportion of peak-period trips can lead to substantial reductions in overall congestion. And, while congestion charges create incentives for more efficient use of existing capacity, they also provide improved indicators of the potential need for future capacity expansion. They are also generating revenues that can be used to further enhance urban mobility.

Where Has It Been Implemented?

A number of value pricing projects have been launched in the United States over the past 3 years. The private sector led the way in 1995 by constructing new tolled express lanes in the median of State Route 91 in Orange County, California. Tolls vary by time of day and level of congestion to maintain an uncongested alternative along one of the most heavily-traveled commuter routes in the United States.Under the Value Pricing Pilot Program and its predecessor, the Congestion Pricing Pilot Program established by the Intermodal Surface Transportation Efficiency Act of 1991, value pricing projects have been launched in San Diego, California; Houston, Texas; and Lee County, Florida. The California and Texas projects involve tolling on High Occupancy Vehicle (HOV) lanes to make better use of available capacity.

Maximum Toll Schedule (as of 3/99)
I-15 Value Pricing Pilot Project
San Diego, California

Maximum Toll	Morning Period (Southbound)							
$4.00								
$3.00								
$2.50								
$2.00			X			X		
$1.50								
$1.00		X					X	
$ .75	X							X
$ .50								
	5:45-6:00	6:00-6:30	6:30-7:00	7:00-7:30	7:30-8:00	8:00-8:30	8:30-9:00	9:00-9:15

Maximum Toll	Evening Period (Northbound)							
$4.00								
$3.00								
$2.50								
$2.00		X	X			X		
$1.50								
$1.00							X	
$ .75	X							X
$ .50								
	3:00-3:30	3:30-4:00	4:00-4:30	4:30-5:00	5:00-5:30	5:30-6:00	6:00-6:30	6:30-7:00

In San Diego, California, drivers of single occupant vehicles are allowed to use the HOV lanes on Interstate 15 by paying a toll that varies directly with the level of congestion. In Houston, Texas, drivers of vehicles with two occupants can pay a fixed toll during rush hour to use an HOV lane on Interstate 10 that is otherwise restricted to vehicles with three or more occupants. The project in Lee County, Florida involves the use of peak and off-peak toll variations to provide an incentive to shift travel out of the most heavily traveled time. A number of additional cities across the United States are evaluating the feasibility of value pricing to improve traffic flows and to enhance mobility. Several of these are expected to move toward implementation in the near future. Internationally, pricing projects have been implemented recently on a new beltway in Toronto, Canada, in three cities in Norway, on intercity toll roads in France and in the central area of Singapore. Numerous cities in the European Community (the Netherlands, United Kingdom, Sweden and Greece) as well as Hong Kong are currently conducting feasibility and implementation studies and field tests of pricing concepts.

Why Is Value Pricing of Interest?

Travel time savings due to reduced congestion and anticipated environmental benefits have been major attractions of recently opened value pricing projects. Other potential benefits include:

- Reduced frustration and delay
- Increased travel choices
- More efficient modal choices
- Revenue generation
- Increased economic productivity
- Improved highway investment decisions

What Kind of Pricing Applications are Eligible for Support?

FHWA is seeking proposals to implement value pricing programs designed to reduce highway congestion through the use of variable tolls on roads, although related market-based approaches to congestion relief, such as parking pricing, will also be considered if they incorporate significant price variations by time, location, and/or congestion level. Projects of interest include:

AREAWIDE VALUE PRICING

- Fees for entering an area, sometimes called cordon crossing charges, using electronic vehicle identification devices;
- Charges for traveling on a network of metered routes within a defined area;
- Areawide parking charges with variable fees targeted toward congestion reduction, or areawide parking cash-out programs which provide employees the option of trading in employer-provided parking spaces for cash.

VALUE PRICING ON A SINGLE HIGHWAY FACILITY, ROUTE OR CORRIDOR

- Pricing of key traffic bottlenecks, single traffic corridors, or single highway facilities, including bridges and tunnels;
- Conversion of fees on existing toll facilities from fixed to variable structures, such as use of peak surcharges combined with off-peak discounts.

VALUE PRICING ON SINGLE OR MULTIPLE HIGHWAY LANES

- Charges for the use of newly constructed or existing highway lanes during peak-traffic periods, including fees that allow entry to High Occupancy Vehicle lanes by vehicles not meeting prescribed occupancy requirements.

PRE-PROJECT STUDIES AND MARKET TESTS

- Pilot Program funds may be used to assist State and local governments in carrying out pre-project study activities designed to lead to the implementation of a value pricing project. The intent of the pre-project study phase of the Pilot Program is to support efforts to identify and evaluate value pricing project alternatives and to prepare the necessary groundwork for possible future implementation.
- In certain situations, Pilot Program funds may also be used to implement and evaluate small scale market tests with voluntary participants designed to demonstrate a new pricing technology or to generate information about user responses to value pricing.

INNOVATIVE PILOT TESTS

- Potential Pilot Program participants are encouraged to develop new and innovative pricing approaches for incorporation into the program, including use of innovative electronic tolling technologies, satellite-based vehicle identification technologies, incorporation of smog fees into

"CONGESTION PRICING HAS GREAT PROMISE: IT COULD REDUCE CONGESTION SIGNIFICANTLY WHILE HELPING TO MEET AIR QUALITY AND ENERGY CONSERVATION GOALS. MORE OVER, BY RELYING ON A MARKET MECHANISM, IT WOULD ACCOMPLISH THESE ENDS WHILE PROVIDING NET BENEFITS TO SOCIETY."

Curbing Gridlock,
National Research Council,
Special Report 242, 1994.

variable road pricing strategies, or use of auction techniques for allocating entry permits, or determining price levels.

What Activities Can Be Carried Out with the FHWA Funds?

Funds available for the Pilot Program can be used to support pre-project study activities and to pay for implementation costs of value pricing projects. Costs eligible for reimbursement, under Section 1216(a) of TEA-21, include costs of planning, setting up, managing, operating, monitoring, evaluating, and reporting on local value pricing pilot projects. Examples of specific costs eligible for reimbursement include the following:

PRE-PROJECT STUDY COSTS

- Impact assessment
- Modeling
- Development of monitoring/evaluation plans
- Public participation
- Market research
- Financial planning

IMPLEMENTATION COSTS

- Costs associated with the implementation of a value pricing project such as implementation of electronic tolling equipment, enforcement costs, costs of monitoring and evaluation and public participation.
- Costs of providing new or expanded transportation alternatives.
- Depending on the availability of funds, limited funds may be available to serve as a revenue reserve fund to provide assurance to toll authorities that a pilot test of value pricing would not jeopardize their bond covenants.

How to Apply

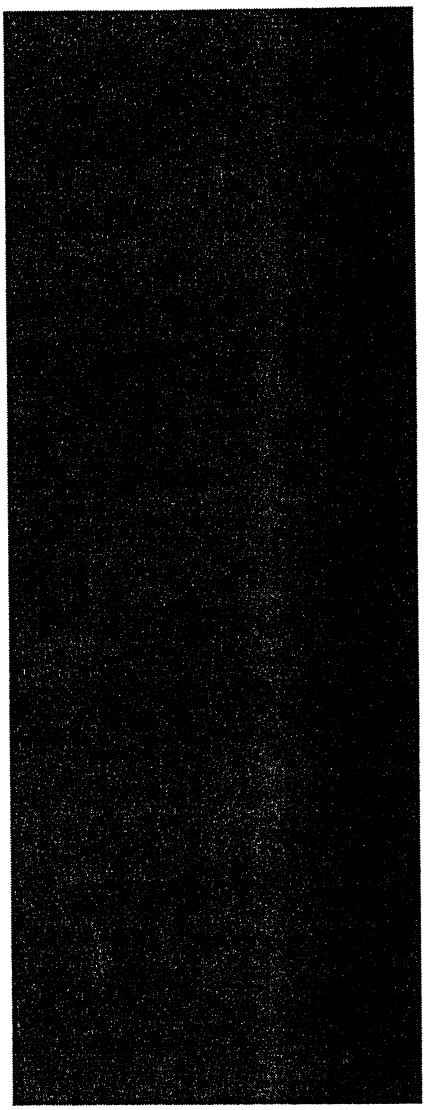
Any State, local government, or other public authority may apply for these FHWA grants. Coordination of the proposals with the relevant Metropolitan Planning Organization (MPO) and the State Department of Transportation (DOT) is required.

Prior to submitting a formal application for pro-gram participation, potential applicants should contact their State FHWA Division Office and/or the FHWA Value Pricing Team in the Office of Transportation Policy Studies to discuss their interest in the Pilot Program and the general nature of the proposed local value pricing pilot program or pre-project study. The FHWA will then be able to provide materials and technical support to assist in the development of the application. Following this initial contact, a sketch plan for the proposed pricing program will be requested before a full proposal is developed. Further detail on what should be included in the sketch plan is contained in the Federal Register notice of October 5, 1998.

Proposals with the greatest potential to reduce congestion and advance current knowledge of price effects, operations, enforcement, revenue generation, equity mitigation and monitoring/evaluation mechanisms will be given the highest priority. The FHWA is also interested in expanding the value pricing strategies implemented. Thus, priority will be also given to promising but untried technological, operational and institutional innovations. Projects with strong evaluation programs, significant commitment by implementing organizations and evidence of stakeholder support are encouraged.

What Technical Resources are Available?

- Federal Register notice of October 5, 1998 [(Volume 63, Number 192),



pages 53487-53491], provides a summary of the TEA-21Value Pricing Pilot Program and establishes broad criteria for participation.

- The activities under the ISTEA Congestion Pricing Pilot Program are summarized in the FHWA's Report to Congress on the progress and accomplishments of the congestion pricing pilot program, entitled, Reducing Traffic Congestion: Using Market Prices to Enhance Mobility, July 1998.
- Pricing project planning guidelines are summarized in an FHWA report, Congestion Pricing: Guidelines for Project Development, Revised Interim Report, FHWA, August 1996.

Where Can Additional Information be Obtained?

Additional information can be obtained from the value pricing homepage at http://www.hhh.umn.edu/centers/slp/conpric/conpric.htm. This homepage is being operated for the Federal Highway Administration by the University of Minnesota's State and Local Policy Program.

More general information about value pricing and the Value Pricing Pilot Program can be obtained from either of the following offices:

POLICY ISSUES

Office of Transportation Policy Studies, HPTS
Federal Highway Administration
Washington, D.C. 20590
Tel: (202) 366-0570

OPERATIONAL ISSUES

Office of Travel Management, HOTM
Federal Highway Administration
Washington, D.C. 20590
Tel: (202) 366-6726

This is an electronic version of
Publication No. FHWA-PL-99-014
HPTS/3-99(5M)E

Related Information:

- FHWA Discretionary Programs: Value Pricing Pilot Program Information
- Financing Federal-Aid Highways, 1999
- A Guide To Federal-Aid Programs And Projects, May 1999
- Highways and the New Wave of Economic Growth
- Office of Policy: Value Pricing Pilot Program Information
- TEA-21
- TEA-21 Value Pricing Fact Sheet

This page last modified on March 20, 2000

FHWA Discretionary Programs

VALUE PRICING PILOT PROGRAM

PROGRAM INFORMATION

BACKGROUND:

This program replaces the Congestion Pricing Pilot Program that was authorized by the Intermodal Surface Transportation Efficiency Act of 1991. Section 1216(a) of the Transportation Equity Act for the 21st Century (TEA-21, Public Law 105-178) authorizes the Secretary of Transportation (the Secretary) to create a Value Pricing Pilot Program by entering into cooperative agreements with up to fifteen State or local governments or other public authorities, to establish, maintain, and monitor local value pricing pilot programs.

TEA-21 amends ISTEA Pub L. 102-240, 105 Stat. 1914, by providing that any value pricing project included under these local programs may involve the use of tolls on the Interstate system. This is an exception to the general provisions concerning tolls on the Interstate system as contained in 23 U.S.C. 129 and 301. Section 1216 (a)(5) of TEA-21 amends section 1012(b) of ISTEA by adding subsection (6) which provides that a State may permit vehicles with fewer than two occupants to operate in high occupancy vehicle (HOV) lanes if the vehicles are part of a local value pricing pilot program under this section. This is an exception to the general provision contained in 23 U.S.C. 102, that no fewer than two occupants per vehicle be allowed on HOV lanes. The Secretary is to report to Congress every two years on the effects of local value pricing pilot programs. TEA-21 continues the program through FY 2003.

The Congress has mandated this program as an experimental program aimed at learning the potential of different value pricing approaches for reducing congestion. Value pricing, also known as congestion pricing or peak-period pricing, entails fees or tolls for road use which vary by level of congestion. Fees are typically assessed electronically to eliminate delays associated with manual toll collection facilities. This concept of assessing relatively higher prices for travel during peak periods is the same as that used in many other sectors of the economy to respond to peak-use demands. Airlines offer off-peak discounts and hotel rooms cost more during peak tourist seasons. Road-use charges that vary with the level of congestion provide incentives to shift some trips to off-peak times, less-congested routes, or alternative modes, or to cause some lower-valued trips to be combined with other trips, or eliminated. A shift in a relatively small proportion of peak-period trips can lead to substantial reductions in overall congestion. And, while congestion charges create incentives for more efficient use of existing capacity, they also provide improved indicators of the potential need for future capacity expansion. They are also generating revenues that can be used to further enhance urban mobility.

STATUTORY REFERENCES:

23 U.S.C. 129 & 301; ISTEA Pub.L. 102-240, 105 Stat 1914, Section 1012 (b) TEA-21 Section 1216(a)(4&5)

FUNDING:

Fiscal Year	1999	2000	2001	2002	2003
Authorization	$ 7 M	$11 M	$11 M	$11 M	$11 M

TEA-21 provides a total of $51 million for Fiscal Years 1999-2003 for the Value Pricing Pilot Program. Of this amount $7 million is authorized for FY 1999 and $11 million is authorized for each of fiscal years 2000 through 2003. Funds allocated by the Secretary to a State under this section shall remain available for obligation by the State for a period of three years after the last day of the fiscal year for which funds are authorized. If, on September 30 of any year, the amount of funds made available for the Pilot Program, but not allocated, exceeds $8 million, the excess amount will be apportioned to all States for purposes of the Surface Transportation Program. Funds available for the Pilot Program can be used to support pre-project study activities and to pay for implementation costs of value pricing projects.

FEDERAL SHARE:

The Federal share of the costs for any project eligible under this program is 80 percent.

OBLIGATION LIMITATION:

The Value Pricing Pilot Program funds are subject to obligation limitation. The obligation limitation reduces the available funding for the program under the provisions of TEA-21 Section 1216 (a).

ELIGIBILITY:

Qualified applicants include local, regional and State government agencies, as well as public tolling authorities. Although project agreements must be with public authorities, a local value pricing program partnership may also include private tolling sponsors and authorities.

Funds may be used to support pre-project study activities and to pay for implementation costs of value pricing projects. Costs eligible for reimbursement under section 1216(a) of TEA-21 includecosts of planning, setting up, managing, operating, monitoring, evaluating, and reporting on local value pricing pilot projects. Examples of specific costs eligible for reimbursement include the following:

1. Pre-Project Study Costs--All costs of pre-project study activities, including costs of pre-project planning, public participation, consensus building, marketing research, impact assessment, modeling, financial planning, technology assessments and specifications, and other work necessary for defining value pricing projects for implementation, and doing necessary design work to bring projects to the point where they can be implemented. Costs of pre-project study activities cannot be reimbursed for longer than three years.

2. Implementation Costs--Implementation costs are costs necessary for implementation of specific value pricing projects identified during the pre-project study phase of the program, including costs for setting up, managing, operating, evaluating, and reporting on a value pricing project.

Project implementation costs can be supported for a period of at least one year, and thereafter until such time that sufficient revenues are being generated by the project to fund its implementation costs without Federal support, except that implementation costs for a pilot project cannot be reimbursed for longer than three years. Each implementation project included in a local value pricing pilot program will be considered separately for this purpose. Funds may not be used to pay for activities conducted prior to approval of Pilot Program participation. Funds may not be used to construct new highway through lanes, bridges, etc., even if those facilities are to be priced, but toll ramps or minor pavement additions needed to facilitate toll collection or enforcement are eligible.

Complementary actions, such as, construction of HOV lanes, implementation of traffic control systems, or transit projects can be funded through other highway and transit programs eligible under TEA-21. Those interested in participating in the Pilot Program are encouraged to explore opportunities for combining funds from these other programs with Pilot Program funds.

Revenues generated by a pilot project must be applied first to pay for pilot project implementation costs as defined above. Any project revenues in excess of pilot project implementation expenses, may be used for any programs eligible under Title 23, U.S.C. Uses of revenue are encouraged which will support the goals of the value pricing program, particularly uses designed to provide benefits to those traveling in the corridor where the project is being implemented.

Eligible Project Types

FHWA is seeking proposals to implement value pricing programs designed to reduce road congestion through the use of variable tolls on roads, although related market-based approaches to congestion relief, such as parking pricing, will also be considered if they incorporatesignificant price variations by time, location, and/or level of congestion. Projects of interest include:

Areawide Value Pricing

- Fees for entering an area, sometimes called cordon crossing charges, using electronic vehicle identification devices;
- Charges for traveling on a network of metered routes within a defined area;
- Areawide parking charges with variable fees targeted toward congestion reduction, or areawide parking "cash-out" programs which provide employees the option of trading in employer-provided parking spaces for cash.

Value Pricing on a Single Highway Facility, Route or Corridor

- Pricing of key traffic bottlenecks, single traffic corridors, or single highway facilities, including bridges and tunnels;
- Conversion of fees on existing toll facilities from fixed to variable structures, such as use of peak surcharges combined with off-peak discounts.

Value Pricing on Single or Multiple Highway Lanes

- Charges for the use of newly-constructed or existing highway lanes during peak-traffic periods, including fees that allow entry to High Occupancy Vehicle lanes by vehicles not meeting prescribed

occupancy requirements.

Pre-project Studies and Experiments

- Pilot Program funds may be used to assist State and local governments in carrying out pre-project study activities designed to lead to implementation of a value pricing project.

- In certain situations, Pilot Program funds may also be used to implement and evaluate small scale experimental projects with voluntary participants designed to demonstrate a new pricing technology or to generate information about user responses to value pricing

Innovative Pilot Tests

- Potential Pilot Program participants are encouraged to develop new and innovative pricing approaches for incorporation into the program, including use of innovative electronic tolling technologies, satellite-based vehicle identification technologies, incorporation of smog fees into variable road pricing strategies, or use of various forms of auction techniques for allocating entry permits, or determining price levels.

SELECTION CRITERIA:

Proposals with greatest potential to reduce congestion and advance current knowledge of price effects, operations, enforcement, revenue generation, equity mitigation and monitoring/evaluation mechanisms will be given the highest priority. FHWA also is interested in expanding the types of value pricing strategies implemented. Thus, priority will be given to promising but untried innovations, including technical, technological, operational and institutional. Projects with strong evaluation programs, significant commitment by implementing organizations and evidence of stakeholder support are encouraged.

SOLICITATION PROCEDURE:

FHWA has an open solicitation process for the Value Pricing Program as announced in an October 5, 1998 Federal Register notice. Applications for participation will be considered as they are received until all 15 allowable cooperative agreements have been executed and/or until available program funds have been exhausted.

Any State or local government, or other public authority, may submit an application for these FHWA grants. Coordination of the proposals with the relevant MPO and the State DOT is required. Applications should be submitted through the State DOT to the appropriate FHWA Division Administrator who will forward proposals to the FHWA's Director, Office of Transportation Policy Studies (HPTS) . HPTS will coordinate the review of the proposals by the Federal Interagency Review Group. The Federal Interagency Review Group includes representatives from the Department of Transportation modal offices as well as from the Environmental Protection Agency. The Federal Interagency Review Group will submit its recommendations to HPTS and the Office of Travel Management for action. The FHWA will notify applicants of the review group's recommendations.

SUBMISSION REQUIREMENTS:

There is a two-step process for submission of applications for participation in the Value Pricing Pilot Program including the development of a sketch plan and a detailed proposal . Prior to submitting a formal application for program participation, potential applicants should contact their State FHWA Division Office and/or the FHWA Value Pricing Team in HPTS to discuss their interest in the Pilot Program and the general nature of the proposed local value pricing pilot program pre-project study. The FHWA will then be able to provide materials and technical support to assist in the development of the application. Following this initial contact, a sketch plan for the proposed pricing program will be requested before a full proposal is developed.

The expected content of the sketch plan and detailed proposal follow:

Sketch Plan

The first step includes the development of a sketch plan for the proposed value pricing pilot project. The sketch plan should, at a minimum, provide a brief description of the following:

1. Congestion problem to be addressed.

2. Nature of proposed or potential pricing projects to respond to that problem, including overall project goals, potential facilities to be included, time line for study and possible implementation of value pricing projects.

3. Parties proposed as being signatories to the cooperative agreement with the FHWA (as a minimum, the local Metropolitan Planning Organization (MPO), and the owner/operator of the facility or facilities to be priced, must endorse or express support for the program). Indications of support from affected parties, including representatives of business, labor, industry, transportation users, and/or local residents, or plans for obtaining such support should be included.

4. Extent of public participation in the development of the proposal, or of plans for future public participation activities. Potential equity consequences of any proposed projects should be portrayed in general terms, and if adverse impacts are anticipated, preliminary plans for responding to such problems should be identified.

5. Legal and administrative authority needed to carry out a value pricing project, extent to which these have been obtained, and further steps needed to obtain necessary authority.

6. Plans for pre-project study, or findings from pre-project studies that have already been completed.

Detailed Proposal

The second step of the application process includes the development of a detailed proposal. The detailed proposal is developed subsequent to review and approval by the Federal Interagency Review Group of the initial sketch plan. A detail proposal should include:

1. Detailed description of the congestion problem being addressed (current and projected);

2. Detailed description of the proposed pricing program and its goals, including description of facilities included, expected pricing schedules, technology to be used, enforcement programs, and so on;

3. Preliminary estimates of the social and economic effects of the pricing program, including potential equity impacts, and a plan or methodology for further refining these estimates for all pricing project(s) included in the program;

4. The role of alternative transportation modes in the project, and anticipated enhancements proposed to be included in the pricing program.

5. A time line for the pre-project study and implementation phases of the project (proposals indicating early implementation of pricing projects that will allow evaluation during the life of TEA-21 will receive priority);

6. A description of tasks to be carried out as part of each phase of the project, and an estimate of costs associated with each;

7. Plans for monitoring and evaluating value pricing projects, including plans for data collection and analysis, before and after assessment, and plans for long term monitoring and documenting of project effects;

8. A detailed finance and revenue plan, including a budget for capital and operating costs; a description of all funding sources, planned expenditures, proposed uses of revenues, and a plan for projects to become financially self-sustaining (without Federal support) within three years of implementation.

9. Plans for involving key affected parties, coalition building, media relations, etc., including either demonstration of previous public involvement in the development of the proposed pricing program, or plans to ensure adequate public involvement prior to implementation;

10. Plans for meeting all Federal, State and local legal and administrative requirements for project implementation, including necessary Federal-aid planning and environmental requirements. Priority will be given to proposals where projects are included as a part of (or are consistent with) a broad program addressing congestion, mobility, air quality and energyconservation, where an area has congestion management systems (CMS) for Transportation Management Areas (urbanized areas over 200,000 population or those designated by the Secretary) and the congestion mitigation and air quality (CMAQ) program.

STATE TRANSPORTATION AGENCY RESPONSIBILITIES:

1. Coordinate with State, local, and Federal agencies within the State to develop viable proposed projects.

2. Ensure that the applications for candidate projects meet the submission requirements outlined above.

3. Establish priorities for their proposed projects if desired.

4. Submit the applications to the local FHWA division office.

FHWA DIVISION OFFICE RESPONSIBILITIES:

1. Provide general program information to the State transportation agency.

2. Review all candidate applications submitted by the State prior to sending them to FHWA Headquarters to

ensure that they are complete and meet the submission requirements.

3. Submit the candidate applications to FHWA Headquarters.
4. Work with FHWA Headquarters to develop cooperative agreements with State/local agency.
5. Monitor project activities and evaluation efforts of approved projects.

FHWA HEADQUARTERS PROGRAM OFFICE RESPONSIBILITIES:

1. Develop Federal Register notice and draft program policy and operational documents.
2. Provide technical and policy guidance to potential and current participants in the Value Pricing Pilot Program.
3. Coordinate Federal Interagency Review Group comments and recommendations for approval of value pricing applications.
4. Review candidate project submissions and compile program and project information for biennial report to Congress.
5. Make awards and allocate funds for the selected projects.
6. Work with Division office to develop cooperative agreements for approved projects.
7. Monitor project activities and evaluation efforts.

FHWA HEADQUARTERS PROGRAM OFFICE CONTACT:

Policy issues

Office of Transportation Policy Studies, HPTS
Federal Highway Administration
Washington, D.C. 20590
Tel: (202) 366-0570

Operational issues

Office of Travel Management, HOTM
Federal Highway Administration
Washington, D.C. 20590
Tel: (202) 366-6726

Web Site Information:

http://www.hhh.umn.edu/centers/slp/conpric/conpric.htm. This website is being operated for the Federal Highway Administration by the University of Minnesota's State and Local Policy Program.

Sample Talking Points Briefing for Secretary

NOTE: These talking points will be used by the Office of the Secretary in making congressional notification contacts. Since some of the recipients of the calls may not be closely familiar with the highway program, layman's language should be used to the extent possible. Information contained in the talking points may be used by a member of Congress in issuing a press release announcing the discretionary allocation.

Value Pricing Pilot Program Discretionary Funds

APPLICANT: < *List full name of State Transportation Agency* >

PROJECT: < *short name/description of project*>

This project provides for the study/implementation of value pricing strategies on _._ miles of the _____ in_____ County in _____State.

FHWA FUNDS: $xx,xxx,xxx. <*requested funds*>

Specify other source of funds (for ex: State, local, transit, etc, if any, to supplement Federal funds.

- This project will study/implement value pricing strategies to alleviate congestion and better utilize existing capacity on the _____.
- The project is scheduled for completion in *<month/year>*.
- Value pricing, also known as congestion pricing or peak-period pricing, combines new toll technologies with marketplace economics to fight congestion.
- Using electronic toll collection technology to vary tolls by time of day and location of travel, tolls are set high at peak travel periods to help reduce congestion and improve mobility by providing incentives for consolidating trips, shifting some trips to off-peak times or less congested routes, or using other modes like carpools and transit.
- Eleven value pricing projects have been started in recent years under an FHWA pilot program, with three operating projects, a comprehensive study of a private sector project, and seven feasibility studies.
- Market pricing in transportation allows better use of existing highway capacity and reduces the need for new capacity. The concept is the same as that used in other sectors of the economy to respond to peak-use demands. Hotels cost more during peak tourist seasons, telephone rates are higher during the day than on evenings or weekends, airlines offer off-peak discounts, and even movie theaters offer bargain matinees.
- TEA-21 authorized 15 new value pricing projects and provided $7 million in 1999 and $11 million annually from 2000 to 2003 to support the program. All these projects can involve tolls on Interstate highways as part of a value pricing program.

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