



EXECUTIVE SUMMARY
State Road and Tollway Authority
Georgia 400 Variable Pricing
Feasibility Study



FEBRUARY 2010

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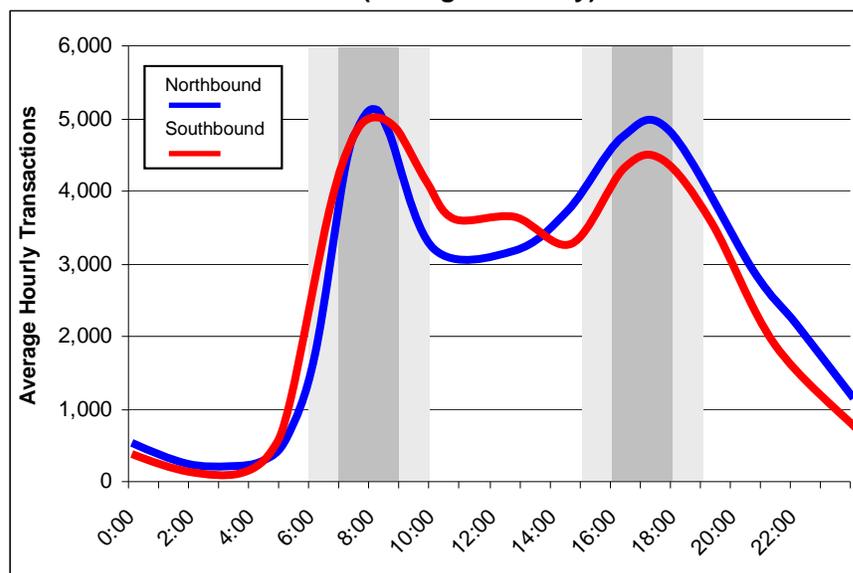
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EXECUTIVE SUMMARY

The Value Pricing Pilot Program is a U.S. Department of Transportation Federal Highway Administration-funded program for the evaluation and implementation of variable pricing projects throughout the nation. SRTA is proud to be one of 15 recipients of FHWA VPPP funds. All aspects of the Variable Pricing Feasibility Study were funded through an FHWA grant. No toll revenues or operating funds were used in the conduct of this study. The Georgia 400 Variable Pricing Facility Study was conducted between January of 2007 and June of 2009 by principal consultant Wilbur Smith Associates, in conjunction with PBS&J, GeoStats, and Sycamore Consulting. The purpose of this study is to determine the potential benefits and challenges of the institution of variable pricing on GA 400 and to provide the State Road and Toll Authority and its planning partners with the tools necessary to make informed decisions regarding the future of mobility in this corridor.

A comprehensive study of existing conditions was undertaken to understand both the need for and the potential impacts of variable pricing. This helped establish the baseline conditions that would be targeted, such as which hours were experiencing capacity shortfalls, and which hours had additional capacity available (see Figure ES-1).

Figure ES -1
Total Hourly Transactions
(average weekday)



Extensive field studies were performed covering everything from traffic volumes to transaction times at the plaza, by method of payment. All of this data was used to verify the various models that went into the development of the Variable Pricing Feasibility Study Findings.

WHY VARIABLE PRICING?

The Georgia 400 toll facility carries approximately 112,000 vehicles per day and provides a critical link between the northern portion of the Atlanta Bypass (I-285) and I-85. As greater Atlanta's transportation needs grow, so do the demands on GA 400. It is vital to regional mobility to ensure that the facility continues to offer travelers a fast, direct route to their destination today and well into the future.

While variable pricing has many definitions and means of implementation, the goal is the same: to use pricing as a tool to manage motorist behavior and overall demand. In the case of the GA 400 toll facility, efforts are focused on eliminating congestion at peak periods of the day, due to overall demand, as well as ensuring that the plaza has the ability to efficiently process toll customers. While this can be achieved through the physical addition of travel lanes or toll collection infrastructure, such an undertaking would be prohibitively expensive and does not address the region's long-term transportation needs.

The Variable Pricing Feasibility Study seeks to address congestion and the overall quality of service provided to the Atlanta region by:

- Encouraging increased participation in the SRTA "Cruise Card" electronic toll collection program, thereby increasing efficiency of operations at the toll plaza and reducing any congestion or delays
- Encouraging travel in off-peak hours and making use of capacity currently available during less busy times of the day
- Improving localized and regional air quality through the lessening of congestion

WHAT WAS STUDIED?

The five scenarios identified in ES-1 were specifically developed to address each of these strategies through variable pricing, both independently and in combination with one another. The goal of value pricing is not to increase revenues. Rates were specifically selected to achieve the above goals while remaining as close to the current tolls as possible. In each scenario, toll road patrons are offered the opportunity to continue to use the road at the current base rate of \$0.50 per transaction.

Table ES-1
Summary of Pricing Scenarios

Scenario Number	Scenario Name	Cash ⁽¹⁾	Cruise Card	
			Off-Peak	Peak ⁽²⁾
1	No-build (base-case)	\$0.50	\$0.50	\$0.50
2	Detoll	0.00	0.00	0.00
3	Cruise Card Discount	0.75	0.50	0.50
4	Time of Day Discount	0.75	0.50	0.75
5	Combined Cruise Card and Time of Day Discount	1.00	0.50	0.75

(1) Cash customers are not eligible for time-of-day pricing discounts
(2) Peak hours are between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM

Peak traffic was found to occur from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. in both directions. Time of day pricing scenarios were developed to shift traffic from these congested periods to the hour before and the hour after the peak, referred to as the “shoulder” hours. A study of baseline conditions also found a relatively low usage of Cruise Card electronic toll collection (ETC) and additional capacity in the dedicated Cruise Card lanes. Scenarios were developed to take advantage of the speed of the ETC transaction and the available capacity.

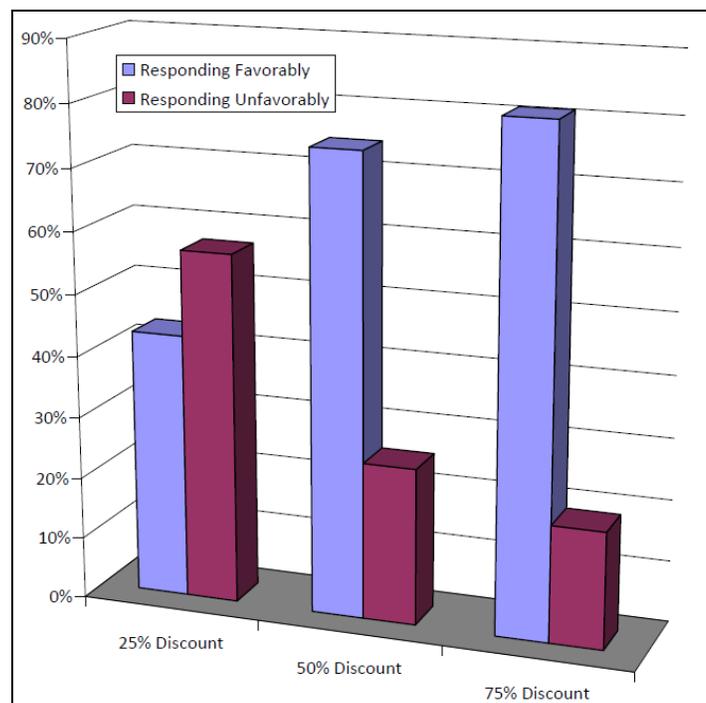
USER SURVEYS

User surveys were developed to gauge the GA 400 patrons’ willingness to shift time periods and payment types at various levels of discount. Since the overall objective of this study is to shift facility patrons to different methods of payment and travel times, the data gathered at this stage is central to the rest of the study. The surveys also collected extensive data on the respondents’ travel habits including trip frequency, purpose, origin, destination, and more. Approximately 42,000 surveys were distributed and 7.4 percent were returned. From these surveys two key inputs to the study

were developed. With respect to the willingness to shift to Cruise Card, 43.1 percent of cash customers surveyed indicated that they would be likely to get a Cruise Card if there was a \$10 enrollment fee and a 25 percent toll discount.

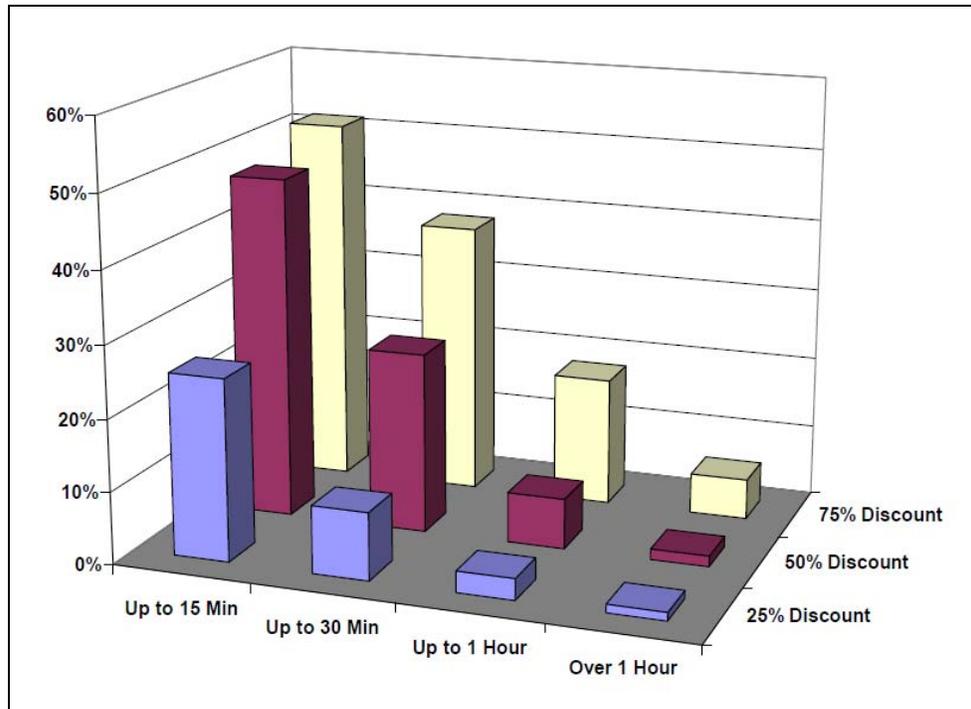
With larger discounts, that willingness to shift to ETC increased to a maximum of 80.1 percent of those surveyed responding favorably to a 75 percent discount. A shift of even 10 percent of existing cash customers to ETC payment can significantly alter the operation profile of the plaza.

Figure ES-2
Willingness of GA 400 Cash Users
to Switch to Cruise Card



Responses regarding willingness to shift travel times were also developed from the returned surveys and are illustrated in Figure ES-3. While the ability of most individuals to change their schedule is limited, shifts of up to 15 minutes were viewed favorably by up to 47.6 percent of survey respondents. Larger discounts carried a greater willingness to shift, while larger time shifts became less likely at all discount rates.

Figure ES-3
Willingness of GA 400 Users
to Shift Travel Time



AIR QUALITY ANALYSIS

Each of the five pricing scenarios tested has an impact on travel patterns and characteristics both on the GA 400 toll facility as well as the region at large. The air quality analysis employs a methodology consistent with regional conformity determination procedures and emission factors from ARC's Envision 6 Regional Plan Update and was conducted at the plaza level (Hot Spot Analysis) and the regional level. Based on the Hot Spot analysis, all scenarios except for Scenario 2, the detoll scenario, would result in a decrease in carbon (CO) concentrations at the plaza from current conditions in comparison to the base case. On a regional basis, only Scenario 2 has a substantial impact. Due to the removal of the toll and the corresponding increase in total vehicle miles traveled, there is an increase from the base case in volatile organic compounds (VOC) of approximately 1.5 daily tons. There is a corresponding increase in nitrogen-based pollutants (NO_x) and particulate matter (PM_{2.5}) as well. Scenarios 3, 4 and 5 each have a very small impact on VOC, NO_x, and PM_{2.5} ranging from the slightly negative to the slightly positive. Complete results at 2010 and 2020 levels under varying plaza

configurations for all five scenarios can be found in the study documentation.

USER AND EQUITY ANALYSIS

The GA 400 toll facility attracts trips from all over the Greater Metro Atlanta area representing disparate populations, each with unique demographic and social attributes. The user and equity analysis undertaken as part of this study identifies demographic profile of current users and separates them into Cruise Card and cash-paying customers. It is important to note that user composition and equity is primarily a function of the geographic distribution of jobs and populations. The equity analysis concludes:

- The tollway provides access to higher-income employment centers in the region as evidenced by the higher average income demographic of the tollway users
- Households with a lower average income are more likely to use the cash option
- Minority populations are more likely to use the cash option
- Lower participation rates by some populations are likely related to the geospatial variability of employment centers in the region

The equity analysis does not provide an analysis of each of the five scenarios. Rather, the purpose of this study is to provide the information needed for decision makers to determine if any individual group or groups of people are disproportional affected by the various pricing structures. If necessary, equity issues can be mitigated in the ultimate formulation any pricing policy that may be adopted.

FINDINGS

Ultimately, the purpose of this study is to develop strategies for reducing congestion and improving mobility, both in the present and as the Atlanta region's transportation needs grow. The traffic and toll revenue impacts, plaza operational impacts, air quality impacts, and equity issues can all be found in the full study documentation available at the study web site or by contacting SRTA. Scenarios 3, 4, and 5 all have net positive revenue impacts which could be used to help offset the cost of implementation and operations. Scenarios 3, 4, and 5 allow operations to continue at or better than current levels through 2020. The findings regarding reduction of congestion at the toll plaza are as follows:

SCENARIO 1 - BASE CASE

Under the base-case forecast, traffic volumes are expected to increase on GA 400 by approximately 0.4 percent per year between the assumed implementation year of 2010 and 2020. Regional growth is greater, but two factors serve to diminish demand on the facility. First, traffic growth is high enough that conditions on the facility degrade substantially during peak hours, making the toll facility less desirable. At the same time, improvements to competing facilities keep growth on GA 400 relatively low.

SCENARIO 2 - DETOLL

The purpose of this scenario was to illustrate the degradation in the level of service that would occur on the toll facility, the potential impacts on regional traffic characteristics, and the resulting air quality impacts if tolls were removed. Under this scenario, total daily volume increases by 18.2 percent, dramatically reducing travel speeds to as low as 16 miles per hour and adding as much as 9 minutes to travel between I-85 and I-285 via GA 400. Local and arterial roads do improve slightly from the increased volume using GA 400, but this is minor in comparison to the degradation in service on the toll facility.

SCENARIO 3 – CRUISE CARD DISCOUNT

Under this scenario, total volume is reduced from the base case by less than 1.0 percent due to the increase in the cash toll. However, the corresponding increase in ETC transactions greatly reduces the transaction time at the plaza and eliminates queuing for cash customers. As a result, the toll plaza's overall capacity is effectively increased along with the level of service for all users. Under this scenario, one cash lane in each direction would need to be converted to a dedicated Cruise Card lane.

Revenues are increased by 14.9 percent and could be used to offset the cost of implementation and operations.

SCENARIO 4 - TIME-OF-DAY DISCOUNT

By offering a discounted toll rate to ETC patrons in all but the peak hours of operation, this scenario aims to encourage travel at less congested times of day. As illustrated in the Figure ES-4, Scenario 4 achieves this by increasing traffic in the shoulder hours and reducing traffic in the peak hours. In 2010, AM peak volumes are reduced by 5.3 percent with PM peak traffic reduced by 5.5 percent. With both peaks now spread over eight hours instead of being concentrated into a four-hour period, service at the plaza is improved as delays decrease and queues dissipate more rapidly. This scenario also requires the conversion of one cash lane in each direction to a dedicated ETC lane. Revenues are increased by 24.6 percent and could be used to offset the cost of implementation and operations.

SCENARIO 5 - COMBINED CRUISE CARD/TIME-OF-DAY DISCOUNT

This scenario offers the largest conversion of users to ETC payment, the greatest reduction in peak hour volumes, and the most effective means of distributing demand over the course of the day. In 2010, AM peak volumes are reduced by 8.1 percent with PM peak traffic reduced by 7.8 percent. Cruise Card transactions are increased by 75.4 percent and queuing is nearly eliminated. An increase in revenue of 30.6 percent could be used to offset the cost of implementation and operations demand over the course of the day.

Comparative graphical representations of the total traffic volume impacts by period and direction of travel are presented as Figures ES-4 through ES-7. These figures are for illustrative purposes and correspond to the traffic and revenue impacts reported in the body of the main study documentation.

CONCLUSIONS

The intent of this study is not to make recommendations but rather to provide SRTA and its planning partners with the tools needed to make informed decisions about the operations of the GA 400 toll facility. The benefits of each scenario need to be carefully weighed against the costs and the impacts upon current facility patrons. For a complete review of data collection, methodology, and findings please review the pertinent section of the full study documentation that follows.

