



# Miami-Dade Expressway Authority

## Open Road Tolling Master Plan

2007-2011

# FINAL REPORT

MARCH 2006





PBS&J

BERMELLO, AJAMIL & PARTNERS, INC.

EAC CONSULTING, INC.

2001 N.W. 107TH AVENUE  
MIAMI, FLORIDA 33172  
305.592.7275  
FAX: 305.594.8790

March 14, 2006

Mr. Stephan Andriuk  
Miami-Dade Expressway Authority (MDX)  
3790 N.W. 21st Street  
Miami FL 33142

Dear Steve:

Attached is the Final of the MDX Open Road Tolling Master Plan Report. This submittal includes the introduction and guide for use of the document, the Tolling Concept and preliminary Traffic and Revenue estimates provided by WSA, the preliminary Toll Operations Plan and Business Rules and operating cost estimates, the recommended capital program to implement ORT along with the initial capital cost estimates, and some information on the proposed signing program and public outreach programs.

This document is intended to be the vehicle through which executive staff and the board will select and announce the Open Road Toll policy and strategy moving forward. This Master Plan and strategy provides capital program recommendations and guidelines to facilitate engagement of the necessary resources to complete this work. We are confident that, if adopted, the Miami-Dade Expressway Authority will be able to provide greatly improved service for your customers. The additional revenues to be captured through this program will also enable the Expressway Authority to accelerate other needed improvements to optimize MDX expressway operations and improve regional mobility.

This Report is provided electronically and in hard copy for your use. We thank you and your staff and consultants for their assistance on this project, and appreciate the opportunity to serve the Miami-Dade Expressway Authority.

Sincerely,

Dade Transportation Consultants

Philip D. Miller  
Project Manager

Attachments

Cc:	Alfred Lurigados	Marie Schafer
	Servando Parapar	Enrique "Rick" Crooks
	Tere Garcia	Jay Turner
	Gil Portela	Phil Miller
	Dave Burgess	Marty Sas
	Ed Regan	Gary Quinlin

## MDX ORT MASTER PLAN TABLE OF CONTENTS

### EXECUTIVE SUMMARY

1. INTRODUCTION, PURPOSE AND NEED
  - 1.1. Introduction – Background
  - 1.2. Purpose – Transportation Improvements
  - 1.3. Open Road Tolling Needs and Challenges
2. TOLL CONCEPT
  - 2.1. What is Open Road Tolling?
  - 2.2. Scenario of Toll Gantry Locations
    - 2.2.1. SR 112 (Airport Expressway) ORT Gantry Locations
    - 2.2.2. SR 836 (Dolphin Expressway) ORT Gantry Locations
    - 2.2.3. SR 874 (Don Shula Expressway) / SR 878 (Snapper Creek Expressway) ORT Gantry Locations
    - 2.2.4. SR 924 (Gratigny Expressway) ORT Gantry Locations
  - 2.3. Rates and Classifications
  - 2.4. Traffic And Revenue Projections And Discussion
3. CAPITAL PROGRAM
  - 3.1. Infrastructure Elements
  - 3.2. System Description
  - 3.3. System Development and Procurement
  - 3.4. Capital Cost Estimate
  - 3.5. Schedule and Recommendations for Capital Program
4. TOLL OPERATIONS CONCEPT
  - 4.1. Customer Service and Business Rules
  - 4.2. Toll System and Technology
  - 4.3. Operations Cost Estimate
5. PUBLIC INFORMATION AND COMMUNICATIONS PROGRAM
6. FINANCIAL ANALYSIS AND DISCUSSION
  - 6.1. Analysis Cases for Estimation of Operating Costs
  - 6.2. Factors Considered in Operating Costs Estimates
  - 6.3. Analysis Cases Operating Costs Results
  - 6.4. Discussion of Impact of ETC Participation Rates
7. CONCLUSION

## EXECUTIVE SUMMARY

Upon acceptance of the Open Road Tolling (ORT) Feasibility Study in December, 2004, the Miami-Dade Expressway Authority (MDX) directed the development of this Open Road Tolling Master Plan. Faced with enormous traffic congestion challenges and the need for multiple capital-intensive projects to address these challenges, Open Road Tolling is the way to provide an expanded mobility enhancement program.

The Master Plan outlines a capital improvement program designed to convert toll collection from a cash-based system at a few plazas to an all-electronic/video system covering all roadway segments under the responsibility of MDX. The program goals are:

- o Relieve congestion and improve safety, through elimination of conventional toll plazas,
- o Relieve local congestion with additional roadway and interchange improvements,
- o Charge all drivers at equitable toll rates, insuring drivers only pay for the portion of the road they use.
- o Improve safety, traffic operations, congestion relief, and reduce noise and air pollution, and
- o Eliminate driver inconvenience with conventional plaza repair and construction.

Chapter 1 explains the background and goals in more detail. Chapter 2 reviews the proposed toll concept, tolling point locations and rates, and the projected gross toll revenues. Chapter 3 provides a high-level program design which, with board approval, would become an integral part of the FY 2007 – FY 2011 Work Program. The general outline of required work, general schedule and staging, and estimated costs are provided. Chapter 4 considers operations in the ORT environment. Chapter 5 presents an overview and some of the requirements for public coordination of this ORT program. Chapter 6 summarizes the anticipated revenues and operating costs related to ORT operations, and Chapter 7 considers the risks in this program and mitigating factors or measures to be taken to help ensure success.

The program summary:

- o Gantries with ETC and video hardware would charge drivers between \$0.25 and \$0.50 at mainline and ramp locations throughout the system. Video-based customers would pay \$0.25 more than SunPass customers. SunPass customers traveling the full length of each route would pay no more than the SunPass rates approved today.
- o There would be no cash-payment facilities along the roadway. Existing plaza sites may be converted to safety, maintenance and/or other customer service functions to include kiosks for SunPass and Video tolling account management.
- o The MDX toll collection system is estimated to yield gross toll revenues of \$180 million by FY 2011, in comparison with about \$137 million in the no-ORT base case forecast for FY 2012.
- o New system and infrastructure contracts would be required to implement Open Road Tolling, the total of which is estimated to cost approximately \$57 million.
- o The first element of ORT operations would be provided on the new extension of SR 836 to 137<sup>th</sup> Avenue, which will occur during 2007. This route will charge \$0.25 in each direction, collected only by electronic tolls.

- o SR 874 will be widened and improved, as currently planned. Under the ORT scenario, gantries will be installed and placed into operation by 2009 before the existing plaza is removed from service. SR 924 operations will be converted to ORT at approximately the same time.
- o SR 112 and SR 836 will be converted from cash operations to ORT operations by 2012. This will allow time for other roadway operational improvements, such as some of the interchange work at SR 826, to be completed before the new toll collection concept is put into practice.
- o Open Road Tolling will require MDX to handle a much larger number of toll and video-based transactions than is currently the case.
- o A number of public outreach initiatives will be required to clearly communicate to the public what is proposed.
- o A new signing system to clearly identify ORT roadways will help with driver recognition.
- o Projected operations costs and violation recovery rates were based on existing MDX performance, but at a much higher volume of activity.
- o There are a number of potential project risks, which can be mitigated with advance planning and preparation, and deliberate attention to schedule and detail.

After MDX converts toll operations to Open Road Tolling, the existing plaza sites will continue to be used. Their future use may be for driver account servicing or information, or to support MDX roadway safety and operations with emergency vehicle parking or maintenance storage. The changes to the individual routes:

- o **SR 112** – A mainline gantry will charge \$0.50 in each direction,
- o **SR 836** – Three additional mainline gantries will charge \$0.35, \$0.40 and \$0.50 in each direction,
- o **SR 874 / 878** – The currently proposed construction of new toll plazas, with the need to shift the mainline pavement, would no longer be needed. This would be a major reduction in the amount of construction delays related to the necessary improvements.
- o **SR 874 / 878** – Two mainline gantries will charge \$0.25 in each direction, and a gantry further north will charge \$0.45 in each direction,
- o **SR 924** – Two mainline gantries will charge \$0.50 in each direction.

All vehicles will be detected by transponder (SunPass) or video capture of the license plate. Transactions will be paid by SunPass (or other interoperable transponders) or video, or the transaction will be considered a violation.

- o The *SunPass program*, operated by Florida's Turnpike Enterprise, will be enhanced with expanded outlets and payment venues as well as new less-expensive transponder models which should be available for about \$10 or less.
- o *Video accounts* with similar features as a SunPass account will be available for customers wishing to establish MDX toll accounts, without a transponder. These would be suitable for temporary account holders or infrequent users such as tourists/visitors.
- o *Violators* will be granted a 48-hour grace period during which their tolls may be paid at the video toll rate. Afterwards, when violators receive notices, they will have the opportunity to

make restitution with a \$25 fee for a period of time before it migrates to a Uniform Traffic Citation.

A comprehensive public coordination campaign will be launched to explain this program to the general public, to give drivers ample advance notice and help drivers use MDX in the most effective and inexpensive way possible.

The Open Road Tolling program will enable MDX to focus the agency's resources and energy on roadway operational improvements, providing improved surface transportation mobility for Miami-Dade County.

# 1. INTRODUCTION, PURPOSE AND NEED

## 1.1 Introduction - Background

The Miami-Dade Expressway Authority (MDX) is a state-sanctioned, locally-administered independent agency created in 1994 by the state of Florida. MDX owns and operates a network of five expressway segments, 31 center line miles, in the metropolitan Miami area. These five segments are part of the overall Strategic Intermodal System for South Florida. This entire limited access network is in a highly urbanized area of over 2 million people, in an expanding economy. The maintenance, improvement, and expansion when warranted, of this expressway network is vital to this expanding economy.

The MDX system includes SR 112 (Airport Expressway), SR 836 (Dolphin Expressway), SR 874 (Don Shula Expressway), SR 878 (Snapper Creek Expressways) and SR 924 (Gratigny Expressway). Of these, SR 836, along the Miami International Airport, is the largest (11.8 miles) and the greatest revenue generator. MDX is entirely funded by toll revenues.

During the initial years of existence MDX was responsible for the planning of enhancements to its expressway system while actual toll collection operations were carried out under contract by the Florida Department of Transportation (FDOT) and subsequently Florida's Turnpike Enterprise (FTE), when it reorganized toll collection operations. Toll revenues were collected by FTE and deposited into bank accounts earmarked for MDX.

By mutual agreement FTE turned over the responsibility for the collection of tolls on MDX-owned facilities to MDX. In conjunction with the collecting tolls on its own facilities, MDX replaced the FTE toll collection system with a new toll collection system developed by United Toll Systems, plc (UTS) in 2002. MDX elected to have all of its electronic toll collection transactions continue to be processed by the SunPass Customer Service Center, which is operated by FTE. At this point in time MDX does not issue of transponders or maintain SunPass accounts.

The five facilities were built prior to the formation of MDX as "open-barrier" toll systems, with toll collection at one point on each route and remaining movements between interchanges left un-tolled. Tolls at these five locations are currently \$1 for SunPass cars and \$1.25 for cash-paying 2-axle vehicles. Drivers on other portions of the system pay no toll at all. Most interchanges and route segments lie in limited right-of-ways with no practical expansion possibilities to accommodate new plazas. Only about 28% of all vehicular movements on the MDX system are tolled.

MDX' plazas have SunPass electronic toll collection and are interoperable with the other toll facilities in Florida. The existing SR 836 plaza has been rebuilt with SunPass express lanes. The

other facilities are older and require repair or upgrades to be kept in operation beyond the short-term, and are a partial contributor to traffic congestion on the MDX network.

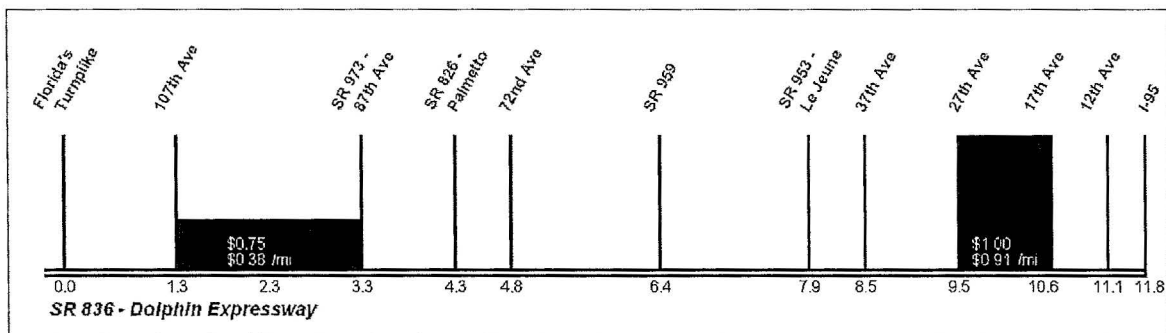
## 1.2 Purpose – Transportation Improvements

MDX has a 20-year, \$2.75 billion Master Transportation Plan in place for major expressway improvements in South Florida. MDX has a shorter-term Five-Year Work Program to implement capital improvement projects. The Five-Year Work Program is the agency’s vehicle for planning, budgeting and financing purposes. If the ORT Master Plan is adopted, it is this Five Year Work Program that must be updated.

The five expressways, like all highways in the Miami-Dade region, are heavily congested. MDX has several projects in the long-range work program for SRs 836 and 874 to address some of the capacity and interchange problems. Large funding requirements for these projects accounts for most of the available capital improvement budget. Many more needed projects remain unfunded.

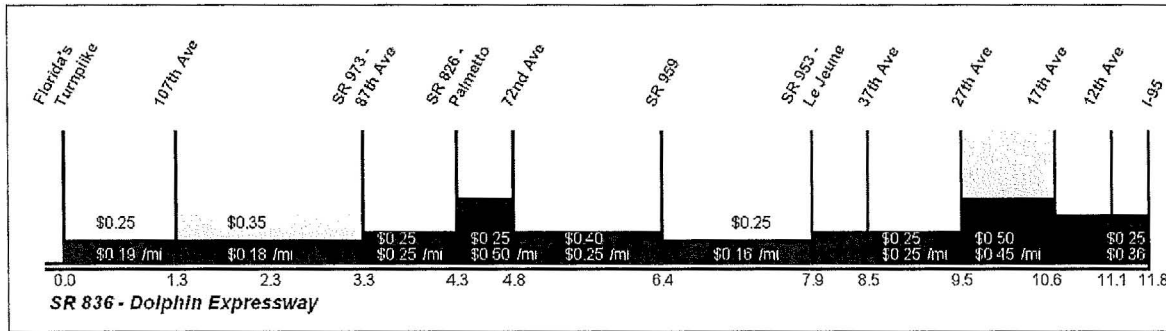
MDX has decided to address these problems through a conversion to uniform Open Road Tolling on all its facilities. The MDX ORT Master Plan defines this conversion program. The ORT program goals are:

- o Relieve congestion on the MDX facilities through elimination of conventional toll plaza,
- o Relieve congestion on the MDX facilities through construction of additional roadway and interchange improvements, which are only possible with a significant increase in net income,
- o Improve toll equity by charging 100% of drivers a toll rate closer to the average 12¢-13¢ per mile, rather than charging a few vehicles a much higher toll rate as is the current practice. For example, by adoption of this ORT Master Plan, drivers on SR 874 will not have to pay \$1 to use a ramp plaza currently planned for Killian Road. Instead, those local movements will cost \$0.50 or less.



**Figure 1-1** – Existing effective per-mile rates on discrete segments of SR 836 with the existing toll plaza between 27<sup>th</sup> and 17<sup>th</sup> Avenues, and the 97<sup>th</sup> Avenue plaza under construction. For example, eastbound drivers between 27<sup>th</sup> and 17<sup>th</sup> Avenues effectively pay almost \$1 per mile for this segment of the facility, but drivers pay nothing to use SR 836 between SR 959 and Le Jeune Road.





**Figure 1-2** – Effective per-mile rates on discrete segments of SR 836 with a more uniform toll for each movement. The lightly-shaded areas highlight today’s toll rates. For example, with the proposed toll rates, drivers will pay about \$0.16 per mile if they just use SR 836 between SR 959 and Le Jeune Road.

**Other goals:**

- o Avoid the cost of major capital improvements to the older toll plaza facilities if they were to be kept in operation,
- o Avoid the cost and driver inconvenience of new conventional plaza construction, which would be required to close the system and collect tolls from all drivers. For example, by adoption of this ORT Master Plan, drivers on SR 874 will not have to endure a long construction program required to rebuild the existing conventional plaza, as has been envisioned for the improvements currently under design. This is a significant benefit for drivers in that service area.

**Significant issues addressed in the ORT Master Plan include:**

- o The toll concept from a traffic and revenue perspective,
- o The toll concept from a business rules perspective,
- o Integration of the program with existing capital projects,
- o Development of an implementation schedule,
- o Issues related to the use of video as a toll account tool, and not just a violation enforcement tool.

### 1.3 Open Road Tolling Needs and Challenges

The operation of toll facilities without cash collection is appearing on new facilities<sup>1</sup> in the US and abroad, although no US agencies have yet converted a cash-based toll facility to all-electronic operations. In addition to the specific benefits cited as goals of this project, other generally appealing features of “plaza-less” open road tolling include:

- o Safety improvements:
  - Removal of obstacles (the plaza lanes and crash blocks) from high-speed roadway facilities, and the need to provide signing and emergency lighting for those obstacles,

<sup>1</sup> CityLink in Melbourne, Australia; ETR 407 in Toronto, Canada; and four concession routes in Santiago, Chile

- Removal of employees from a dangerous work environment to safer back-office environments.
- o Economies in capital requirements:
  - No plaza pavement construction,
  - No right of way requirements,
  - Never any need for further review and re-engineering of traffic operations,
  - No major building design or construction requirements,
  - Virtually no environmental impact.
- o Economies in operations requirements:
  - Removal of all cash-handling operations in the roadside environment,
  - Elimination of most roadside staffing requirements related to tolls,
  - Significant reduction in system maintenance costs through elimination of electro-mechanical devices such as coin machines, gates, printers, and so on,
  - Elimination of all cash plaza maintenance requirements and expenditures,
- o Benefits from the reduction in the visual impact of toll collection:
  - Plazas are physical reminders of the need to pay for the use of the road,
  - Plazas are likely not considered a visual enhancement by many drivers.

The concept of ORT is already in use on the MDX system at the “Wing” plaza on SR 836 by 17<sup>th</sup> Avenue on the eastbound mainline. MDX already has the first ORT section without cash toll collection under construction, when the SR 836 Extension opens and is only usable by drivers with SunPass accounts.

However, this ORT conversion program does encounter two principal categories of challenges:

- o Removal of the cash-paying option for customers without ETC accounts, and
- o Introduction of tolls on many parts of the system which have been toll-free.

One measure to address these challenges will be in the use of video as a backup and alternate vehicle identification tool, in addition to the primary identification means, the SunPass transponders.

MDX already has experience with its first generation of video toll technology, capturing video transaction images of vehicles that traverse the high speed lanes without a transponder or with a transponder that does not read or is attached to a “bad” account. Although the FTE has a violation processing service center MDX has elected to manage the disposition of violations on its own facilities such as S.R. 836. This process is coordinated with FTE to ensure that customers who are holding valid transponders are not inadvertently sent a violation notice when their transponder failed to register a SunPass transaction.

Currently the MDX violation processing center (VPC) is operated under contract with Washington Group International, Inc. Because the MDX violation processing center has the capability to process violation images it may only be a matter of expanding the VPC to a size that can handle increased processing resulting from increased violations and video tolling. The VPC would have to be modified to include account and transaction processing similar to that

utilized at the SunPass Customer Service Center but with the focus being on processing transaction images against video accounts based upon license plate numbers.

In addition to providing the technology, MDX will need to make great efforts to simply inform people that sections of the MDX system that were either free or accepted cash, now are different. Tolls will be required on all sections of road maintained and operated by MDX, and a toll account will be required. Signing, public outreach, and an initial surge of mailings for new violators will all be required to inform MDX' customers of these new operating conditions.

## 2. TOLL CONCEPT, TRAFFIC AND REVENUE PROJECTIONS

### 2.1 What is Open Road Tolling?

Open road tolling means that there is nothing provided along the roadside for toll collection except for open roadway. The only toll facility that may be observed by the driver is the toll gantry (basically a highway sign structure) with the electronic toll collection equipment on it, the related support infrastructure (in MDX' case, a small pre-fabricated building by the gantry base), and toll signing to tell drivers that they are passing a payment point and how much is being charged.

For this ORT Master Plan, the term “gantry” may be considered to mean “cashless toll plaza.”

With open road tolling, there are no physical toll plazas, but the factors that determine location of the gantries and how tolls are assessed are no different than those which determine conventional toll plaza locations. Similarities to existing toll systems include:

- o Each highway lane under a toll gantry is nothing more than a SunPass toll lane—without gates, lights, concrete islands or canopies. In the same manner as in the existing plazas, a vehicle with SunPass is detected in the toll lane and a SunPass transaction is created, which is debited from the driver's SunPass account. Drivers using these lanes, just as with any SunPass lane today, without a transponder get a picture taken of their vehicle license plate. Since we have no options available for a driver to pull over to pay cash, the ORT system will also allow these “violators,” under certain circumstances, to maintain a video-based toll account or address their violation in a relatively benign manner before it becomes a Uniform Traffic Citation. Nonetheless, rules in force today at the MDX SunPass Only lanes will generally apply to the new ORT gantry lanes.
- o Gantries will be located in consideration of the same issues as conventional toll plazas: preventing free movements, charging an amount that approximates an equitable toll rate to the greatest extent possible, and meeting these two requirements with an array of gantries as economical as possible to build and operate. Toll collection economy is achieved with the smallest number of gantries possible with the largest toll amount per transaction possible. Unfortunately, the goals of perfect toll equity and toll collection economy are mutually exclusive for an urban system with many interchanges. This is because, in order to charge a perfectly uniform toll rate between every interchange, an inordinately large number of plazas—or gantries—are needed. A balance between reasonable toll equity and reasonably low cost must be found.
- o Toll rates at each gantry are set based on a minimum cost of toll collection, a charge proportional to the distance that most drivers travel when only paying at that one location, and the vehicle class. For the Miami-Dade Expressway Authority, with many interchanges only one to three miles apart, the minimum cost of doing business dictates the minimum toll in many instances: all ramp gantries and even some mainline gantries will only charge \$0.25

for passenger cars with a valid transponder. Other mainline gantry charges will be either \$0.45 or \$0.50. Multi-axle vehicles will pay more at each location, consistent with the existing toll rate schedule.

- o Toll rates at each gantry are also set based on encouraging drivers to use the method of toll payment most advantageous—economical—for the owner. Today, customers with SunPass save \$0.25 vis-à-vis cash toll customers, at MDX facilities as well as many other SunPass venues. Under the ORT program, that practice will be continued as SunPass customers will save \$0.25 in comparison with video toll users.

Open road tolling is different, of course, in that all revenue collection is based on vehicle identification and toll account (or violation history) management. The option to pay cash on a particular trip will not exist any more, so drivers will now be required to have advance arrangements in place to pay tolls via their electronic toll account, or pay a premium for making use of the video tolling option.

Cash-paying customers who choose to not have any banking account or are unable to function without cash will be challenged in this non-cash environment, however MDX and the Turnpike Enterprise are jointly considering various measures to allow individuals to maintain toll accounts with MDX video or SunPass, with cash. These concepts are in preliminary development and the need to address this issue is recognized.

In summary, the toll collection concept for the MDX Open Road Toll Program can be described as follows:

- o Toll gantries will collect specific toll amounts according to the specific rates set by vehicle class and method of payment: with video-based toll transactions at a \$0.25 premium over SunPass transactions. The rates are shown in the Section 2.2 graphics and the Section 2.3 table. For full-length trips, an average system-wide rate of 12¢ to 13¢ per mile is achieved, although shorter trips are always a minimum of 25¢.
- o SunPass (or Florida interoperable) transponders will be accepted for payment at the electronic toll rate. Video toll accounts, or violations, are charged at the SunPass rate plus a surcharge of 25¢.
- o The existing axle-based classification structure will be continued.
- o Tolls will not be adjusted by time of day or according to congestion levels at this time.
- o MDX will not handle transponder sales or distribution issues, but allow that function to remain with the Florida's Turnpike Enterprise (FTE).
- o MDX may manage video-based toll accounts with business rules similar to SunPass pre-paid toll accounts, along with violation enforcement.
- o Violators will have a 48-hour grace period during which they may contact MDX and settle their account at the video toll rates, without penalty, at which time they can be encouraged to establish a video account or acquire a transponder from one of the FTE options.

## 2.2 Scenario of Toll Gantry Locations

The location of gantries selected for the ORT Master Plan was selected to best meet the competing goals of toll equity and financial practicality through several iterations. During studies conducted by WSA, Scenarios 1 through 3 were developed to explore the merits of a system similar to ticket-based toll collection, another scenario with a gantry between each interchange, and a mix of those two approaches.

The study results indicated that the more reasonable solution was to use a simplified approach essentially the same as the current system, but with no free movements allowed. During the Master Plan Development, the study team developed two further scenarios with a mix of mainline and ramp gantries to determine an optimal combination. These were presented during the October MDX Operations as Scenarios 4 and 5. The differences between the two scenarios was not major: Scenario 4 relied more on ramp gantries and used a 25¢ minimum toll, whereas Scenario 5 attempted to achieve greater toll equity through the use of more mainline gantries and lower tolls with the additional gantry locations.

The scenario developed subsequent to that meeting is presented herein as Scenario 6, which is a blending of the two previous scenarios and is the preferred alternative. Scenario 6 utilizes the 25¢ minimum toll and gantry arrangement from Scenario 4 for Routes 836 and 112, but substitutes some mainline gantries for ramp gantries on SR874 / 878 and 924, and charges tolls at a somewhat lower amount per location.

Scenario 6 follows with basic descriptions in schematics and notes in Chapter 2. More detail, ADT projections and trip tolls for equity assessment are contained in Appendix A.

### 2.2.1 SR 112 (Airport Expressway) ORT Gantry Locations

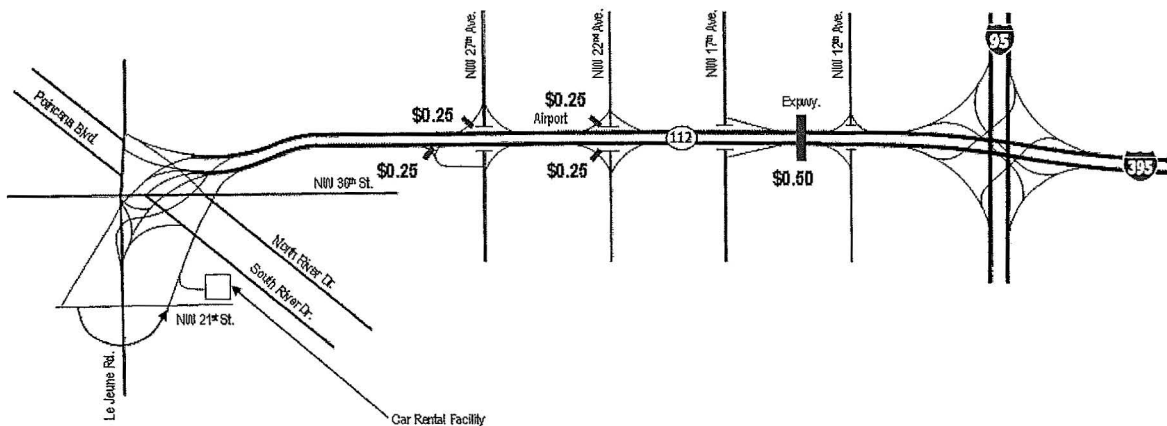


Figure 2-1 – Proposed tolling locations for SR 112.

SR 112 is the Airport Expressway, connecting the Miami International Airport area with Interstate 95. MDX' portion is approximately 4.5 miles. Drivers are only currently charged a toll at one location: \$1.00 / \$1.25 (cash) toll, in the eastbound direction only, at the site between 17<sup>th</sup> and 12<sup>th</sup> Avenues. The current round trip effective toll rate is about 11.1¢ / mile for SunPass customers and 13.9¢ / mile for cash customers.

The new mainline gantry is to be located between 17<sup>th</sup> and 12<sup>th</sup> Avenues, charging \$0.50 / \$0.75 (video) in each direction. For SunPass users, there is no change in the round trip full-length trip. The ORT round trip SunPass rate will be about 11.1¢ / mile for SunPass customers and 16.7¢ / mile for video customers.

Ramp gantries are proposed for 27<sup>th</sup> and 22<sup>nd</sup> Avenues to and from the west, to toll all major movements on segments of SR 112. The ramp gantries will charge \$0.25 / \$0.50 (video).

The SunPass trip tolls are shown in Table 2.1. For example, a SunPass customer will pay \$0.50 to drive from 27<sup>th</sup> Avenue to I-95, and he/she will pay \$0.25 to drive from 27<sup>th</sup> Avenue to 22<sup>nd</sup> Avenue.

**Table 2.1 - Proposed ORT Toll Table - SR 112 Airport Expressway**

	Airport Area	NW 27th Ave	NW 22nd Ave	NW 17th Ave	NW 12th Ave	I-95/395
Airport Area	-					
NW 27th Ave	\$0.25	-				
NW 22nd Ave	\$0.25	\$0.25	-			
NW 17th Ave	n/a	n/a	n/a	-		
NW 12th Ave	\$0.50	\$0.50	\$0.50	\$0.50	-	
I-95/395	\$0.50	\$0.50	\$0.50	\$0.50	-	-

*DTC March 2006* *Final Report*

## 2.2.2 SR 836 (Dolphin Expressway) ORT Gantry Locations

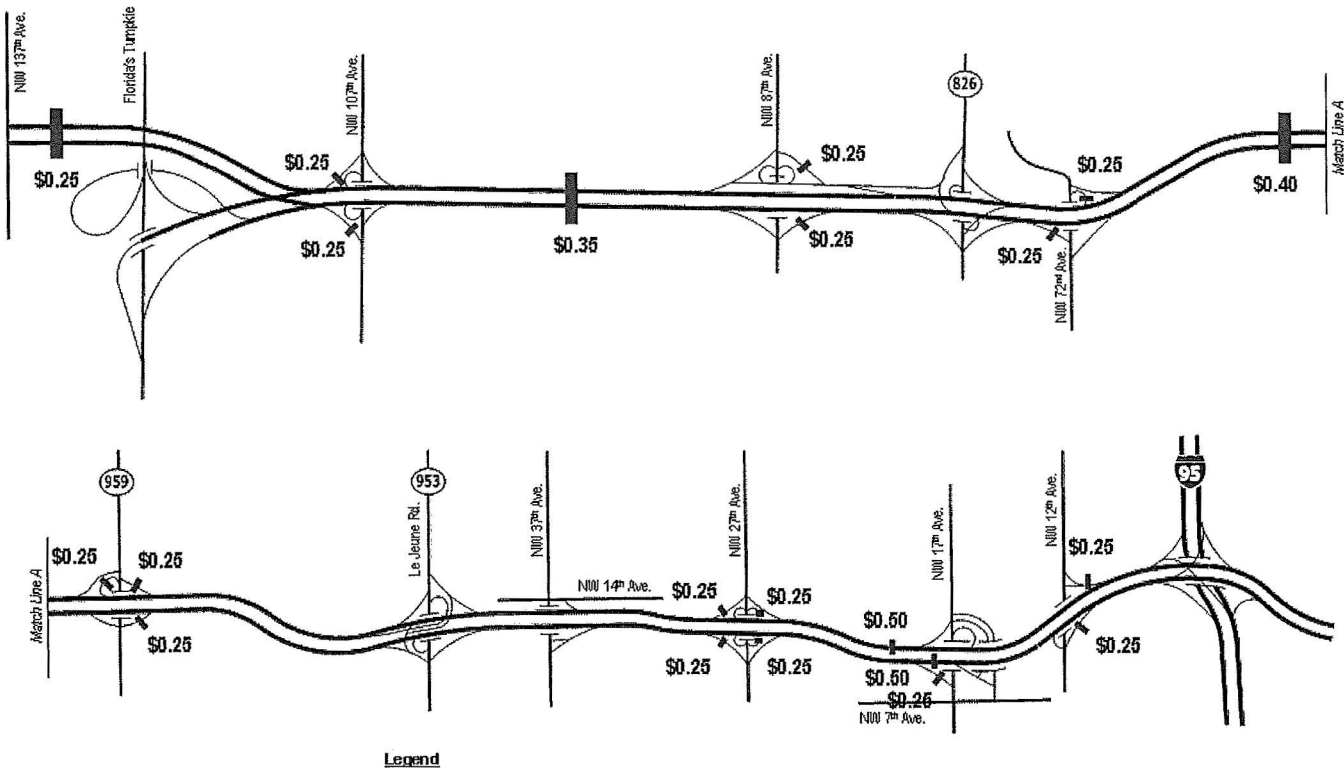


Figure 2-2 - Proposed tolling locations for SR 836

SR 836, the Dolphin Expressway, is the trunk of the MDX system, connecting 137<sup>th</sup> Avenue and the Florida's Turnpike Enterprise HEFT in the west, to Interstate 95, downtown Miami and the beaches in the east. The Dolphin Expressway is approximately 14.1 miles; not including the new extension, it is about 11.6 miles long. Drivers are only currently charged a toll at one location: \$1.00 / \$1.25 (cash) toll in the eastbound direction only, at the site just west of 17<sup>th</sup> Avenue. The current round trip (with completion of 97<sup>th</sup> Avenue plaza construction underway now) between the HEFT and I-95 will be \$2.50 for SunPass customers and \$3.25 for cash customers. The current round trip effective toll rate (between HEFT and I-95) is about 10.8¢ / mile for SunPass customers and 14¢ / mile for cash customers.

The new 97<sup>th</sup> Avenue plaza under construction works in conjunction with improvements to the western portion of SR 836 and a new extension beyond the HEFT to 137<sup>th</sup> Avenue. After ORT conversion, its tolls will be set at \$0.35 / \$0.60 (video) in each direction. A new mainline gantry east of 72<sup>nd</sup> Avenue, and gantries at the "Wing" Plaza will charge \$0.40 / \$0.65 (video) in each direction. The fourth site located on the extension west of the HEFT and currently under



construction, will charge \$0.25 / \$0.50 (video) in each direction. This fourth site will be the first ORT site on the MDX system, coming on line in the first half of 2007.

Ramp gantries close the system in the locations shown above, paying \$0.25 / \$0.50 (video) at ramp locations.

The current ORT Master Plan includes ramp gantries at 87<sup>th</sup> Avenue and 72<sup>nd</sup> Avenue to close the system and insure all drivers pay to use MDX facilities. These ramp plazas will not be installed until later, after completion of the Palmetto / SR 836 Interchange reconstruction, currently envisioned for the 2008 – 2014 timeframe.

MDX is developing short-term add-lane projects for SR 836 in the Palmetto Expressway proximity to relieve some peak period congestion. MDX would like to complete these interim improvements before ORT conversion happens.

The new round trip between the HEFT and I-95 with ORT will cost \$2.40 for SunPass customers and \$3.90 for video customers. The ORT round trip SunPass rate (between HEFT and I-95) is about 10.3¢ / mile for SunPass customers and 16.8¢ / mile for video customers.

The SunPass trip tolls are shown in Table 2.2. For example, a SunPass customer will pay \$1.00 to drive from NW 137<sup>th</sup> Avenue to LeJeune Road, and will pay \$1.50 to continue to I-95. All tolls are the same in either direction.

**Table 2.2 - Proposed ORT Toll Table - SR 836 Dolphin Expressway**

	NW 137th Ave	Florida Turnpike	NW 107th Ave	NW 87th Ave	SR 826 - Palmetto Expy	NW 72nd Ave	SR 959 - NW 57th Ave	SR 953 - LeJeune Rd	NW 37th Ave	NW 27th Ave	NW 17th Ave	NW 12th Ave	I-95
NW 137th Ave	-												
Florida Turnpike	n/a	-											
NW 107th Ave	\$0.50	\$0.25	-										
NW 87th Ave	\$0.60	\$0.35	\$0.35	-									
SR 826 - Palmetto Expy	\$0.60	\$0.35	\$0.35	\$0.25	-								
NW 72nd Ave	\$0.85	\$0.60	\$0.60	\$0.50	\$0.25	-							
SR 959 - NW 57th Ave	\$1.00	\$0.75	\$0.75	\$0.65	\$0.40	\$0.40	-						
SR 953 - LeJeune Rd	\$1.00	\$0.75	\$0.75	\$0.65	\$0.40	\$0.40	\$0.25	-					
NW 37th Ave	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-				
NW 27th Ave	\$1.25	\$1.00	\$1.00	\$0.90	\$0.65	\$0.65	\$0.50	\$0.25	\$0.25	-			
NW 17th Ave	\$1.25	\$1.00	\$1.00	\$0.90	\$0.65	\$0.65	\$0.50	\$0.25	\$0.25	\$0.25	-		
NW 12th Ave	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-	
I-95	\$1.50	\$1.25	\$1.25	\$1.15	\$0.90	\$0.90	\$0.75	\$0.50	\$0.50	\$0.50	\$0.50	\$0.25	-

DTC March 2006 Final Report

### 2.2.3 SR 874 (Don Shula Expressway) / SR 878 (Snapper Creek Expressway) ORT Gantry Locations

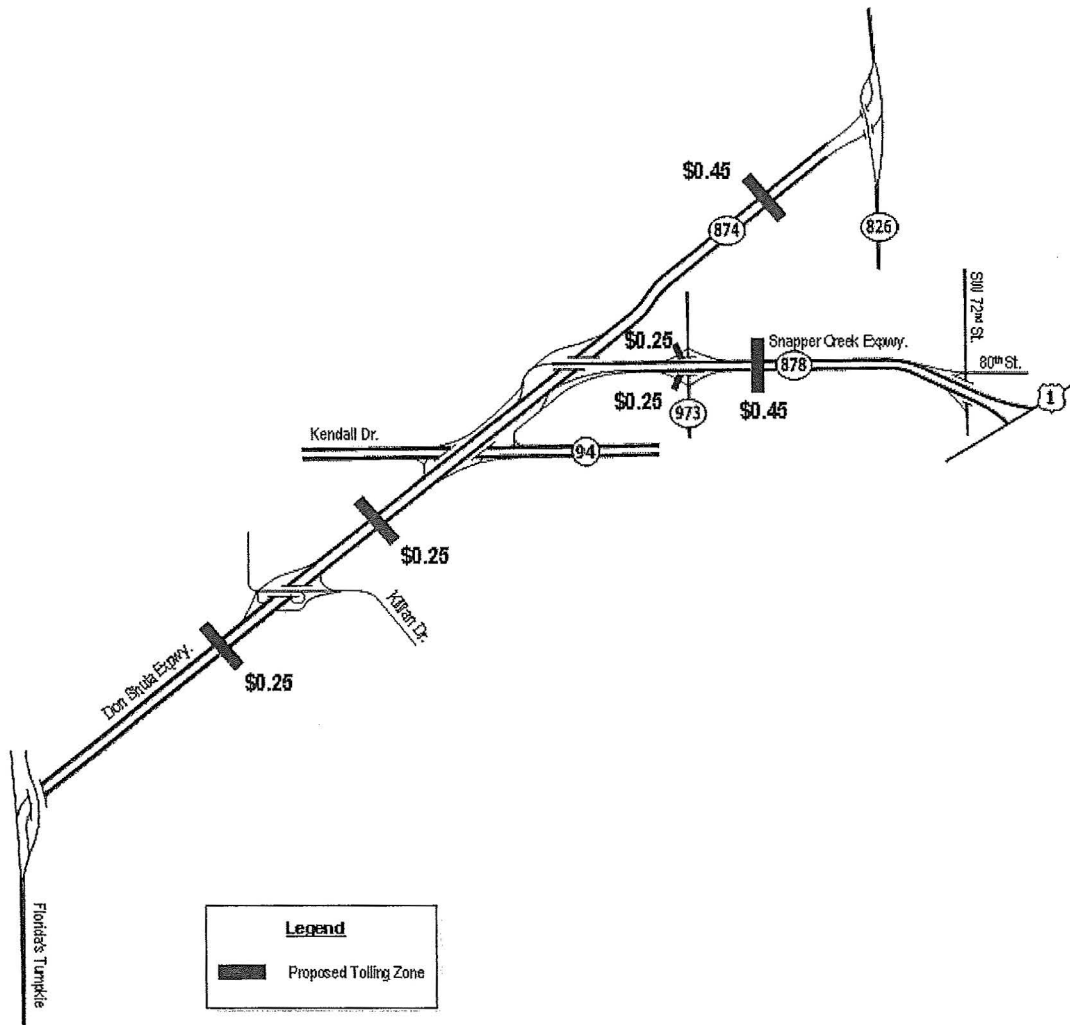


Figure 2-3 - Proposed tolling locations for SR 874/878.

SR 874, the Don Shula Expressway, and the connected SR 878, the Snapper Creek Expressway, are in the southern part of the MDX service area linking the HEFT with the Palmetto Expressway and US 1. SR 874 is about 7 miles long. SR 874 and SR 878 combined between the HEFT and US 1 are also about 7 miles long. Drivers are currently charged a toll at one location in each direction: \$1.00 / \$1.25 (cash) at the plaza between the HEFT and Killian Drive. A new split plaza with high-speed express lanes, along with roadway widening and interchange improvements, is proposed for this area. The current round trip between the HEFT and either the Palmetto or US 1 is \$2.00 for SunPass customers and \$2.50 for cash customers. The current

round trip effective toll rate, between the HEFT and either the Palmetto or US 1 is about 14.3¢ / for SunPass customers and \$17.9 for cash customers.

Under the ORT plan, the final design will be modified to simply remove the existing plaza and eliminate other cash plaza-related improvements, and instead provide an ORT gantry in the general vicinity of the existing plaza. A second mainline gantry will be provided north of Killian Drive, and other mainline gantries will be located on each northern leg as shown in Figure 2-3. These gantry rates are lower than on other routes, in order to achieve approximate toll rate equity across the entire MDX system. The southern mainline gantries will charge \$0.25 / \$0.50 (video), and the northern gantries will charge \$0.45 / \$0.70 (video).

Ramp gantries close the system at the SR 923 interchange on the Snapper Creek Expressway, with \$0.25 / \$0.50 (video) tolls at this location.

The new round trip between the HEFT and either the Palmetto or US 1 will be \$1.90 for SunPass customers and \$3.40 for cash customers. This large increase is because there are six toll payments over the 14 mile round trip. The SunPass rates are low, but the cash rate is almost double the SunPass rate. The new round trip effective toll rate, between the HEFT and either the Palmetto or US 1 is about 14.0¢ / for SunPass customers and 24.3¢ / mile for video customers.

The SunPass trip tolls are shown in Table 2.3. For example, a SunPass customer will pay \$0.50 to drive north from the Florida's Turnpike to Kendall Drive, and \$0.95 to SR 826 (the Palmetto Expressway). All tolls are the same in either direction.

**Table 2.3 - Proposed ORT Toll Table SR 874/878**

	Florida Turnpike	Killian Dr	SR 94 - Kendall Dr	SR 826	SR 973	US 1
Florida Turnpike	-					
Killian Dr	\$0.25	-				
SR 94 - Kendall Dr	\$0.50	\$0.25	-			
SR 826	\$0.95	\$0.70	\$0.45	-		
SR 973	\$0.75	\$0.50	\$0.25	n/a	-	
US 1	\$0.95	\$0.70	\$0.45	n/a	\$0.45	-

DTC March 2006 Final Report

### 2.2.4 SR 924 (Gratigny Expressway) ORT Gantry Locations

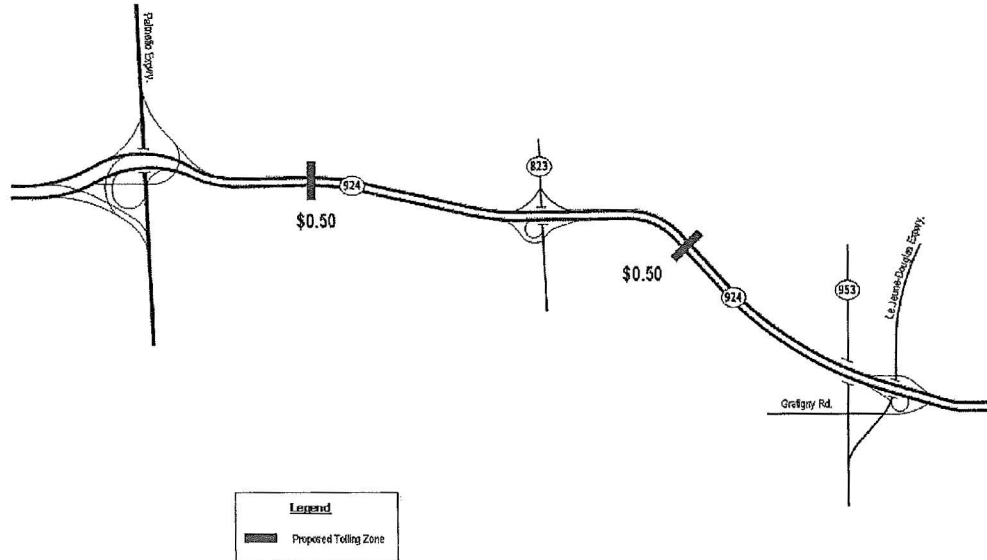


Figure 2-4 - Proposed tolling locations for SR 924.

SR 924 is the Gratigny Expressway, connecting the Palmetto Expressway and other highways and expressways to the east. It is approximately 4.5 miles average in each direction. Drivers are currently charged a toll at one location: \$1.00 / \$1.25 (cash) toll in each direction only, on the eastern half of the roadway. The current round trip effective toll rate is about 22.2¢ / mile for SunPass customers and 27.8¢ / mile for cash customers.

The current plaza is one of the two preferred locations for the new mainline gantries which will each charge \$0.50 / \$0.75 (video), in each direction. For SunPass users, there is no change in the round trip full-length trip. The ORT round trip SunPass rate will be about 22.2¢ / mile for SunPass customers and 33.3¢ / mile for video customers.

The SunPass trip tolls are shown in Table 2.4.

	SR 826 Palmetto Expwy	SR 823	Le Jeune-Douglas Exp
SR 826 Palmetto Expwy	-	-	-
SR 823	\$0.50	-	-
Le Jeune-Douglas Expwy	\$1.00	\$0.50	-

*DTC March 2006* *Final Report*

### 2.3 Toll Rate Classifications

	Gantries		Toll Rates	
	Mainline	Ramp	SunPass	Video
<b>112 Mainline - B etween 17th and 12th Ave.</b>	2		\$0.50	\$0.75
Ramp - 22nd Ave. to/from West		2	\$0.25	\$0.50
Ramp - 27th Ave. to/from West		2	\$0.25	\$0.50
<b>836 Mainline - B etween 137th Ave. and the HEFT</b>	2		\$0.25	\$0.50
Ramp - 107th Ave. to/from West		2	\$0.25	\$0.50
<b>836 Mainline - "97th Ave. Plaza"</b>	2		\$0.50	\$0.75
Ramp - 87th Ave. to/from East		3	\$0.25	\$0.50
Ramp - 72nd Ave. to/from West		2	\$0.25	\$0.50
<b>836 Mainline - B etween 72nd and 57th Ave.</b>	2		\$0.35	\$0.60
Ramp - 57th Ave. to/from East		2	\$0.25	\$0.50
Ramp - 27th Ave. to/from West		4	\$0.25	\$0.50
<b>836 Mainline - At the "Wing"</b>	2		\$0.35	\$0.60
Ramp - EB Off 17th Ave.		1	\$0.25	\$0.50
Ramp - 12th Ave. to/from East		2	\$0.25	\$0.50
<b>874 Mainline - by 112th St.</b>	2		\$0.25	\$0.50
<b>874 Mainline - B etween Killian and Kendall</b>	2		\$0.25	\$0.50
<b>874 Mainline - B etween Snapper Ck and Palmetto</b>	2		\$0.45	\$0.70
Ramp - 87th Ave. to/from West		2	\$0.25	\$0.50
<b>878 Mainline - B etween 87th Ave. and US 1</b>	2		\$0.45	\$0.70
<b>924 Mainline - B etween Palmetto &amp; 57th Ave.</b>	2		\$0.50	\$0.75
<b>924 Mainline - B etween 57th and Le Jeune-Douglas</b>	2		\$0.50	\$0.75
Total Gantries	22	22		

*DTC March 2006* *Final Report*

MDX intends to maintain the existing axle-based classification schedule. Revenue projections are based on this assumption. However, as the commercial vehicle percentage of traffic on the MDX system is only about 2%, a change in the classification structure would likely not have a major impact on MDX revenues.

## 2.4 Traffic and Revenue Projections

The Traffic and Revenue forecast based on the proposed set of gantries and toll plaza rates. It assumes all ORT installation would be complete for FY 2010.

Table 2.6:

Summary of Estimated ORT Scenario 6B Annual Toll Revenue					
Total MDX System					
Revenue in Thousands					
Fiscal Year	SR 112	SR 836	SR 874/878	SR 924	Total
2005 - 06	\$11,399	\$22,100	\$27,871	\$12,935	\$74,305
2006 - 07	11,850	22,361	29,631	13,734	77,576
2007 - 08	12,323	57,022	32,708	14,036	116,089
2008 - 09	12,772	57,865	35,698	14,265	120,600
2009 - 10	19,612	89,878	47,938	23,026	180,454
2010 - 11	20,015	91,111	49,005	23,756	183,887
2011 - 12	20,418	92,344	50,072	24,486	187,320
2012 - 13	20,821	93,577	51,139	25,216	190,753
2013 - 14	21,224	94,810	52,206	25,946	194,186
2014 - 15	21,626	96,041	53,272	26,676	197,615
2015 - 16	21,948	96,704	54,051	27,352	200,055
2016 - 17	22,270	97,367	54,830	28,028	202,495
2017 - 18	22,592	98,030	55,609	28,704	204,935
2018 - 19	22,914	98,693	56,388	29,380	207,375
2019 - 20	23,238	99,355	57,165	30,054	209,812
2020 - 21	23,674	100,326	57,991	30,521	212,512
2021 - 22	24,111	101,435	58,779	31,434	215,759
2022 - 23	24,679	102,617	59,619	31,924	218,839
2023 - 24	25,186	103,507	60,537	32,503	221,733
2024 - 25	25,617	103,372	61,215	32,552	222,756
2025 - 26	25,996	103,495	62,196	33,042	224,729
2026 - 27	26,314	103,555	62,990	33,885	226,744
2027 - 28	26,706	103,852	63,216	34,527	228,301
2028 - 29	26,894	103,627	63,167	34,982	228,670
2029 - 30	27,143	103,755	63,298	35,119	229,315

This table was provided by WSA, based on the assumption for analysis purposes that all facilities would be converted to ORT by FY 2010.

### 3. CAPITAL PROGRAM

To support the Open Road Tolling program, MDX will procure a new system for deployment at the roadside, and will provide new infrastructure support for the roadside system. In addition, a greatly expanded back office will be developed to accommodate a large increase in daily toll transactions, and a larger staff of customer service clerks and video clerks. The Capital Program is designed to deliver all these systems and elements.

#### 3.1 Infrastructure Elements

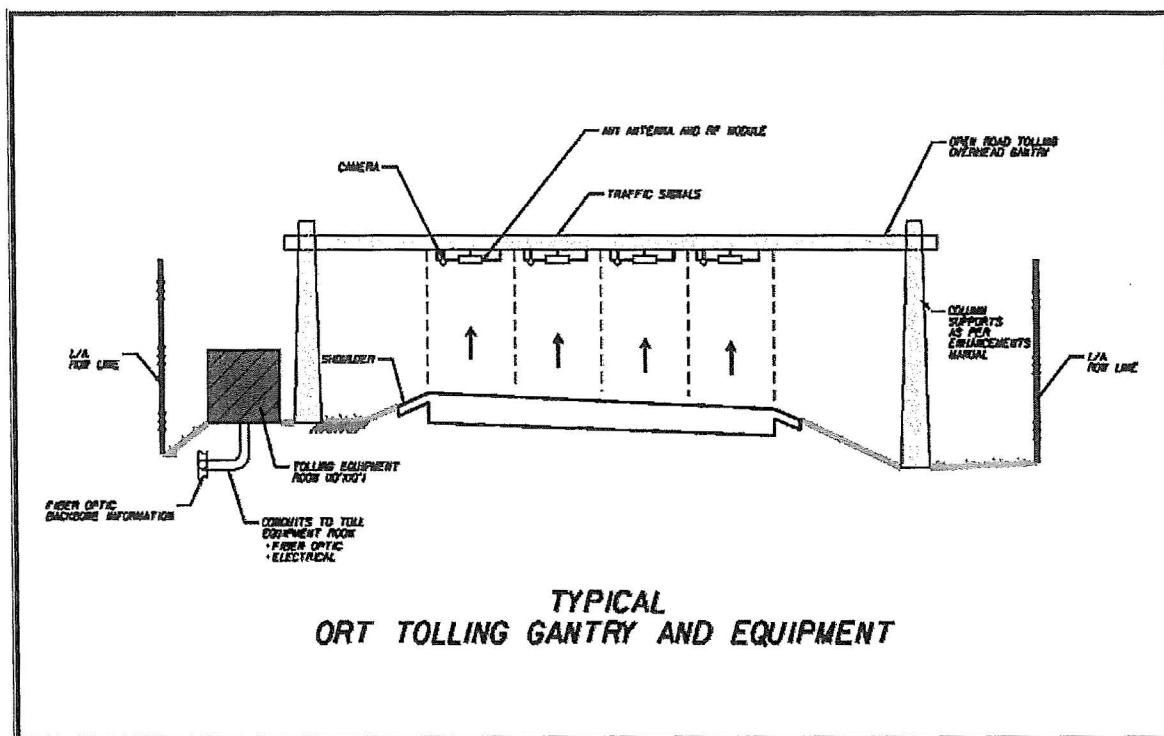


Figure 3-1— ORT Infrastructure Elements

Under the infrastructure implemented contracts, the following general types of work are needed:

**Gantries:** the overhead structure from which to hang the SunPass antennae and overhead equipment can either be a standard sign structure or a variant of that. A number of options are available, from which one or more will be selected during final design of the project:

- The curved truss structure developed by the Florida's Turnpike Enterprise (FTE) for use on their ramp plazas (depicted in Figure 3-2),
- A variant of the mainline gantry also developed by the Florida's Turnpike Enterprise (FTE), which supports an overhead workspace for equipment changeout over live traffic,

- Mono-tube overhead structures based on the California sign structure standards, which have been used on express-lane facilities such as the Transportation Corridor Agencies in Orange County, California, West Park in Houston, Texas, the Illinois Tollway, and FTE’s Suncoast Parkway.
- The architectural-treatment mono-tube overhead structure developed for the 836 extension sign structures, and
- Simple light poles and mast arms for one-lane ramp gantries.

All these structures except the light poles are not only suitable to support the hardware, but also signing which is desirable to identify that tolls are indeed being collected even though there is no conventional plaza. A picture of an FTE ramp gantry with possible MDX signing is shown below:



Figure 3-2 – Ramp Gantry with possible toll signing.

A 10’ x 10’ pre-fabricated utility building with HVAC will be provided at each gantry to install equipment panels, lane tolling and monitoring electronics, roadside IT hardware and network equipment. This building functions as a communications hub where the fiber backbone cable and power service are provided equipment and building operations. There would likely be one building at each interchange with multiple ramp gantries, with short-run infield data and



power conduit to each gantry in an interchange. Some gantries may also have individual data and power roadside cabinets.

A **Generator** will be located outside of and adjacent to each utility building. The generator will be mounted on a pad, to provide emergency power to the tolling site in the event of a power outage. The generator will be capable of automatic start up in the event of power loss and will be capable of providing electrical service to the utility building for a minimum of four hours.

A double-conversion online, rack mounted **uninterruptible power supply, (UPS)**, will be provided for each building and/or cabinet capable of sustaining essential network and tolling operations at the site. The UPS will be capable of providing operational power for the equipment for approximately 120 minutes after the loss of power. Since the online UPS is always running off the battery there is no transfer time in the event of a prime power failure or generator failure.

**Junction boxes and conduit** will be provided to facilitate in-pavement sensor installation as well as infield connections between gantries.

**Signing** for gantries, trailblazers and adjacent roadways will also be provided as part of the infrastructure capital program. Signing will play an important role not only in traffic engineering but in the public outreach campaign. Drivers must be able to quickly discern they are entering a toll road, but that cash payment is not possible. They must be able to quickly recognize they are on MDX facilities and not non-tolled or cash-based toll routes. The signing must be clearly different from existing signing and other roadway signing to immediately capture for the driver that electronic or video payment is required “toll violations are not an option.” It will be important to identify to regional drivers that all sections of routes 112, 836, 874, 878 and 924 are now “TOLL” roads.



Figure 3-3 - Trailblazer

Suggested layout and application of signing is contained in the Appendices.

- o **Color.** In 2005, data from the Pooled Funds Study (administered by the FHWA office for safety and research development) was presented at a International Bridge, Tunnel and Turnpike Association meeting, in which the results showed that purple backgrounds with white lettering was one of the best color combinations for eye capture and recognition. Purple has become an unofficial preferred color for electronic toll collection, stemming from its use in the E-ZPass logo and, more recently, in its application on the West Park ORT facility in suburban Houston, Texas. Purple is the recommended sign color for the ORT Master Plan program.
- o **Tag Line.** Repetition of a very short phrase or wording that is technically correct from a traffic engineering perspective and also can be applied in correspondence, literature,

advertising, etc., will be helpful in providing instant recognition of the MDX facility and operations requirements. Tag lines could be “Free-Flow Tolls” or “All Electronic Tolls.” This selection will ultimately be made by MDX with support of its advertising program staff and consultants. “Free-Flow Tolls” is presented in this report in the graphics.

- o MDX Logo. The “MDX” portion of the agency logo is clean and easy to read at a distance, and would help in distinguishing its roads from others in the area. It will also be important in branding the video tolling product. Wide use of the MDX logo in the signing is recommended.

The infrastructure contractors would be responsible for maintenance of traffic during site work and gantry erection, data and power terminations to the interface panels in the buildings, and typical requirements for site cleanup after construction. The infrastructure contractors would be responsible to provide all signing, but would only install MDX system signage: major coordination with Florida DOT, local agencies and the FTE would be required for trailblazer signing on their routes.

**Work not included in the Master Plan:**

- o No pavement work beyond immediate cleanup and construction repairs is envisioned. The only in-pavement sensors envisioned (see “system description” below) would be loop-based systems – no contact-type of system such as treadles is anticipated. Pavement needs in the region of the toll zones must be evaluated in the ORT program development phase subsequent to acceptance of the Master Plan.
- o Plaza demolition - the Master Plan does not specifically address construction activities for plaza site demolition and pavement restoration of the existing plazas, but does include contingencies to address potential property improvements:
  - SR 112: the existing plaza islands, booths and canopy will be removed, and the roadway will be improved to carry traffic straight through the site. The remaining pavement, separated from the through traffic, and the building can be retained for other MDX uses such as accident staging, help truck or emergency vehicle yards, etc. The building may be retained as a utility or storage building.
  - SR 836: the 97<sup>th</sup> Avenue plaza under construction may be retained for customer service in the cash lanes, after cash collection is no longer needed. Customer service could be provided in an unattended fashion with transponder sales from a kiosk and possibly maps or other information, as well as unpaid toll envelopes. Under no circumstances will cash be accepted at these venues. The buildings will be retained from which to manage field maintenance and operations. The “Wing” plaza’s eastbound cash lane area will likewise be retained for possible customer service or maintenance functions and access. The existing building may be retained for support uses.

- SR 874: all the roadway and plaza work required will be incorporated into a significant change order for the 87404 contract. More work will be deleted than will be added. There will likely be no residual cash plaza facility after completion of the substantial 874 corridor improvements.
- SR 924: the existing plaza islands, booths and canopy will be removed, and the roadway will be improved to carry traffic straight through the site. The remaining pavement, separated from the through traffic, and the building can be retained for other MDX uses such as accident staging, help truck or emergency vehicle yards, etc. The building may be retained as a utility or storage building.

The work program described above is estimated to cost approximately \$36.7 million in 2006 dollars, and requires work at 44 specific locations. Of this, approximately \$23.5 million is estimated for the infrastructure improvements, and \$13.2 million is estimated for the roadside system hardware requirements, described below.

### 3.2 System Description

The ORT contracts will provide the in-lane tolling and surveillance equipment, and the communications equipment needed for operations. The fiber optic backbone needed to connect the road side equipment with the Host location will be provided by others. The roadside ORT toll system will include the same components at every location, varying only by the number of lanes. Ramp gantries will all be outfitted with two lanes of roadside equipment at a minimum, allowing traffic to be routed onto a shoulder during maintenance on the ramp lane equipment.

The technology deployed will include:

- o **Lane Controllers** are priced with primary and backup units which would both be on the roadside Ethernet LAN. Lane controllers in modern LAN environments are simply ruggedized, rack-mounted PCs with custom software suitable for industrial, real-time operations.
- o **Electronic Toll Collection** hardware will support SunPass ETC activity and will be upgraded over time as the State of Florida moves through technology migrations.
- o **Video camera** hardware, including the cameras, housings and lights, will be provided for each lane for violation enforcement and video toll operations. The use of strobe infra-red lighting is recommended: the illumination elements are invisible to the motorist.
- o **Vehicle Classification** will be provided by smart loops in the pavement, which are capable of counting vehicle axles and vehicle separation. At some point in the future, if virtually all vehicles have non-removable transponders, vehicle classification may no longer be necessary, however that will not likely be achieved by 2009. In any case, good vehicle separation is necessary for video operations and vehicle tracking, and this function is also provided by smart loops.
- o **Roadway CCTV** will also be provided with one camera per gantry, in order to provide roadway traffic surveillance and watch for possible abuses of the system. The CCTV system

- will also be extremely useful in system acceptance testing and random verification of system classification accuracy, at a fairly low cost.
- o **Gigabit Ethernet Switches** and communications gear in the buildings will be provided as part of the ORT system, for use with the fiber optic backbone provided by others. The Gigabit Ethernet backbone will provide high bandwidth direct connections between the roadside field equipment and the Host and Violation Processing Center over the fiber optic cable. The interface to the Gigabit Ethernet backbone at each cabinet and/or utility building will be implemented with hardened Ethernet switches.

### **3.3 System Development and Procurement**

System procurement is needed to provide the next generation of roadside and back office technologies. The integrator will be responsible to outfit the ORT system in the roadside and back office environments, using infrastructure and space provided by MDX. In brief, the integrator's scope of work will include:

- o System design and design reviews,
- o System factory acceptance testing,
- o System prototype testing at one of the new MDX gantries,
- o System furnishing, stockpiling and installation of all materials and spares,
  - All hardware and fittings,
  - All IT hardware, and
  - All IT software,
  - Any conduit, boxes, supplies not specifically provided by MDX or its other contractors,
- o System testing, site-by-site and system-wide,
- o System warranty services,
- o System training.

MDX will acquire software with full ownership rights and source code, other than commercial software which will be fully licensed and warranted.

In each arena, there are now a number of systems integrators with products which have gone through the development and test cycle. The procurement will be structured to enable as many of these best products to be offered. The Master Plan is organized such that two specific procurements, either under the ITN approach or the conventional RFP approach, may be used. Both procurements would be conducted simultaneously: MDX would have the flexibility to either accept a vendor's roadside solution, the vendor's back office solution, or both.

The procurement cycle would first require development of ITN / RFP documents by the program development team, followed by the procurement process itself, to include site visits, technical and price proposal reviews, ranking and negotiation. Upon contract award(s), the actual design and development of the roadside and back office systems would commence.

Although MDX will certainly seek proven products and processes, a design development phase will still be critical. The system will be developed with emphasis on requirements for commercial software for customer service and accounting, to the greatest extent possible. Application of commercial software still requires customization, and this is what must be described and designed in detail to insure proper development and a high degree of auditability of the new system. As new system operations and audit will be critical to measuring performance, compliance and violation processing, a thorough reporting system design will be required.

The testing phase will remain critical as well to ensure that all transactions are a) captured, b) recorded correctly, and c) posted to the host database correctly such that SunPass transactions and video-based transactions all have the correct data at the correct time.

### 3.4 Capital Cost Estimate

The cost estimate summary appears in Table 3.1:

<b>Table 3.1 - ORT Program Capital Cost Estimate</b>			
Number	Name	total Estimate	Description
10013	ORT Project Development	\$20,805	Project development and system-wide technology development.
		\$20,805	
11209	ORT Improvements SR 112	\$4,897	Infrastructure and roadside technology
83605	SR 836 Ext. from NW 137th Ave. to NW 107th Ave.	\$0	Roadside technology and program contingency
83623	ORT Improvements SR 836	\$16,029	Infrastructure and roadside technology
87411	ORT Improvements SR 874 / 878	\$10,907	Roadside technology
92405	ORT Improvements SR 924	\$3,693	Infrastructure and roadside technology
		\$35,526	
		<u>\$56,330</u>	

DTC March 2006

Final Report

### 3.5 Schedule and Recommendations for Capital Program

The ORT Master Plan includes recommended projects for the 2007-2011 capital program. Conversion of an operating toll road from cash-plaza based operations to non-stop account-based operations impacts all areas of engineering, finance and operations of the toll organization. The implementation is best organized as a capital program with a number of contracts designed to exploit the best system and service offerings in various market areas. The proposed contracts for the ORT Master Plan are presented in the Authority's format for capital improvements. Not all projects listed, however are engineering projects.

The general relationships of the proposed projects and activities are:

- o During FY 2007, preparation of the design standards for the infrastructure improvements as well as system specifications will be completed. During calendar 2007, the systems integrator(s) will be under contract to implement their system, and the infrastructure contractors will be bidding on their projects. The public outreach campaign will begin during 2006 to announce the opening of the SR 836 extension and the concept of Open Road Tolling. The SR 836 extension is currently scheduled to open in the first half of 2007.
- o During FY 2008, design under the design-build contracts will be completed for the infrastructure improvements on each route, and some gantries will be installed during this time. The 2008 timeframe will be to provide ample time for the system integrator(s) to install the roadside technology and test it without charging tolls, to exercise the system and refine the video image capture performance. Existing plazas will continue in operation until the new ORT system is ready, tested and accepted. Also, the back office system will come on line during this time, not only replacing the existing system but also beginning to offer video-based toll accounts while the existing toll plazas are still in place. Also, SR 874/878 and SR 924 will be tested out and prepared for ORT operations.
- o During FY 2009, ORT operations will begin on SR 874/878 prior to the beginning of demolition of the existing plaza and completion of the 87404 project. ORT operations also begin on SR 924. Other project improvements and schedule constraints require ORT to be completed on SR 874/878 by this time. There are no constraints on SR 924, but the installation will not be difficult, and the project will improve toll equity as well as improve traffic operations, and thus is recommended to be advanced in the same timeframe.
- o During FY 2010 and FY 2011, the infrastructure work and system installation work for ORT operations will be completed on SR 112 and SR 836. These two routes are scheduled together so that the conversion in toll concepts does not force undue diversions from one route to the other during an interim period. The implementation schedule for this route is held back to provide time for MDX to make interim highway operational improvements as well as complete some of the Palmetto Expressway interchange improvements before the change in the toll concept.

This schedule is described pictorially in Figure 3-4:

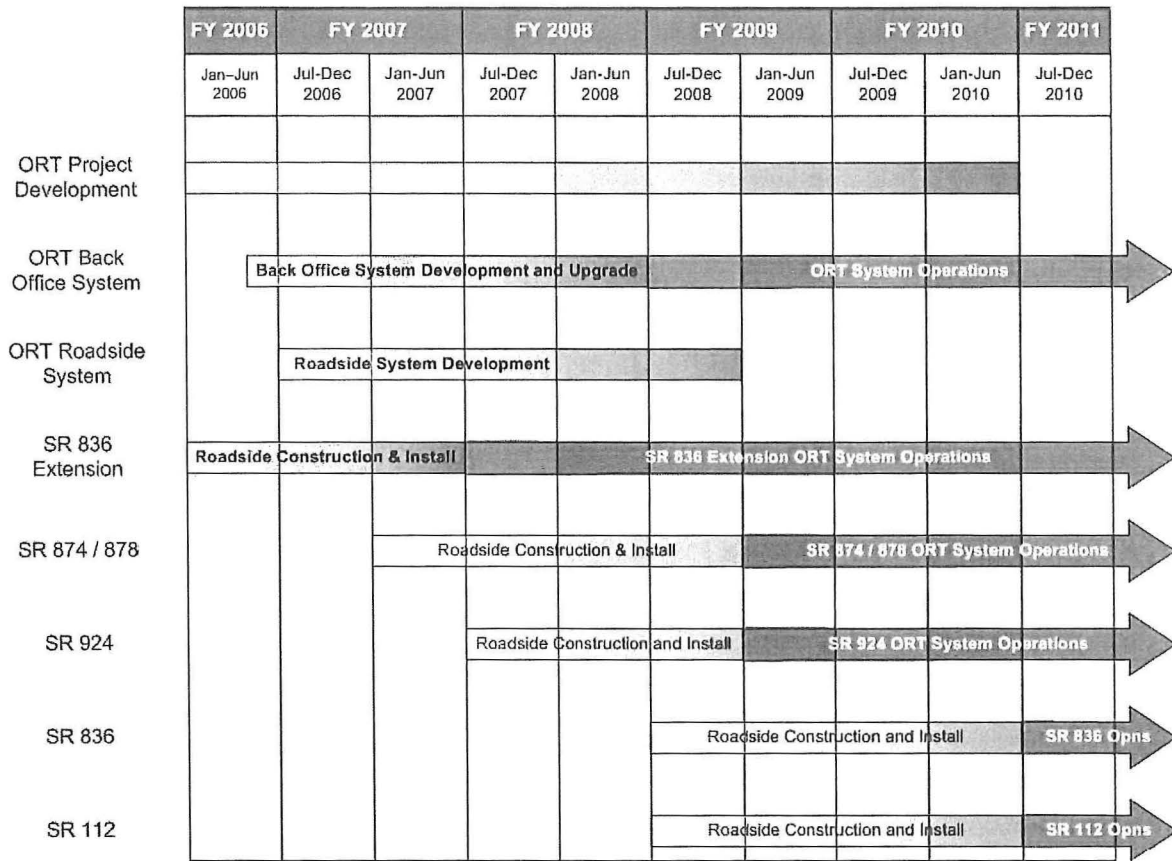


Figure 3-2 – MDX’ ORT Master Schedule Concept

### 10013 - ORT Project Development

Contract Types: Professional Services Agreement

Scope: The consultant scope will include but not be limited to:

1. Preparation of gantry site standards for use in the design-build or construction contracts addressing the structures, buildings, generators, and data and power connectivity.
2. Preparation of the design-build or construction letting documents.
3. Design-build or construction bid evaluations.
4. Design-build or construction design reviews and recommendations.
5. Availability for consultation during construction.
6. Preparation of the ORT roadside and back office system procurement documents.
7. Procurement assistance as needed, to include proposal reviews and recommendations, field views for bidding contractors, preparation of evaluation documentation, and assistance or consultation for MDX as requested during negotiations.
8. System contract(s) administration support as required by MDX, to include contract compliance vis-à-vis scope, schedule and invoicing.
9. System design and submittal reviews.
10. System test program assistance, review and recommendations.

Schedule:

- |  |                                    |
|--|------------------------------------|
| o NTP:   | March, 2006                        |
| o RFP/ITN Completion:                              | August, 2006                       |
| o Standards Completion:                            | November, 2006                     |
| o 83618 Changed Signing Requirements               | November, 2006                     |
| o 87404 Changed Tolling Requirements               | April, 2007                        |
| o 92405 Design-Build or Construction Package       | August, 2007                       |
| o 11206 Design-Build or Construction Package       | October, 2007                      |
| o 83622 Design-Build or Construction Package       | October, 2007                      |
| o Design-Build or Construction Package Completion: | April, 2007 through December 2007. |

Budget:

The Master Plan estimate for this work is \$3.1 million from FY 2006 through FY 2011.



**10013 (Continued) - ORT Public Outreach Program**

Contract Type: Professional services agreement

Scope: The public awareness program developer's scope of work will include but not be limited to all tasks related to informing the MDX customer service market and local community and state political leadership about the conversion to Open Road Tolling:

1. Information to disseminate includes:
  - a. ORT Program description and justification,
  - b. ORT Program schedule of conversions and plaza closing announcements,
  - c. MDX Facilities user instructions (SunPass offerings, new transponders, where to service accounts), video tolling, "what to do if you get a letter."
2. Tools to use and / or develop:
  - a. Public news releases,
  - b. Elected official releases and contact information,
  - c. Advertising in print, radio and possibly television,
  - d. Temporary banners and signing guidance for placement at toll plazas (this firm would just design the program, and a signing contractor would erect any temporary signing or banners),

Schedule:

- o NTP: January, 2007.
- o Contract completion: Six months after ORT conversion on SR 836.

Budget:

The Master Plan estimate for this work is \$5 million from FY 2007 through FY 2011.

**10013 (Continued) - ORT System Development**

Contract Type: System integration design-build contract

Scope: The systems integrator scope of work will include all tasks in order to provide a complete and properly functioning Open Road Toll back office system and operations center:

1. Back office system to include:
  - a. Host system, database and all related hardware, commercial and custom software for system posting up to 2 million transactions per day,
  - b. Adequate data storage and upward migration paths,
  - c. Source code for all custom software,
  - d. Database mapping and table structure,
  - e. Interface specifications for data to/from the roadside,
  - f. Interface specifications for data to/from SunPass Toll Data Center,
  - g. Interface specifications for data to/from MDX general administrative software,
  - h. Commercial report writer software,
  - i. Report server,
  - j. Support for up to 200 call center clerk terminals for video and/or call center services,
  - k. Optical Character Recognition (OCR) engine software and hardware,
  - l. ORT system administration,
  - m. ORT gantry CCTVs and CCTV monitoring will be coordinated with other CCTV cameras delivered under the ITS contract
2. Migration plan to convert all legacy data and records to new system,
3. Migration plan to cut over operations from old field sites (toll plazas) to new system,
4. Migration plan and software development to support interface file transfers to/from SunPass Toll Data Center,
5. Preliminary and final design documentation, including architecture, software design, proposed hardware cut sheets, Bills of Material (BOM), installation schedule, installation description and requirements, all for review, comment and approval prior to BOM purchase,
6. Test program including Factory Acceptance Test, Prototype Test, System Acceptance Test.
7. As-built documentation,
8. Spares,
9. Warranty and depot-level maintenance,
10. Options on long-term maintenance.

Schedule:

- |   |                          |
|---|--------------------------|
| o NTP:                                  | January, 2007            |
| o Host support for 836 extension lanes  | June, 2007               |
| o Begin trial video toll operations     | Before second half, 2008 |
| o 874/878 and 924 system ready for test | Second half, 2008        |
| o 112 and 836 system ready for test     | First half, 2010         |

Budget:

The Master Plan estimate for the system and common work is \$12.7 million from FY 2007 through FY 2011.

**(Broken out into each Roadway Contract) ORT Roadside System**

Contract Type: System integration design-build contract

Scope: The systems integrator scope of work will include but not be limited to all tasks in order to provide a complete and properly functioning Open Road Toll system in the roadside environment:

1. Roadside system to include:
  - a. ETC readers, RF modules, antennae and related lane hardware, conduit and junction boxes (JBs),
  - b. VES cameras, housings, illumination and related hardware, conduit and JBs beyond those provided by the infrastructure improvements contractor,
  - c. Automatic vehicle classification system to provide axle-counting and vehicle separation, and related hardware, conduit and JBs beyond those provided by the infrastructure improvements contractor,
  - d. 360-degree PTZ roadway surveillance camera for use with ambient lighting,
  - e. Gantry LAN,
2. Roadside work to include:
  - f. Furnish on site,
  - g. All hardware and software installation,
  - h. All data and power terminations,
  - i. System monitoring of the Generator and UPS devices,
3. Preliminary and final design documentation, including architecture, software design, proposed hardware cut sheets, Bills of Material (BOM), installation schedule, installation description and requirements, all for review, comment and approval prior to BOM purchase,
4. System interface specifications: transaction formats, systems diagnostics, etc.,
5. Roadside lane controller software source code,
6. Test program including Factory Acceptance Test, Prototype Test, Punch-list / Acceptance Tests for each site, and the System-wide Acceptance Test after system operations.
7. As-built documentation,
8. Spares,
9. Warranty and depot-level maintenance,
10. Options on long-term maintenance.

Schedule:

- |  |                   |
|--|-------------------|
| o NTP:                                   | January, 2007     |
| o Prototype Installation (836 extension) | First half, 2007  |
| o 874-878 and 924 system ready for test  | Second half, 2008 |
| o 112 and 836 system ready for test      | First half, 2010  |

Budget:

This work estimate is included in the amounts presented for each route on following pages:

**11209 - ORT Improvements for SR 112**

Contract Type: Highway infrastructure design-build contract

Scope: The contractor scope of work will include all tasks in order to provide the infrastructure platform to support the ORT Roadside system contractor:

1. Mainline and ramp gantries at the locations identified in the tabulations,
2. '10 x '10 equipment buildings,
3. Trunk line fiber spliced and brought into fiber patch panel in building,
4. Power brought to the service power panel.
5. Generators and emergency power panels / switches as needed,
6. Overhead and in-ground conduit and junction boxes as identified in the ORT standard drawings,
7. Maintenance of traffic services during construction,
8. Coordination with the ORT Roadside system contractor for erection of overhead system hardware, and road closures for installation of any hardware,
9. Fabrication of toll signing for use in the SR 112 service area,
10. Erection of toll signing at gantries and on the SR 112 right of way, to include temporary covers before initiation of Open Road Tolling operations.

Schedule:

- o NTP: first half, 2008
- o System installation first half, 2010.

Budget:

The Master Plan estimate for this work and the system work on this route is \$4.9 million from FY 2008 through FY 2011 and system acceptance.

**83618** - No changes required except for new toll signing and SR 836 trailblazers

Contract Type: Amendment to existing highway infrastructure contract

Scope: The contractor's existing contract will require signing modifications to comply with new ORT signing on the right of way, including at the gantries.

Schedule:

- o Changes to 83618 contract: November, 2006
- o Changes completed: Prior to extension opening to traffic

Budget:

No changes to the budget is required to support ORT implementation on the SR 836 Extension.

### 83623 - ORT Improvements for SR 836

Contract Type: Highway infrastructure design-build contract

Scope: The contractor scope of work will include all tasks in order to provide the infrastructure platform to support the ORT Roadside system contractor:

1. Mainline and ramp gantries at the locations identified in the tabulations,
2. '10 x '10 equipment buildings,
3. Trunk line fiber spliced and brought into fiber patch panel in building,
4. Power brought to the service power panel,
5. Generators and emergency power panels / switches as needed,
6. Modification of existing toll plazas (the "Wing" and the new 97<sup>th</sup> Avenue Plazas, and the 836 extension gantry) if required to support the new system,
7. Overhead and in-ground conduit and junction boxes as identified in the ORT standard drawings,
8. Maintenance of traffic services during construction,
9. Coordination with the ORT Roadside system contractor for erection of overhead system hardware, and road closures for installation of any hardware,
10. Fabrication of toll signing for use in the SR 836 service area,
11. Erection of toll signing at gantries and on the SR 836 right of way, to include temporary covers before initiation of Open Road Tolling operations.

Schedule:

- o NTP: first half, 2008
- o System installation first half, 2010.

Budget:

The Master Plan estimate for this work and the system work on this route is \$16.0 million from FY 2008 through FY 2011 and system acceptance.

**87411 - ORT Improvements for ORT Improvements**

Contract Type: Addendum to existing infrastructure contract

Scope: The contractor scope of work will be supplemented to add all tasks related to the infrastructure platform needed by the ORT Roadside system contractor:

1. Mainline and ramp gantries at the locations identified in the tabulations,
2. '10 x '10 equipment buildings,
3. Trunk line fiber spliced and brought into fiber patch panel in building,
4. Power brought to the service power panel.
5. Generators and emergency power panels / switches as needed,
6. Overhead and in-ground conduit and junction boxes as identified in the ORT standard drawings,
7. Maintenance of traffic services during construction,
8. Coordination with the ORT Roadside system contractor for erection of overhead system hardware, and road closures for installation of any hardware,
9. Fabrication of toll signing for use in the SR 874 / 878 service area,
10. Erection of toll signing at gantries and on the SR 874 right of way, to include temporary covers before initiation of Open Road Tolling operations.

Remarks:

This contract will require other changes to delete work items in the current contract, such as the centerline lane shifts to make room for new cash plazas, or the new cash plazas themselves. These design changes will be made by the current design engineer, upon MDX' approval of the ORT Master Plan.

Schedule:

- o Provision of changes to the designer / contractor: First half of 2006

Budget:

The Master Plan estimate for the additional work is \$10.9 million from FY 2007 through FY 2009. Note this does include the savings in deleted work items such as the centerline shift or the new plazas.

**92405 – ORT Improvements for SR 924.**

Furnish and install roadside gantries, '10x'10 buildings, generators, data and power to site terminated at panels. Maintain traffic, restore construction areas, replace all toll signing and area SR 924 trailblazers.

Contract Type: Highway infrastructure design-build contract

Scope: The contractor scope of work will include all tasks in order to provide the infrastructure platform to support the ORT Roadside system contractor:

1. Mainline gantries at the locations identified in the tabulations,
2. '10 x '10 equipment buildings,
3. Trunk line fiber spliced and brought into fiber patch panel in building,
4. Power brought to the service power panel.
5. Generators and emergency power panels / switches as needed,
6. Overhead and in-ground conduit and junction boxes as identified in the ORT standard drawings,
7. Maintenance of traffic services during construction,
8. Coordination with the ORT Roadside system contractor for erection of overhead system hardware, and road closures for installation of any hardware,
9. Fabrication of toll signing for use in the SR 924 service area,
10. Erection of toll signing at gantries and on the SR 924 right of way, to include temporary covers before initiation of Open Road Tolling operations.

Schedule:

- o NTP: First half, 2007
- o Accepted for system installation Second half, 2008

Budget:

The Master Plan estimate for this work and the system work on this route is \$3.7 million from FY 2007 through FY 2009 and system acceptance.



## 4 TOLL OPERATIONS CONCEPT

A key to the successful introduction of ORT on MDX facilities will be correctly managing the modification and upgrade to existing MDX toll operations and toll system software to accommodate the introduction of image based tolling. Beyond the obvious change from the current mixed mode, barrier toll collection plazas to the open road, free-flow tolling environment there are numerous changes that must be made to toll operations, toll collection software and operating business rules. With ORT the dynamics of the customer interface dramatically changes from the current in-lane customer contact for cash transactions and service center contact through SunPass<sup>®</sup> interoperable CSCs for ETC transactions to only off-road service center contact with interoperable CSCs for ETC transactions and MDX for video account and violation transactions.

Under ORT operations MDX will have day-to-day operational control over transaction management affecting the video tolling and violation processing functionality of the toll system. This will be a major paradigm shift in how MDX is exposed to its cash customers. The conversion to ORT will cause some cash customers to sign up for SunPass<sup>®</sup> transponders in order to continue their routine use of MDX facilities. Other cash customers will either cease to use the facilities or sign up for the video tolling option which will be provided by MDX.

Whether MDX elects to operate the new service center with its own personnel or to contract out the service center operations the dynamics of making sure all video account transactions, account management functions, revenue reconciliation and customer financial information security will be new facets for MDX to effectively manage. Business issues, such as where to locate the new service center, whether to have satellite offices, what should the business hours be, what credit cards to accept, what staffing and experience requirements are needed to protect MDX's goodwill all come into play by implementing ORT. Additional details regarding the operational requirements of the video account service center are contained in Section 4.3.2.

The ETC aspect of ORT operations will still be managed by FTE. This includes all the new SunPass<sup>®</sup> accounts that will be opened as a result of the free flow tolling on MDX facilities, any kiosk operations SunPass<sup>®</sup> installs for SunPass tag distribution including the proposed use of the eGo Plus<sup>®</sup> "sticker" tag. Plans by FTE for the new sticker tag option include providing "cash only" customers with a method to open ETC accounts without having to maintain the accounts with credit cards. The "cash only" customer will be able to replenish the tag account balance by stopping at a designated commercial establishment. All transaction matter relating to tag account management and validity of the tag in a MDX ORT lane will be the responsibility of FTE through the SunPass<sup>®</sup> CSC.

Currently, all ETC transactions occurring on MDX facilities are processed through the SunPass<sup>®</sup> Customer Service Center (CSC) regardless of which interoperable agency actually holds the

user's ETC account<sup>1</sup>. Transactions that are not specific to SunPass<sup>®</sup> customers are then forwarded to the appropriate interoperable agency. It is not anticipated that this will change with the implementation of ORT because MDX will not maintain its own ETC customer base. What will change is the need for a service center, controlled by MDX, to process video based transactions. A necessary adjunct to this service center requirement is now in place with MDX's violation processing center (VPC) operated and managed, on behalf of MDX, by the Washington Group International, Inc. (MGI). The VPC will be the primary focal point for processing vehicle license plate images generated by the ORT system.

Full ORT by MDX will either require an expansion of the VPC to accommodate video accounts and related processes or require the implementation of a separate service center, much along the lines of the SunPass<sup>®</sup> CSC, for video account related services. Because customer contact will shift to interfacing with a MDX controlled customer service center the development of the new ORT customer service center must be carefully planned to ensure that the operating software is efficient and the facility is accessible to the public. Prior to the development of requirements and specifications for the new ORT customer service center a decision needs to be made whether:

- To take the existing MDX VPC software and develop it further to accommodate the functionality required for a video account based service center;
- To develop a separate and distinct video account based service center that interfaces with existing MDX VPC and require the enhancement of the existing VPC to interface with the new service center; or
- To develop a new VPC and video account service center that will replace the existing VPC.

The implications of this decision are whether or not the new software development process is opened up to system integrators that do not currently have operational software installed as part of the MDX toll management system (TMS). Regardless of the decision as part of the implementation process for the ORT Master Plan MDX should seek a binding commitment from all existing toll operations contractors and toll system contractors that these contractors will provide their full cooperation and assistance with any input or software modifications that need to be made in order to successfully implement ORT.

Notwithstanding any of the requirements mentioned above overlaying all the new ORT operational and software requirements will be MDX's enhanced business rules that will govern the effectiveness of MDX's toll operations and the operational impact on MDX's customer base. It is important to note that implementation of ORT by MDX not only changes the dynamics of MDX operations but there will be a ripple effect into the operations of other toll agencies in the state of Florida as well, particularly toll agencies operating in close proximity to MDX facilities<sup>2</sup>.

<sup>1</sup> Florida's Turnpike Enterprise (SunPass<sup>®</sup>), Orlando-Orange County Expressway Authority (E-Pass<sup>®</sup>), Lee County (LeeWay)

<sup>2</sup> Florida's Turnpike Enterprise (SunPass<sup>®</sup>), Broad Causeway (BayPass), Rickenbacker Causeway (C-Pass), Venetian Causeway (C-Pass)

The MDX ORT Master Plan should not be implemented without considering and addressing all impacts that result from ORT on MDX.

Information that is germane to the Toll Operations Concept pertains to (1) the impact of ORT on existing toll operations which includes existing operations contracts, system software and inter-agency transaction relationships; (2) impact on violation processing; (3) the establishment of video accounts and related services; (4) customer service and business rules; and (5) customer privacy issues.

#### **4.1 ORT Impact on Existing Operations**

The transition to ORT operations from the traditional in-lane toll collection activities will have a major impact on how MDX conducts its day-to-day toll operations. Although there will be a shift away from collecting tolls both in-lane and via ETC to all electronic processing through ETC or video image processing it does not mean that the need for humans to be actively engaged in the toll operations process will correspondingly reduce in a dramatic fashion. There will be a shift in personnel requirements from in-lane/plaza activities to back office account management activities plus increased VPC labor to handle the increased electronic processing of toll transactions.

##### **4.1.1 Impact on Current Operations Contracts**

Current toll operations by MDX include a substantial workforce that is actively engaged in toll collection and maintenance activities at the lane and toll plaza level. As ORT is implemented across the MDX system this lane/plaza level workforce will be reduced to a workforce that maintains the in-lane ORT equipment and software. Since a bulk of the current toll collection services are provided under contract it would be prudent for MDX to examine the terms of its contracts to determine what actions are necessary to coordinate the reduction of services with the concurrent implementation of ORT. It is likely that the contract has requirements for notification by MDX for services reduction so that the contractor can manage its workforce and payroll.

MDX also has an existing contract with WGI for processing violations and managing the violation notification process. Depending on the ORT operational scenario MDX elects to pursue, i.e. establish a separate video account service center or expand the existing VPC to include video accounts, there are probably contractual notification requirements for any adjustment in contractor workload resulting from MDX operations. Here again it would be prudent for MDX to coordinate impacts of ORT in a timely manner with its VPC contractor.

##### **4.1.2 Impact on Current ETC Operations**

All ETC transactions on MDX facilities are processed through the FTE's SunPass<sup>®</sup> Customer Service Center (CSC). Even though there are multiple agencies within the state of Florida that are interoperable with SunPass<sup>®</sup>, with each agency holding a separate customer database

(excluding MDX), MDX transmits all ETC transactions to the SunPass® CSC for processing. The SunPass® CSC provides the necessary interface will all other agencies for the collection of ETC tolls due MDX. From an operational standpoint any increase in ETC transactions on MDX facilities, whether incremental or dramatic, will have a negligible impact on the operational relationship with the SunPass®. In fact, an increase in ETC participation and usage on MDX facilities will be consistent with the goals of FTE to increase usage of ETC and correspondingly SunPass on toll facilities in Florida.

**4.1.2.1 Interoperable ETC Interface Requirements**

In order to successfully transmit ETC transactions and related files to SunPass® each ETC transaction and file must meet the interface requirements specified by FTE. As the toll collection system stands today the number of ETC transactions is considered relatively small when compared to the number that will be generated under ORT. The fact that most ETC transactions today occur based on one transaction per round trip on SR 836 and SR 112 and two transactions per round trip on SR 874 and SR 924 keeps the total number of transactions small when compared to multiple transactions per round trip resulting from expanding the number tolling zones to capture most traffic movements under the ORT concept. The number of ETC transactions occurring on a daily basis will increase at least six times the number being experience today.

The potential impact on MDX relates to the expected cost of processing ETC transactions through FTE if and when FTE commences charging for processing ETC transactions. For the purposes of this ORT Master Plan an estimated expected cost of 4 cents per transaction is included in the Opex calculations (Appendix C, Table 8). In order to minimize this expected transaction processing cost it has been suggested that it may be possible to “bundle” ETC transactions in a manner that would lump single trips, comprised of multiple transactions, into one bundled transaction (see Figure 4-1 for illustrative purposes). The bundled transaction totals all tolls due for a number of transactions into a single transaction for processing by FTE. As indicated in Appendix C, Table 8 the MDX transaction-to-FTE Transaction ratio is estimated to be 3.5 to 1. Under this transaction bundling scenario the processing cost savings is over \$10 million per year<sup>3</sup>. Because the processing costs saving are so substantial it is worth pursuing the concept with FTE.

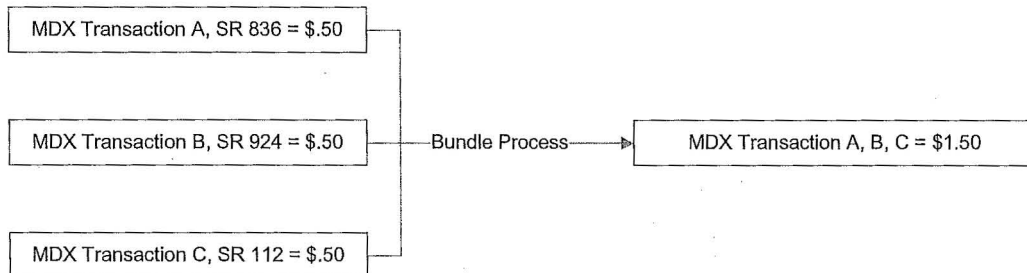


Figure 4-1

<sup>3</sup> Bundled transactions \$4,004,571 versus single transactions \$14,016,000

While the concept of bundled transactions appears to make economic sense there are other impacts to both MDX operations and interoperable agencies that must be considered. Software changes will not only have to be made to the SunPass® CSC to accommodate the transaction bundle but will also have to be made to the E-Pass and LeeWay CSC's as well. The software changes required affect the business rule process applied by SunPass® interoperable agencies by which the integrity of an ETC transaction is checked for validity. In other words, when a MDX transaction arrives at a CSC the software ensures that the toll charged is appropriate for both the class of vehicle listed and the plaza at which the transaction took place. By bundling transactions the current CSC software is not able to process the toll. Therefore changes need to be made to CSC software interfaces.

As one of the purposes of this Master Plan the following discussion is intended highlight some of the processing issues and solutions so a decision can be reached on the transaction bundling issue which in turn affects the requirements and specifications for the ORT toll collection system.

The first possible change is for the CSC software to accept a bundled transaction by establishing a "transaction bundle code" as the plaza identifier. Another possibility is to have the CSC modify the ETC transaction format to allow multiple plazas and tolls to be listed in the one transaction string with complimentary software being able to verify the classifications, tolls and plaza information. Under the bundling concept the transaction would probably not have information relating to date and time of each component of the transaction. No matter which solution is selected it will require cooperation with SunPass® interoperable agencies to implement the transaction bundling concept.

Coincidental with the planning and development of ORT operations by MDX the FTE is also planning and developing a new toll system. It is incumbent upon MDX to enter discussions with FTE regarding interface requirements for toll transactions between the two agencies. FTE's plans for their new toll collection system include revised interface requirements which, even in the absence of a conversion to ORT, MDX will have had to make software adjustments in the MDX toll management system to accommodate FTE's new requirements. System requirements issued by MDX to potential bidders should provide the flexibility to adjust to FTE software interface requirements. However, in the interim the transaction bundling concept should also be actively pursued with FTE.

#### **4.1.2.2 Database Access by Interoperable Agencies**

Notwithstanding the flexibility discussed above it is also important for MDX to have the bundling issue resolved prior to issuing a RFP for ORT software because there are important impacts on how the MDX ORT database will be designed. If the transaction bundling concept can be utilized the MDX software will need an ETC transaction database that links bundled transactions to individual transactions for transaction reconciliation and customer service to handle customer queries. It is important to remember that for the resolution of a perceived transaction problem ETC customers will normally call the CSC that holds their account which will not be MDX's new VASC. Without being able to resolve the customer query at the

customer's CSC level through a link to the MDX database the query will probably be escalated to MDX which increases operating expenses by increasing personnel costs. Thus any transaction cost savings begin to erode not to mention creating customer ill will. The single transaction processing concept allows each service center to have all the transaction information in front of the customer service representative to review with the customer. The transaction bundling concept does not unless there is an online link to MDX's transaction database.

It is possible to develop the required CSC links back to a protected portion of the MDX database to accommodate customer transaction issues. The MDX ETC database can be mirrored with read-only access by other agencies to preclude any possible data changes or gateways into the MDX TMS. Database requirements and specifications should be clearly stated in all requests for proposals for the ORT toll collection system. Cost estimates for this have not been made as part of the Master Plan. If this concept is part of the initial design the cost for system development and equipment would still be far less than the increased transaction processing costs for single transaction processing. In other words the concept is worth pursuing.

#### 4.1.3 Potential Impact on Inter-Agency Relationships

It appears that MDX will be the first Florida toll agency to implement video tolling as part of its toll collection activities. By becoming the first and *only* tolling agency to have a customer base that utilizes license plates as the sole means of identifying a customer MDX will possibly impact the operations of other toll agencies in the Miami-Dade County area. The impact will be caused by MDX customer's not complying with the video tolling concept on MDX facilities only. It is likely that these other agencies will experience an increase in violations by MDX customers not remembering that it applies to MDX facilities only.

It is not hard to imagine MDX customer's traveling on FTE facilities or local Causeway's with the notion that they can travel through toll collection zones, that are not restricted by barriers, thinking that their license plate image will be used to have the proper toll credited to the agency owning the toll facility used. MDX will have to ensure that its public information disseminated to video account customers is abundantly clear that video tolling pertains to only MDX facilities. In this respect it may be operationally sound to include a video tolling logo on MDX facilities providing customers with a reminder that if they don't see the logo then video tolling is not an option. This logo concept may be particularly useful during the transition period from video tolling being permitted only on the SR 836 Extension to video tolling system wide on MDX facilities.

Notwithstanding the toll violation enforcement policies and procedures of these other agencies, MDX should initiate an inter-agency communication policy to keep each other informed as to the impacts of ORT and how to maintain customer satisfaction.

As discussed in Section 4.1, depending on whether or not MDX sends individual transaction or bundled transaction information to interoperable CSC's, the impact of ORT may vary from relatively light to greater than moderate when it comes to responding to each agency's customer database for matters relating to the use of MDX facilities

## 4.2 Impact on Violation Processing Operations

The implementation of ORT will have a huge impact on the collection of vehicle image data and how it is currently being processed. Under present day operations an image captured of a vehicle license plates results in one of two alternatives. It is either an ETC customer whose transponder was not read but the vehicle license plate provided information that would tie the transaction back to the customer's ETC account or the image represented a violation transaction that must be processed through the VPC. The number of images captured and processed under present day conditions is about 3% of total transactions (approximately 7,500 images per day). The balance of transactions occurring on the MDX system is a combination of cash and ETC.

With the removal of in-lane cash payment options for MDX customers coupled with tolling most, if not all, movements on the MDX system of toll facilities the number of images captured will increase 40 fold. This rate assumes an ETC penetration rate of at least 75% (Appendix C, Table 1) which should result from MDX's ORT campaign to encourage customers to sign up for transponders instead of video tolling. This dramatic increase in the number of images that have to be processed has a direct affect on the staffing requirements to process the increased volume.

In order to offset the increased staffing requirements to process images MDX should take advantage of technological advances in optical character recognition (OCR) for determining license plate numbers and in camera system for acquiring the license plate image. The effectiveness of the OCR process is directly attributable to the quality of the imaged being scanned. The better the quality of the image through increased pixel density the higher degree of confidence the OCR software has that it correctly determined each license plate character. More information regarding image capture technology is in Section 4.5.

Currently the VPC system data processing interfaces consist of a connection to MDX for receipt of violation transactions and with FTE for exchanging data files to determine which "violators" are in fact ETC customers that did not receive a complete transponder read or did not have a transponder but hold valid ETC accounts with a SunPass interoperable agency. The implementation of ORT increases the number of data interfaces and data flows between the VPC, MDX, FTE and the new VASC system.

The first step for image review takes place at the VPC. Without data files and processes to determine video account customers at the lane level the determination of the license plate number takes place at the VPC. It is then possible to determine which images belong to video account customers by one of two processes. By specifying that the VPC and VASC be fully integrated this process can take place on a real-time basis. Real-time processing means that as images are processed by the VPC they are sent to the VASC to be checked against the VASC database. If a valid match is found the transaction is retained by the VASC for posting against the appropriate account. Figures 4-2 and 4-3 illustrate in a simplistic data flow diagram processing sequences for video images depending on how the ORT system is designed.

Figure 4-2 depicts the processing of license plate transactions in a circular process between the MDX VPC and VASC and SunPass CSC as the original compiled potential violator's license plate file is whittled down by making account matches at the VASC then SunPass CSC. The process is not the most efficient but it does accomplish the task.

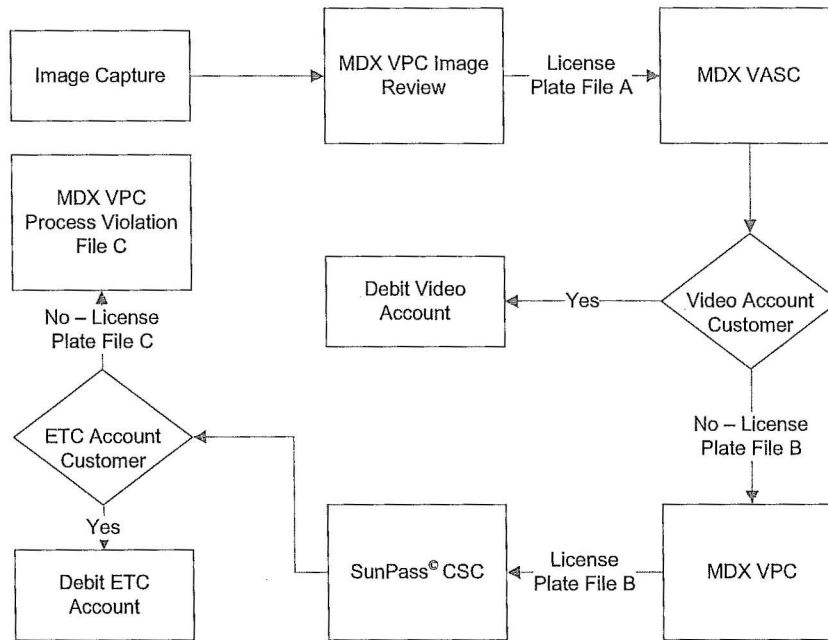


Figure 4-2

Figure 4-3 depicts a more efficient method of processing the potential violator's license plate file. Using the same concept that is used when an ETC tag file is sent to a toll lane, the VASC would send to the MDX VPC, on a daily basis, a file containing license plate numbers tied to valid video accounts. The VPC would then be able to determine which video transactions to forward to the VASC for processing, thus eliminating for the most part, the need for a return license plate file back to the VPC. Concurrently, the VPC would be able to determine which image based transactions to send to SunPass for processing. The SunPass CSC would still be required to return to the VPC all transactions that did not match valid ETC accounts.



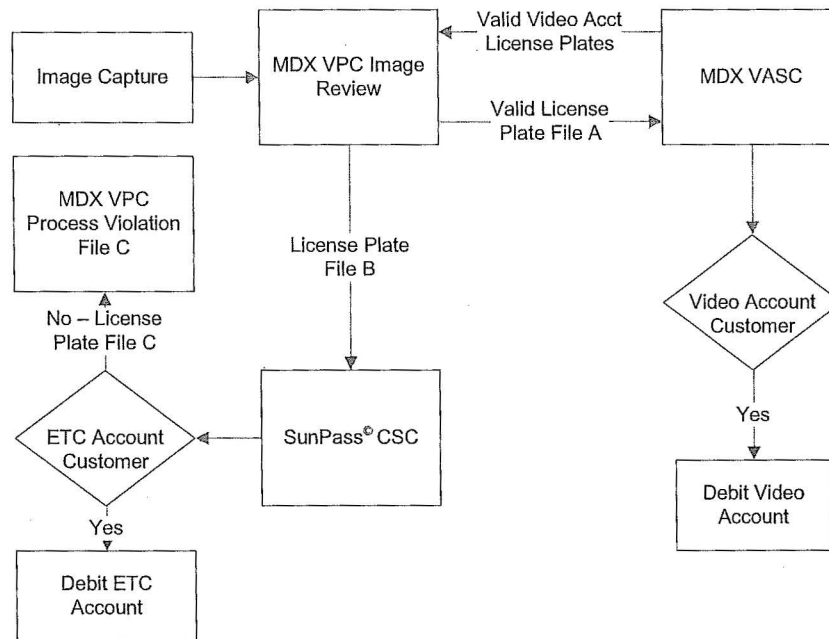


Figure 4-3

The key advantage of first processing image transactions against the VASC database, under either alternative, is the reduction in the number of transactions that will be sent to the SunPass<sup>®</sup> CSC which results in reduced transaction costs by SunPass<sup>®</sup>. Transactions that are not matched to valid customer accounts at either the VASC or SunPass CSC are then handled by the MDX VPC for further processing as violations.

Whether or not the current MDX VPC is enhanced to also include the VASC both the VPC and VASC will have to be fully integrated into each other for efficient operations. When a customer that has received a violation calls the VPC to dispute or resolve the matter a VPC CSR should be able to access the VASC to check if the customer holds a valid account. The customer could have at one time been a valid video account customer that allowed the account to become invalid which the VPC CSR would be able to determine and further discuss with the customer. Or if MDX elects to provide limited video passes the CSR would be able to determine the applicable time frame for valid pass and whether or not the violation occurred outside the permitted time window. The main concern is to not give the customer the run around by passing the customer from one service center to another.

#### 4.2.1 Image Tolling Processing

For comparison purposes of an ORT facility and image processing the Highway 407 Express Toll Route (ETR) in Toronto, Canada, uses a combination of ETC and image tolling for the collection of tolls. On an average daily basis approximately 259,000 vehicles (2003 annual statistics, the average work day average is 330,000 vehicles) utilize Highway 407 ETR. Approximately 30 percent, or 78,000, of these vehicles using the facility are not equipped with

transponders which results in their license plates being recorded electronically. The image tolling system is reported to be able to identify approximately 80 percent of the vehicle plates through the OCR process. The other 20 percent of the digital images, about 15,000 vehicle trips, are reviewed by humans in an effort to identify the vehicles. However, what is not indicated in the data is what percentage of readable plates was actually captured by their equipment.

At a minimum for Hwy 407 ETR this equates to requiring 10 video tolling collectors being capable of reviewing about 400 images an hour for an eight-hour shift seven days a week to stay current with the image review workload. This assumes that there are at least 30,000 images to review because the toll is based upon a trip with entry and exit recorded either by ETC or video image of the license plate. The staffing requirement is the same as having 3 full time attended lanes plus one shift processing normal traffic at 400 vehicles per hour. The Highway 407 statistics are only intended to illustrate the efficiency of their OCR process.

### **4.3 Establishment of Video Account Service Center**

#### **4.3.1 Video Account Customer Service Center**

MDX will need to provide direct customer service to a portion of its customer base when it implements ORT. By converting to all electronic processing for toll collection SunPass® will no longer be the sole electronic tolling mechanism on MDX's system of toll facilities. For MDX customers who elect not to use SunPass® compatible transponders to pay their toll they will be able to avail themselves of an alternative mechanism that utilizes the vehicle's license plate, in the same manner vehicles are identified for violation processing, to pay the toll electronically by establishing a video account. For the purposes of the following information regarding video accounts the process of collecting tolls may also be referred to as "Image Tolling."

The opening and maintenance of video accounts will be through a new service provided by MDX by the establishment of a Video Account Service Center (VASC). Whether or not VASC is an expansion of services provided in conjunction with the VPC or a separate entity entirely it is important that the customer receive seamless service between MDX and all SunPass® interoperable service centers providing electronic account processing.

By establishing a VASC MDX customer relations take on a different dynamics from the in-lane customer exposure experienced under present day operations. As ORT is implemented with image based accounts as a payment option MDX will need to ensure that video transactions are fully integrated into the customer service provided by both FTE and MDX. The new set of transaction types will need to be supported across the Customer Service and Violations Processing Systems of interoperable SunPass® agencies and MDX.

Moving to ORT and offering a different type payment alternative dramatically increases the emphasis on customer communication. The opportunity for personal interface with toll collectors at the toll plazas will be eliminated. The success or failure of the entire ORT approach can be significantly impacted by how effectively future communications are handled. This

includes communications between MDX and its customers as well as communications between MDX and its sister agencies.

It will also require partnering with entities such as Rental Car Agencies, getting information to occasional users at convenient locations and effective roadway signing. This is particularly challenging because one issue is what the sign says but the more difficult challenge is getting the customer to read it. Rental car use on MDX facilities presents a challenge as to how to effectively institute a method of image based tolling and providing timely information back to the rental agency regarding toll usage by the rental agencies customer.

### 4.3.2 Video Account Customer Service

The establishment and maintenance of video accounts is very similar to establishing a SunPass account. Similarities include having a unique identifier on the vehicle, such as the license plate, to tie the vehicle to a customer account, and having all the account maintenance tools available to accurately collect tolls and handle customer inquires about their accounts.

Following are some key features that MDX should incorporate in the VASC customer service solution:

- Individual/commercial account creation/updates
- Account replenishment by cash, check, credit card, or debit card
- Payment receipt
- Prepaid tolls and deposit balance management
- License Plate verification for new, replaced, and stolen
- Transaction disputes and financial adjustments
- Customer discount programs (software flexibility to activate if necessary)
- Account closure/reactivation
- Account deactivation and collections
- Process automated plate-based transactions by identifying the associated ETC customer account and debit the toll charges to that account
- Automatically replenish accounts with low balance via a credit card interface or an automatic clearing house (ACH)
- Automatically generate monthly statements
- Send instructions to access the statements and other customer communication to the customers by e-mail, cell phone, or text messaging (SMS)
- Automatically process notices (e.g., low balance or negative balance notification to customers not automatically replenished)
- Close out customer accounts
- Real-time integration with the Web site and kiosks
- Produce reports for daily, monthly operations
- Maintain electronic copies of customer correspondence in system archives
- Fully integrated G/L interface – double entry accounting for all financial transactions
- Integrated interactive voice response (IVR) system
- Reconciliation to host

- Reconciliation to VPC

Additional detail pertaining to the requirements definition for VASC operations includes:

#### 4.3.2.1 User Defined

The VASC system should be developed in a manner that is highly user configurable and is parameter driven.

#### 4.3.2.2 Accounts

- At a minimum the following account types should be accommodated by the VASC system:
  - Private
  - Commercial
  - Non-Revenue
  - Rental Agency (separate based upon business rule development for possible flat fee for daily tolls)
- The VASC system should be capable of accepting information to open accounts from a variety of sources which should track the method of account set-up and include:
  - Walk-in
  - Internet
  - Mail
  - Fax
  - Kiosks (such as day pass or other limited use)

#### 4.3.2.3 Payment Types

The following payment types should be allowed by the VASC system:

- Credit Card
- Debit Card
- Cash
- Check
- ACH
- Commercial Invoice (business rules governing pre and post paid accounts)

#### 4.3.2.4 Account Balances and Deposits

- Account Balances
  - Allow for user-defined initial account balances and the ability to vary the required balance based on parameters such as payment type, account type and number of vehicles on the account.
- Replenishment Levels
  - Should have a direct interface with a MDX designated bank.

- Have the ability to recalculate replenishment levels based upon usage which are based upon Account Balance parameters.
- Deposit
  - Have the capability to require some form of account deposit based upon Account Balance parameters.
- Fees
  - Allow for user defined fees based upon fee criteria and based upon threshold of events.
  - Examples include: image tolling surcharges, administrative fees, account reactivation, statements, bad checks, etc.

#### 4.3.2.5 Account Information

- Data
  - The VASC system should provide functionality to attach scanned documents to account information via direct access from CSR workstation.
- Notes
  - Allow for CSR notes, including date stamp with user ID, which can be selected from a drop down list for standard items with the functionality of being able to add additional information as necessary.
- E-mail Notification
  - Provide functionality for issuing automatic notifications via e-mail when specified business rule events occur, including:
    - Date and time of low balances
    - Replenishments
    - Problems with credit card charging / authorization

#### 4.3.2.6 Promotions and Discounts

The VASC system functionality should allow MDX discount programs and promotions to be defined and applied based upon parameters such as time period, account type, payment type, special promotion flag, etc.

#### 4.3.2.7 Account Statements

VASC customers should have various options for obtaining statements. The VASC system should include a full, secure web-based access to the customer's account status that will allow the customer to obtain information that should be updated in real-time however, no more than 24 hours after a transaction has been posted to the ORT system. Options for accessing account information should include:

- Via mail for a statement fee.
  - Options should include monthly or quarterly configurable fees which customers could update over the internet.
- Via E-mail.

- Via Fax which should include the ability to charge an administrative fee based upon local or long distance faxing.

#### 4.3.2.8 Replenishment Process for Credit/Debit Cards

The VASC system should provide for automatic replenishment of accounts when an account falls below a business rule specified threshold. The system software should have the functionality of being able to reprocess, on the ensuing parameter driven days, credit/debit cards that did not successfully debit the low balance account. In particular:

- The replenishment process shall not update an account balance until approval of the charge and confirmation number is received.
- Replenishment attempts should allow charges to a primary card or secondary card if the primary card fails.
- The system should allow setting a parameter based on the number of days or a balance level when the account status is changed to credit hold and all transactions are processed as violations.
- The system must include an automated process for reconciliation of credit card processing that provides details of the successes and failures.

#### 4.3.2.9 Non-Credit Card Replenishment

The VASC system should have the functionality to set separate thresholds by replenishment types. It should also have the functionality for the application of fees for the failure to replenish as required by MDX business rules.

#### 4.3.2.10 System Notices

The VASC should provide a variety of notices, that should where functionally logical be automatically generated, to customers:

- To effectively manage video accounts the system must have a process for notifying customers that their credit/debit card expiration date needs to be updated. The system should also provide for an escalation process if the customer fails to provide a timely response.
- To notify customers of:
  - Negative balances
  - Bad checks
  - Account status changes
  - Periodic account update requests
  - Account closures

### 4.3.3 VPC / VASC Logical Database

#### 4.3.3.1 Database Navigation

It is recommended that MDX, as part of the VASC procurement process, include software requirements where the VPC and VASC share the same logical database. The software would allow authorized users to effortlessly navigate between the VASC and VPC. For example, the same individual could be a video account customer or a violator at different instances depending on the account balance (negative balance causes violations). This also facilitates the conversion of a violator to a video account customer by a customer service representative requiring minimal effort.

This software requirement would increase the productivity of back-office personnel by providing rapid access to customer information including any history of violations. For example, if a violator is on a payment plan then a single system would disallow conversion to a customer till the balance is paid off.

#### 4.3.3.2 Financial Perspective

From a financial perspective, a single logical database for VASC and VPC can track transaction dispositions more naturally than disparate systems. At each stage of the workflow cycle, the system should attempt to automatically identify valid VASC customers who may be inadvertently processed as a violator. Depending on the business rules, if a customer is successfully identified, the violation may be processed as a video toll. Any fees and fines for the violation may be dismissed, and the toll charges should be debited to the customer account, per applicable business rules.

### 4.3.4 Multi-Tier Architecture

It is recommended that all components of the video account back office system be based on a multi-tier architecture which allows the separation of the database, the business logic and the presentation layer. Software based on such architecture is generally easier to manage and change due to the natural separation within the architecture.

The VASC should have a sophisticated workflow engine consisting of both automatic processes and human interfaces to track and process video account transaction their inception to final disposition.

At each stage of the workflow cycle, the system should attempt to automatically identify valid VASC customers who may be inadvertently processed as a violator. Depending on the business rules, if a customer is successfully identified, the violation may be processed as a video toll. Any fees and fines for the violation may be dismissed, and the toll charges should be debited to the customer account, per applicable business rules.

#### 4.3.5 Web

The web interface is a key to keeping operational overhead low by extending most of the VASC functionality over the web for customer self service. The web application has to be tightly integrated to the back-office system for comprehensive data presentation and exchange. The prime goal of the website is to minimize the number of calls by customers to the customer service center.

#### 4.3.6 Customer Conversion Program

It is essential that MDX provide an avenue for potential customers to become customers. A process that is equitable and dignified that allows drivers to do the right thing is imperative in keeping violations within acceptable standards. Consideration should be given to the type of program and its parameters such as are all offenders waved administrative fees or just first time offenders? In order to have the administrative fees waived for each violation will a potential customer need to sign an agreement that verifies they will keep an account in good standing up to a certain amount of time (6 months)? Is there a set amount as to how much administrative fee can be waived? Parameters outlining this program should be established prior to the ORT conversion.

Another aspect of ORT and Image Tolling is that the line between violation and a good customer can be a matter of Board policy. For instance, if the policy is that someone could sign up for Image Tolling within 24 hours of using the facility, then a transaction can be a violation when it occurs and a valid transaction the next day. Due to this inter-relationship between violations and Image Tolling, it is not difficult to conclude that while it is possible to separate a transponder-based CSC from back office violation processing operations, this cannot effectively occur with Image Tolling. This requires effective back office operations to integrate the VASC and violation processing functions.

Ideally the customer conversion program will focus on trying to not only convert violators to video account customers but will include incentives to convert video account customers to transponder accounts. This program is essential to keep the VASC staff at minimum levels by taking advantage of the efficiencies of transponder collected tolls.

#### 4.3.7 Information Ownership

It is imperative that MDX's customers are afforded the privacy and security of their accounts and account information. Acquiring and maintaining customer information is a new line of business for MDX. As such MDX should retain complete ownership of the customer records. In addition, MDX should encourage the enactment of appropriate Board policy and legislation to clearly protect the privacy of customer information including their trips on the MDX system. This is discussed in further detail in Section 4.7.



## 4.6 Customer Service and Business Rules

Good business rules drive good business practices and customer relations/service. MDX has followed this axiom by ensuring that its business rules for customer service at its toll plazas is adhered to by all personnel that have day-to-day contact with the public. By changing customer interfacing from toll plazas to a back office environment MDX will need to formulate new business rules that control the business of delivering services to its customer base.

In addition to customer oriented business rules, MDX will need to develop information system business rules that control how the processes governing image tolling, interaction with the VPC and interfaces with interoperable agencies. From a business perspective:

**A business rule is guidance that there is an obligation concerning conduct, action, practice, or procedure within a particular activity or sphere. Two important characteristics of a business rule are:**

- **there ought to be an explicit motivation for it**
- **it should have an enforcement regime stating what the consequences would be if the rule were broken<sup>4</sup>.**

From the perspective of information systems (operating software):

**A business rule is a statement that defines or constrains some aspect of the business. It is intended to assert business structure, or to control or influence the behavior of the business.<sup>5</sup>**

Therefore, **“from the *information system* (sic) perspective, a business rule pertains to the facts of the system that are recorded as data and to the constraints on changes to the values of those facts. The business perspective of business rules involves the behavior of people in the business (human activity) system.”<sup>6</sup>** Because these perspectives are distinct, it is necessary to develop business rules for each perspective.

One of the most important set of business rules will be the set that governs the processing of the electronic transactions that are captured by the ORT toll collection system. Business rules pertaining to the processing of SunPass<sup>®</sup> transactions are currently in place. MDX customers with SunPass<sup>®</sup> compatible transponders know how there transactions are going to be processed against their accounts. Table 4.1 is illustrative of business rules governing the tolls and fees associated with various types of electronic transactions generated by the ORT toll collection system.

<sup>4</sup> Business Rules Group, definition of “What is a Business Rule”

<sup>5</sup> Ibid

<sup>6</sup> Ibid

**Table 4.1 - MDX Open Road Tolling Fare Policy Summary - Account Descriptions**

Vehicle Detection by:	Account Type	Description	Toll (Example)	Violation Fine	Remarks
Transponder	SunPass	Pre-pay, pre-register, SunPass account with transponder ID.	\$0.50		This is the least expensive way to pay.
		Pre-pay, pre-register, SunPass account with license plate ID.	\$0.50		Billed to SunPass in the same fashion as a "cash rate."
Video Capture of License Plate	Plate Pass	Pre-pay, pre-register, MDX account with license plate ID.	\$0.75		Similar to a SunPass account, with some restrictions related to video limitations.
		Grace Period - 48-hour wait for customer to call in and make payment.	\$0.75		Allow two violations in 30 day period.
	Violation	UTC	\$0.75	+ \$25.00	Mailed after 3rd violation in 30 day period.

DTC March 2006 Final Report

MDX also has a set of business rules governing the processing of toll violations and how violation processing is coordinated with FTE. A comprehensive set of business rules need to be developed that govern the processing of image tolls and how the new VASC interacts with its new customer base, the VPC and other interoperable agencies. This Master Plan does not set forth any specific business rule set for ORT. Once the Master Plan is approved by the Board it is envisaged that MDX will develop the appropriate business rules, especially information system business rules, which will guide the development of ORT operating software.

For revenue estimating purposes this Master Plan does include a business rule that toll rates for video-based transactions will be \$0.25 higher than the SunPass rate at a given location. The purpose of the surcharge is to offset anticipated costs of processing the vehicle image so that the transaction can be credited to the appropriate customer's account.

As part of the software requirements and specifications process additional business rules, usually in the form of data flow charts, will need to be developed to ensure that the ORT software functions in the manner that is consistent with Board policy governing the use of MDX toll facilities. The business rules will then become a part of the RFP package issued to prospective bidders.

#### 4.7 Video Tolling System and Technology

Within the body of this Master Plan in-lane equipment and operating system software have been previously discussed. This section will discuss requirements for equipment technology being utilized for capturing and processing video images for toll collection. This information is useful in understanding the challenges faced in order to obtain and process digital data so that a vehicle traveling in excess of 60 mph can be clearly identified by an image of its license plate.

Camera based enforcement systems have been employed for many years as a means of providing effective violation enforcement. Even though the early traffic management enforcement systems were based on "wet film" cameras taking pictures of speeding vehicles, they still offered a savings in terms of cost and manpower over more traditional, labor intensive methods of enforcement. As a result of technological advancements, camera enforcement systems are now

based on digital or video imaging that provide a more cost-effective mechanism than the earlier “wet film” cameras. With digital cameras there is no need to load/unload films nor is there a need to process the film in a photo lab. Digital images are processed electronically without any requirement for human assistance.

Digital cameras capture violation images and data directly in digital format. The digital images are suited for a number of data processing techniques. Their most significant advantage is their capacity to encrypt images and violation data at the point of capture. Once encrypted, any attempt to manipulate or tamper with the original image data can be easily detected.

The medium on which the data is stored (JAZZ drive, CD, WORM drive, hard disk) does not matter. What does matter is that encryption has made the primary evidence secure and protected as the primary evidence for the violation. This encrypted digital evidence constitutes optimal primary evidence for the prosecution process if necessary.

Nearly all digital cameras use Charge Couple Devices (CCDs) as their imaging tool. CCDs are image sensing devices made up of individual light receptors arranged in a grid. Each part of the grid is termed a pixel (PICTure ELEment). Light energy emitted or reflected from an object, such as a vehicle, is converted into a series of electrical charges by the CCDs. Each pixel discharges the energy outside the CCD converting it into a digital stream which is encrypted in real time thus preserving violation data for each image in its original raw form. Images are captured using frame grabbers.

Once the image has been encrypted any attempt to access the data, or any transaction involving it, is automatically logged to develop an audit chain for that image. Copies of the original digital file may be enhanced to facilitate processing, such as pushing the image through special software to adjust contrast in order to read a license plate better, but the encrypted primary file remains as protected, raw, primary evidence. It is paramount that any utilized digital imaging system used for violation enforcement account for both enhanced and raw image data files.

In summary, digital images have several advantages that benefit the user:

- Require minimum storage space
- Provide electronic interpretation (OCR) of images
- Digital data transmission resulting in low transfer costs
- Provides remote continuous enforcement
- Possible to fully automate the violation process and video tolling process

As the motorist’s vehicle passes through a tolling point (a gantry) the video enforcement system will capture a digital image of the vehicle and license plate. The number of cameras utilized for this image capture process depends upon whether or not an image is required for only the rear license plate, both front and rear license plates, and an overview image of the entire vehicle. OCR software will be located at the VPC and will automatically determine the license plate number if possible. OCR software is configurable so that a parameterized degree of confidence level that the OCR software correctly identified the plate number can be set by the user of the system.

Existing OCR systems are not free of possible errors therefore even though full automation of the image review process is the goal it must be realized that MDX will continue have to have staff to verify the proper function of the system for both violation processing and video tolling. This is not to say that within the violation enforcement system processes reasonable OCR thresholds can not be set where it is deemed to be a very low risk factor that an error has been made and that the consequence of such an error is considered minimal by MDX. Such risk being a credit back to an account because the wrong account was automatically identified through the vehicle license plate number or a violation notice was sent to someone that had the same plate number but was registered in a different state. There are approximately 30 companies that offer OCR systems that are utilized for determining license plate numbers.

The OCR process for license plate recognition generally works by having the software logic search and locate the license plate area in the image. Usually this is based on recognizing rectangular areas, copying the area then analyzing the area for license plate characters. The software can be programmed to search specified areas of the image, referred to as a 'hot zone' where license plates are most likely to occur which helps filter out unwanted objects. On average the minimum plate size the software is seeking is about 1800 pixels. When a plate can not be found the software can employ a second technique that is based upon searching the image for plain characters. Once found, either in the rectangular area or by character search, each character on the plate is then analyzed and given a confidence factor. Depending on the specified threshold for character confidence the image can either be automatically processed or queued for human review or verification.

Illuminating the vehicle, in particular the license plate, is critical to capturing license plate images. The use of infrared lighting allows the camera to capture an illuminated image without disturbing the vision of the vehicle driver because the light spectrum is outside the human vision range. Usually the captured image is in black and white which is all that is necessary to determine the plate number. However, the use of color cameras is becoming more prominent. The color camera not only captures the license plate information but also the color of the vehicle involved in the transaction. This additional vehicle color information can be used to verify that the license plate is on the vehicle to which it is registered. In addition, colors on the license plate can also be analyzed by OCR software to assist in the determination of which state the plate is registered in.

There are camera system vendors that are combining both black and white and color cameras in "one box" in their image capture systems to offer the best of both worlds for violation and image tolling processing.

## 4.8 Operations Expense Estimate

Operational expenses (Opex) for ORT have been estimated based upon assumptions and experiences with similar toll system functionality. The Opex tables are located in Appendix C of the Master Plan. The two cost categories developed for this report are the Customer Service Center costs, which involve virtually all toll payment and account activity, and system maintenance costs to provide regular system service and maintenance for the roadside and back office system.

## 4.9 Customer Privacy Issues

With the establishment of a VASC MDX will be responsible for customer information, including addresses, financial information and movement of vehicles on its facilities. Based upon experience from other agencies that hold this type of information it is apparent that some of the information can be classified under open records acts as being available to the public. Normally financial information is protected from public scrutiny but travel information may not be without specific legislative protection.

By not having customer trip information protected MDX will be subject to inquiries about trips made by its customers which may have a negative impact upon the willingness of customers to open accounts. Within the passed year the state of Georgia addressed the concern over having customer travel information being available to the general public by passing legislation that excludes such from being considered a public record.

The Georgia Legislature amended Code Section 50\_18\_72 of the Official Code of Georgia Annotated, relating to when public disclosure of records is not required, so as to exempt records of the State Road and Tollway Authority that would reveal the financial accounts or travel history of an individual who is a motorist on a tollway project.

"(18) Records of the State Road and Tollway Authority which would reveal the financial accounts or travel history of any individual who is a motorist upon such toll project. Such financial records shall include, but not be limited to social security number, home address, home telephone number, e\_mail address, credit or debit card information, and bank account information but shall not include the user's name."

## 5. PUBLIC INFORMATION AND COMMUNICATIONS PROGRAM

As Open Road Tolling moves through the process of approval and system-wide implementation, MDX will gain from successful explanation of key elements of public information, in order to provide for a smooth transition and eventual buy-in from the public. Key elements include public perception and acceptance of paying a fair share or equitable toll rate for using the MDX system, and the fact that customers will no longer have the option of paying cash. The critical issues that affect the public perception and acceptance of ORT include:

- Awareness that ORT is fair and extremely beneficial to all users,
- The relationship between ORT rates and today's rates,
- The fact that users will not longer be able to pay cash at a tollbooth,
- The imposition of a toll on users of the MDX System where none previously has been collected, and
- The potential traffic diversion of traffic to local and arterial roads that may accompany the implementation of ORT.

A strong governmental affairs plan, extensive public outreach, education and a strategic marketing campaign will have to be developed to successfully communicate the numerous user benefits of converting MDX facilities to ORT. These benefits include:

- Enabling customers to travel without stopping at toll plazas,
- Eliminating toll plazas to enhance mobility,
- Equitably distributing the costs of operating, maintaining and improving the expressway infrastructure in Miami-Dade to all MDX customers as opposed to only those that pay a toll today, and
- Using additional toll revenues to bring future scheduled projects to fruition quicker, greatly enhancing the mobility in the County.

There are distinct but interrelated elements of the MDX ORT Public Involvement Plan. One of the elements of the Plan encompasses addressing the actual legal requirements established by the MDX Toll Rate Policy and the Public Involvement Policy. These requirements include the preparation of a plan for a series of advertised Public Reviews and one or more Public Hearings. Compliance with these MDX's policies is required to establish any toll rate change and to allow for the tolling of trip movements that were not tolled before.

The other elements relate to the actual interaction with the public and the dissemination of information about ORT, to achieve public acceptance and to generate support at all levels of the public, from elected officials, to governmental agencies to ultimately the MDX' customer base. This ultimately has to include a broad advertisement and public relations efforts prior, during and after ORT deployment, in order to advise the public of the changes and promote the benefits of ORT to create grassroots acceptance. These two last efforts must be accompanied by an intense

distribution and expansion of the SunPass program. Improved transponder distribution and account maintenance options as well as availability of less expensive and/or more technologically advanced transponders, will assist SunPass participation. This is critical since ORT deployment success depends on the general use of electronic toll collection.

These information and marketing plans are dynamic and will evolve as technology evolves; with simultaneous efforts coordinating with Florida's Turnpike Enterprise. The strategic marketing and educational campaign will also need to address specific components of ORT, particularly video tolling and violations enforcement

There has been to date public information and communication activities which have included general information efforts on ORT in the form of project specific meetings, radio shows and interviews, and general briefings with elected officials.

The ORT public outreach campaign will consist of several phases:

- o Preliminary or Initial Phase – ongoing general information, communication activities and notification of public officials and collaboration with sister agencies,
- o Phase I - Public Information and Marketing Campaign related to the opening of SR 836 Extension,
- o Phase II Public Reviews and Public Hearing related to the changes in the toll structure and rates, and the conversion of existing routes to ORT operations, and
- o Ongoing coordination activities and public notifications for the phased deployment of ORT on a corridor by corridor basis.

The ongoing general information must include a strong and focused plan to formally address elected officials at all levels, community opinion makers and the media. The message and the continuous efforts with governmental entities will be modified as the initial Master Plan and the parameters and framework is approved, as a new rate for the system is established and as new information arises such as in the arena of ETC technology, the full development of video tolling, business plans and violation enforcement. These on-going efforts on education and information on the concept, development and implementation of ORT will permeate the process throughout planning, development and implementation. After initial implementation, the focus will be on the video tolling and enforcement area.

Phase I of the plan will need to address focused information efforts and marketing campaign with the potential user of the SR 836 Extension, the first cashless ORT section on the MDX system, within the next 12 months given the opening of the facility in 2007.

Phase II will include the preparation for the required Public Reviews and Public Hearings, plus a corridor by corridor campaign of focused information for potential users of the specific corridor, followed by a strategic marketing campaign.

General on-going education and information dissemination on the concept, development and implementation of ORT will permeate the planning, development and implementation of this project. Special attention to user compliance by avoiding violations must be included in the

education efforts prior to and after implementation, in order to minimize the number of violations that occur and ensure positive customer relations.

### **5.1 Phase I – SR 836 Extension**

The SR 836 Extension is composed of three major improvements:

- o The Southbound Ramp from SR 836 to the Turnpike,
- o The extension of SR 836 from its terminus as the Turnpike to 137<sup>th</sup> Avenue, and
- o The improvements from 87<sup>th</sup> Avenue to 107<sup>th</sup> Avenue which include a new bidirectional toll plaza.

The extension piece has always been envisioned as the ORT Pilot Project, since it is the first new segment of expressway that MDX is constructing. The MDX Board had already made the policy decision to construct all new segments or extensions as Open Road Toll facilities.

The public outreach requirements and opportunities for the SR 836 Extension differ from those of the remainder of the system. Here, there is no existing route but a new segment. The public does not need to “re-learn” how to use the SR 836 Extension with the electronic toll collection only component. The SunPass-Only feature is just part of the new roadway with a new driving option available for our customers. Therefore, the public campaign should be focused on the Extension’s new benefits.

Phase I will include the following specific tasks that will be scheduled from February 2006 to June of 2007:

**Focus Groups.** Focus groups serve to identify the customer needs, concerns, wants and expectations. The use of focus groups to gauge public reaction to the ORT concept is critical to understanding a proper approach for public relations and marketing strategies. A completed project work plan for focus groups will be prepared in July 2006. The work plan will consist of participant recruitment tactics, recommended number of participants, focus group strategies, issues, content and format and reporting of results and recommendations.

- The specific objectives of these focus groups are to examine and determine:
  - o Customers’ perspective of current use of toll plaza to collect tolls,
  - o Customers’ overall reaction to the ORT concept, and
  - o Customers’ feedback to ORT’s “segment traveled” based tolling versus current static based tolling, and acceptance of the equitable tolling concept.

We will use the focus groups results to support the public information and marketing strategies for the SR 836 Extension as well as for latter phases of the plan. The results from the first focus groups will establish a benchmark against which the plan and strategies can be measured.

- **Video.** There is nothing as powerful as being able to visually show the public, elected officials and other stakeholders how ORT looks and works. The preparation of an initial



video is proposed to be used in setting the tone for public meetings and assist in creating a quicker understanding of ORT. In general, the video will be used to inform and educate the public, elected officials and community stakeholders on ORT. It will show how ORT works, what the system and user requirements are, along with promoting the benefits of the ORT system. Additionally, the video, by incorporating both actual and animated images and coupled with the ability to easily make revisions and additions to the video's content, will enable MDX to more easily convey and demonstrate the evolving technologies and the host of possible new electronic devices that may become available for use with ORT. Furthermore, the video can fully demonstrate MDX's approach to phasing in ORT on each corridor as it proceeds through the planning, design, construction and implementation phases. The timing of the initial video targeted for Phase I is proposed for completion in the summer of 2006.

- **Targeted Government Affairs Plan.** MDX has been working closely with the District Commissioner Jose "Pepe Diaz" in establishing progress updates on the projects under construction for the SR 836 Extension. These efforts are being extended to introduce the ORT concept as it is introduced on the SR 836 Extension. The Mayors and members of the Councils of the City of Sweetwater and City of Doral as well as all members of the area's Community Councils will be briefed on the ongoing progress of the projects under construction, which will begin to include presentation of the ORT concept in its roll-out on the SR 836 Extension. One-on-one briefings with the District, State and Federal Legislators for the area will also be scheduled.

These efforts will need to match up with the general and on-going information tasks that will be provided during the course of the project. One-on-one briefings with all MPO members will be necessary to provide specific information on the SR 836 Extension Projects, the first use of ORT and the general concept of ORT system wide.

Prior to these efforts commencing, an assessment of the local and state political climate will be performed to identify potential issues and concerns that may arise during the presentations.

- **Focused Public Informational Outreach Efforts.** For this effort, to be initiated within the first six months of 2007, the identified public shall include potential users of the Extension. These include major business and industrial development in this general area, residential and industrial areas west of the Turnpike; specifically west of 137<sup>th</sup> Avenue and south of NW 12<sup>th</sup> Street. Using the base that has been established during the construction phases of the Extension project, MDX will initiate a series of presentations to update construction progress and incorporate the new information on ORT for the SR 836 Extension. These efforts will be folded into existing homeowners' groups meetings and other existing venues that can be accessed. This once again will need to match the general public outreach efforts that are currently on-going.
- **Newsletters and Fact Sheets.** For Phase I two newsletters will be prepared that will be customized for the interest groups from the potential customer area. The first newsletter will

be used to update the progress on the projects as well as introduce the concept of ORT. The second newsletter will provide specific details on the use of ORT, video tolling, violation enforcement, the availability of SunPass, and the future technology of the ETC device. These newsletters will be sent using existing and expanded email lists, and will be printed for public meetings and presentations.

Additional specific fact sheets will provide details on the concept of ORT at the Extension, its deployment and the impact it will have on the users of this segment. It will include information on SunPass and a view of the future plans of MDX regarding ORT.

- **Media Plan.** A communication and marketing strategy will be prepared for the planned implementation to begin six months prior to the opening of the SR 836 extension and the rollout of ORT for both paid and free media. This strategy will include campaign goals, timelines, target markets, creative messages and taglines, communications vehicles, and plans for testing creative messages. In addition to the communications strategy plan, a detailed media plan will be developed outlining specific media strategies, timelines of introducing campaign themes and messages, the duration of message broadcasting, expected reach and frequency goals, and specific media outlets for the media buys.

This first phase represents the initial soft-sell and introduction of ORT in 2006 to coincide with the opening of the Extension in 2007. The rollout campaign will exhibit extraordinary qualities uniquely designed to meet the special needs of this first phase. First, the campaign must reach the entire market with ORT educational messages because it is the initial implementation or rollout of the system. Yet, with the opening of the new SR 836 Extension, we must be mindful that only a small percentage of MDX users will initially be confronted with the ORT system. Many more users, however, will need to know about the new 97<sup>th</sup> Avenue toll plaza, which will contain, for the first time, mostly electronic toll lanes and have only a small number of lanes available for cash collection. These dual messages need to be understood by multiple audiences which will require the media campaign to be comprehensive in scope and far-reaching in coverage.

It is recommended that the media campaign use multiple mediums (television, radio, outdoor, print, direct mail) targeting a variety of audiences (county wide population, MDX users, specific geographic locations around the SR 836 Extension) in both English and Spanish.

To support the introduction of ORT, a complementary schedule of paid public affairs programming will be considered. Programs will be evaluated based on their ability to optimize the outreach to our various targets. Additionally, opportunities will be sought with all applicable media outlets for non-paid media time/space to further educate our audiences.

- **SunPass Campaign and Interagency Coordination.** Florida's Turnpike Enterprise (FTE) is planning to expand high-speed toll collection at its mainline plazas over the next several years, to include southern Florida regional toll facilities. MDX has been and will continue to coordinate marketing efforts with FTE and the other Florida toll agencies. This same level of coordination will be expanded as decisions are made as to which new technology will be

rolled out and marketed. All these efforts will commence as decisions are made on the operational side.

## 5.2 Phase II – MDX Policy Requirements for Tolling Charges

- **Toll Rate Policy.** MDX’s Policy Regarding Toll Rates outlines a formal procedure for the approval or adoption of an increase to the existing toll rate charged to users and/or the imposition of a toll on users of the MDX System where none previously has been collected. MDX’s Budget and Finance Committee must endorse a Resolution for Board approval following the procedures of MDX’s Public Involvement Policy.
- **Public Involvement Policy.** The Public Involvement Policy outlines formal public involvement procedures through an open-forum, public review process that places the responsibility on MDX to use its reasonable best efforts to provide the public with accurate and timely information on issues of public concern and to encourage public comments in respect to the proposed change.
  - **Procedures and Public Advertisement.** The process calls for one or more Public Reviews and one Public Hearing prior to the approval of the Resolution. Public Reviews consist of open house type public meetings for the purpose of providing information to the public on Open Road Tolling and obtaining and reviewing public comment. These Public Reviews are to be held in various areas of Miami-Dade County and are scheduled in such a way to provide the maximum opportunity for the public to participate. These meetings are advertised two times in major publications with large circulation. The first advertisement is published not more than 30 days and no less than 21 days prior to the date of the Public Hearing with the MDX Board and the second advertisement is published not more than 10 and no less than 7 days prior to the Public Hearing. A court reporter is provided to collect public comments that are incorporated prior to the Public Hearing for the review of the MDX Board and the general public.
  - **Public Reviews.** Public Reviews are public meetings conducted by MDX Staff and consultants for the purpose of providing information to the public and obtaining and reviewing public comment with respect to the plan that MDX will undertake. In this case the topics will include setting the toll rate for ORT, the tolling of points not previously tolled and details of improvements that will be funded as result of ORT. The Public Reviews are similar to open house type meetings held in an open forum format over a period of not less than three (3) hours designed in such a manner so as to permit members of the public to elicit information from MDX or submit written or verbal comments. Comments cards are available for written comments from the public and a court reporter is made available to record verbal comments.

It is recommended a minimum of 15 Public Reviews be planned county wide in order to provide the public the maximum opportunity for participation. These Public Reviews will be held in the vicinity of each of the MDX corridors and the in downtown Miami business area. MDX will hold these Public Reviews at locations that offer access to physically disabled persons wishing to attend. The Public Reviews will be planned as follows:

Downtown business area:	2 Public Reviews
R 924:	2 Public Reviews
R 874:	3 Public Reviews
SR 878:	1 Public Review
SR 836:	5 Public Reviews
R 112	2 Public Reviews

- **Public Hearing.** MDX will hold one or more Public Hearings to allow for public comment on the proposed Resolution to the MDX Board on the toll rate and imposition of a toll on users of the MDX System where none previously has been collected. The Public Hearing/s will be advertised including the details of the proposed changes and with a summary of the Resolution.
- **Content for presentations.** The content of the Public Reviews shall be prepared with information on the rate to be established, details on the tolls per gantry per corridor, and on the specific plans and programs that potentially new revenues would fund. This process is very similar to when MDX prepares for a toll increase or new toll plaza. Discussion and presentations on improvements that will be financed by changes in the toll structure are the essence of the material disseminated at the Public Reviews. This information is derived from the initial incorporation of potential revenues into the Five Year Work Program and ultimately in financing any new unfunded needs such as the projects incorporated into the MDX Master Transportation Plan, if appropriate.
- **Schedule.** MDX will need to determine by the summer of 2007, whether to consider changes to the Toll Rate Policy on a system-wide basis or on a corridor by corridor basis. In the decision is to seek consideration and approval on a system-wide basis then additional Public Reviews and/or General Information meetings in the specific corridor are recommended as an additional effort to inform the public. For the purpose of the master plan, it is assumed that the Toll Rate Resolution will be for a system-wide basis. This 6-9 month process should commence in the latter part of calendar year 2007. This process will be integrated into the on-going public involvement activities during the design and deployment of ORT. The Final Public Hearing decision will provide the details of the toll rate that will be disseminated in the public information program.

### 5.3 *On-Going Information and Educational Plan for the Phased System Development of ORT*

The introduction of the ORT concept began during the last toll adjustment activities and covered as an item in the public affairs programming as future plans on the MDX system. The concept of ORT was also preliminarily discussed at the Final Design meetings with the SR 874 communities during the required noise wall meetings. The messages used to date have included:

- MDX customers will only pay for the distance/segments driven,
- There will be no more toll plazas but a series of gantries,
- There will be no more plaza congestion because there will no longer be plazas, gantries,
- ORT is being planned without a cash option in the lane (no tollbooths),
- At time of deployment, the SunPass or ETC device will be free or at a minimum cost (less than \$10.00),
- The new “Sticker Tag” SunPass will be more convenient to replenish, with cash replenishment a priority,
- There will be the capability of video tolling for tourists or those not having a SunPass,
- A day/weekend pass may be available as an alternate method of payment for Tourists/visitors,
- Presently only 28% of our system-wide customers pay a toll,
- ORT will equalize the toll paid so everyone pays only their fair share.

These ongoing activities will support the specific corridor informational and marketing plans and is viewed as a county wide effort of public information, education, understanding, acceptance and gathering of support for ORT.

- **Governmental Affairs Plan.** Elected officials are the first level of public information. As soon as the ORT Master Plan is approved, initial meetings about the concept need to follow in early 2006. A script will be prepared as to the points to be covered with explanation of the general concept of ORT, the benefits and potential arguments and concerns, proposed toll rate scenario, discussion of potential future revenues, how the revenues are incorporated into the MDX work program and explanation of the public outreach process. Identification of elected and government officials at all levels of government have been prepared to incorporate in this effort to include MPO members, Miami-Dade County Commission, Miami-Dade County Municipalities. Eventually presentations to the Metropolitan Planning Organization and its subcommittees, including the Transportation Planning Council and the Citizens Transportation Committees, Community Councils will be scheduled. Special one-on-one briefings with the Dade Delegation are also critical to this process.

This governmental outreach effort must be continuous and updates must be presented as details on technology, video tolling, vehicle enforcement and program changes are developed.

- **Creation of a Citizens and Business Task Force.** MDX has already started to introduce the concept of Open Road Tolling and has found that the concept is being received favorably. Taking advantage of these initial presentations and using some of the targeted groups that MDX has worked with in the past, MDX can create a Citizens Task Force to review the concept and provide feedback. The Citizens Task Force needs to be expanded from the initial targeted groups to be geographically and demographically diverse in order to incorporate all segments of the community.

In addition, business and industry groups can also be targeted to create a Business and Industry Task Force to gather input and generate support from this sector of the community. MDX is in the planning phase of a transportation summit to be hosted by the Greater Miami Chamber of Commerce. Timing is anticipated for the fall of 2006. This is a great opportunity to introduce the information and the process that has been developed through the ORT Master Plan.

These groups can be used as sounding boards to evaluate the effectiveness of the various elements of the public involvement and public information efforts.

- **Educational and Public Relations Component.** In order to generate understanding and acceptance of ORT, a multilevel education process will be needed that begins with the most basic concepts and builds on those concepts as the process evolves.

Non-paid communications with the media will be a two-pronged approach:

- An ongoing educational effort about ORT, beginning with personal briefings to print and broadcast media appealing to each segment of the MDX constituency, and
- Specific information about each corridor well in advance of the opening

ORT will be the subject matter for letters to key business/opinion leaders. Articles on the subject will be included in the monthly MDX Pressway newsletter.

Once the ORT Master Plan is approved, a synopsis of the issues will be prepared for present

- The subject has already been broached in a briefing with the editor of Miami Today,
- It is an ideal topic for the planned follow up with the editorial board of the Miami Herald,
- Print and broadcast media appealing to all segments of the MDX constituency will be pursued for “desk side” briefings,
- Media tours will be scheduled on a select basis.

ORT will be the subject matter for the second quarter business leader letter, planned for distribution in April. Articles will be placed in the monthly MDX Pressway Newsletter.

Additional tactics:

- Seek third party endorsements from leading transportation agencies/experts,
- Place by-lined articles on ORT written by subject experts,
- Pitch groundbreaking MDX ORT strategy to national transportation publications/editors,

- Identify speaking opportunities for MDX in the local business community and at appropriate regional and national transportation conferences,
- Host Team Florida with specific ORT focus.
  
- **Communications Tools.** A series of publications prepared to reach a variety of interest groups and educate the public on the Open Road Tolling concept, its deployment and the impact it will have on the users of the system. These will be used in workshops, public meetings and other presentations to community groups. These include newsletters, brochures and fact sheets. Additionally these communication tools can be customized to target audiences. Examples include:
  - Key messages
  - Fact sheets at a glance and historical
  - Pocket brochures
  - PowerPoint presentation
  - B roll video
  - Photography
  - Press kits
  - FAQ
  
- **Web Site.** The MDX website has been redesigned to incorporate the outreach efforts. Format and content will be consistent with what is developed for the newsletters and other publications. The web site can showcase studies and details of the Open Road Tolling Master Plan and Implementation Plan, and can include an interactive component to view video and provide comments.
  
- **Public Outreach Efforts.** In addition to the formal Public Reviews a careful and all encompassing public information plan can be structured around a set of goals and objectives that encourage constructive opportunities for interested parties to exchange information, debate issues throughout the life of the planning, design and deployment of ORT and its key milestones. The Public Information Plan will follow State FDOT procedures and have been used for every project that MDX has developed. The goals to be established include:
  - Inform and educate the public through continuous interaction and contact to foster good will, build credibility, and share information/knowledge while addressing diversity communications needs,
  - Encourage creative participation and fresh ideas for the needs and wants of the community,
  - Create opportunities for early and continuous community and agency communications and input throughout the life of the process,
  - Strive for consensus and support from the public.

A summary of the existing conditions and an assessment of the political climate as well as an analysis of potential public perception will be prepared to guide the strategic approach to the elected officials, the media and the public in general. A strategic approach will be developed to refine and modify the outreach activities.

In a project such as ORT we are addressing a broad audience of users to the MDX system. The general public will be divided into several specific interest groups including: homeowners associations, grassroots and community groups and environmental organizations. The other target is the business sector such as chambers of commerce, trade organizations, Miami-Dade Public School system and other governmental agencies.

For the Public Outreach Task a series of public information techniques will be used such as:

- Open Houses,
  - Public Reviews,
  - Workshops,
  - General Information Meetings,
  - Briefings,
  - Mobile Information Centers.
- **Strategic Approach.** A strategic plan, specific to each phase of ORT, will be developed in advance of deployment. It will be incorporated into the ongoing communications efforts and continue the dissemination of information, building upon success to date and capitalizing on the endorsement of strategic supporters. For example, the SR 874 Corridor is the first corridor that is being recommended for deployment of ORT. The existing situation in this corridor includes the planning of the split toll plazas and the incorporation of tolling movements that were not tolled before. With this plan in place almost 85% of the users of the SR 874 Corridor will be paying a toll. In the ORT scenario these users will be paying a lower toll than what they would pay now proving the equalization of ORT. These groups strategically may become a support for the entire program.
  - **Media Plan.** A plan which incorporates all facets of public affairs programming will be developed. Additional unpaid opportunities to partner with media will be pursued to help inform the public and specific audiences.

Clearly, a successful ORT implementation hinges on the positive buy-in by a vast majority of the general public. High acceptance rates can be achieved with a substantial commitment to inform the public of the community-wide benefits that ORT will offer. Additionally, the campaign must endeavor to reach the greatest number of people with high frequency over a significant period of time in order to generate greater understanding and encourage the public to embrace the new mobility provided by MDX. To this end, an ongoing and broad multi-media educational and promotional campaign will be developed to inform the public of a number of critical components of ORT. They are:

- Highlight and promote the numerous benefits of ORT,
- Inform the public of system functions and program requirements,
- Report upcoming changes to the toll structure and the corresponding toll rates,
- Provide current information on system-wide planning, developments and implementation,
- Educate the public on video tolling options and enforcement policies and practices.



## **5.4 Preparation for Phased Deployment of System on a Corridor by Corridor Basis**

At the end of Phase I and II a Public Involvement Report will be prepared to incorporate all public outreach efforts including those implemented as a result of MDX Policy requirements. This will establish the framework for the communications efforts tied to the schedule of deployment of ORT on a corridor by corridor basis.

The elements discussed in Phase I of the SR 836 Extension, will be modified to target the specific corridor being deployed. Advances in technology will be incorporated and by 2009 the new Toll Tag will be in place. The coordinated marketing efforts with FTE and other Florida toll authorities will be in place.

As each corridor is deployed, a targeted six (6) month public information process will be in place with a corresponding six (6) month targeted strategic marketing campaign.

## 6. FINANCIAL IMPACTS

Along with estimates of revenue and capital costs, an estimate of projected MDX' ORT operating costs is developed.

In toll organizations, the major components of toll operating costs are plaza staffing, toll system maintenance and operations, IT systems maintenance and operations, and building maintenance and operations, all of which accompany the other typical highway administrative and operating costs. The advent of electronic toll collection and violation enforcement have added major costs in customer service center operations, predominantly in staffing for customer service and video review, as well as upgraded system costs and transponder purchases, handling, distribution, inventory costs, etc.

In an electronic-only environment, plaza staffing and the building maintenance and operations costs are dropped from the toll collection budget. The increase in ETC account activity costs is not too difficult to estimate, as the costs are almost linearly variable.

MDX' operating costs will be most impacted, and most challenging to predict, because not only the scale but the nature of ETC operations will change. The scale will change from approximately 200,000 transactions per day to that of over 1,200,000 per day. Also, driver behavior will of necessity have to re-adjust to ORT operations. It should be expected that, initially, a large number of drivers will become violators, by accident if not by a desire to "test" the system to see if it is possible to get away with driving without paying. There will be a much larger volume of image processing, license plate data processing, and notice mailing.

### 6.1 Analysis Cases for Estimation of Operating Costs

To estimate activity levels, traffic and revenue data was used as the baseline to generate estimated transaction volumes. These included estimated volumes of video transactions. To estimate anticipate driver behavior responsiveness to violation notices ("Uniform Traffic Citations"), current behavior levels and percentages of compliance were used as a baseline, and modified slightly in cases where it is believed people will be more or less likely to comply with toll or fine payment instructions.

Six separate analysis cases were developed. During the development of the ORT Master Plan, WSA was requested to develop traffic and revenue forecasts for the entire MDX system, assuming that by FY 2010 (July 2009 – June 2010) the entire ORT system would be operational. The revenue results of this analysis appear in Table 2.5. This is described as Case 1 for the operational costs analysis. Cases 1 through 6 are presented in Table 6.1 below:

**Table 6.1 - Analysis Cases for Estimates of Operating Costs**

The cases analyzed for the ORT Master Plan report are listed below. Case 1 uses the FY 2010 numbers provided by WSA. Case 2 uses the same numbers but arbitrarily reduces ETC transactions to 75%, to see the impact on operations costs and potential revenues. Case 3 uses only the volumes projected for the routes to be completed in 2009, and 75% ETC. Case 4 uses volumes for the entire system (with 75% ETC), and increases those volumes 2% for the one year delay. Case 5 uses WSA's projections for FY 2015, and Case 6 uses WSA's FY 2020 projections.

Case	1	2	3	4	5	6
FY	2010	2010	2010	2011	2015	2020
Routes	All	All	874/878, 924	All	All	All
Data Source	WSA	WSA	WSA, for two routes only	WSA, inflated 2% for 2011	WSA	WSA
ETC%	ca. 85%	reduced to 75%	reduced to 75%	reduced to 75%	ca. 85%	ca. 85%
ADT	1,255,515	1,255,515	512,309	1,280,625	1,376,919	1,460,171
ETC-ADT	1,068,580	941,636	384,232	960,469	1,164,029	1,228,433

DTC - March 2006

Final Report

Case 2 considers the impacts of a lower percentage of customers paying with SunPass than is projected in the traffic estimates. The total volume traffic was held constant, but the ETC number was calculated as 75% of the total daily traffic.

Case 3 considers the program staging anticipated at this point, in which ORT will be first completed for the Don Shula and Snapper Creek Expressways (SR 874/878) and the Gratigny Expressway (SR 924). The traffic activity is estimated for those two routes, and the ETC participation was held at 75%.

Case 4 then considers the following year; completion of ORT installation on most of the Dolphin Expressway (SR 836) and Airport Expressway (SR 112). Case 4 includes all the system-wide traffic from 2010, and adds 2% for year-on-year growth in traffic. Again, ETC traffic was held at 75% for this case, on the assumption that the transition to higher forced participation will last through FY 2011. Traffic projections are for all movements, including the SR 836 interchanges with 87<sup>th</sup> and 72<sup>nd</sup> Avenues. MDX may not install gantries at those two locations until completion of major construction in this interchange complex area, currently envisioned to extent to 2014.

Cases 5 and 6 simply consider how the system will grow through 2015 and 2020. It is assumed that by these times the new ORT system usage will have adjusted and the forecast ETC participation rates will be met.

## 6.2 Factors Considered in Operating Costs Estimates

Current MDX operating detail statistics were used to develop parameters for violation rates, unusable license plate images, returned mail and paid violations. Activity levels for new operations not currently performed by MDX—maintenance of pre-paid video accounts and the addition of related telephone customer service—were estimated both in frequency and duration based on experiences from other toll projects.

The remainder of all transactions after deducting SunPass activity is counted as video transaction volume. MDX currently considers these as “apparent violators.” From this total video activity number, estimated transactions without valid plate information are first deducted. These are vehicles without license plates, with plates blocked by trailer hitches or dirt or other obstacles, or for which there is no matching data. After that, the number of video transactions are categorized as out-of-state, non-revenue or not listed in the DMV, plates that match an ETC account, plates that are identified for the first or second time within 30 days and so considered in the grace period, and some pre-paid video account – based transactions. Most of the remainder are violators, and the few remaining transactions are voided. Voided transactions happen in practice when there is insufficient recorded transaction information or contradictory information.

Note that with the analysis cases, the ETC percentages given are the projected number of reads of transponders. The analysis counts the video capture of valid ETC customers, called “Image-Tolling” in Florida, in addition. In cases where ETC is given as 75%, when the number of image tolls is added, the percentage increases to about 80% of all transactions lead to revenue from ETC accounts.

It is assumed that there would be increased frequency of initial violations and lower compliance with the grace period toll payments, than is currently the case. This is because there will be many more tolling points under ORT than there are today, and it will be easier for accidental violators to errantly drive the system once or twice without realizing they are on a toll road.

Costs were estimated in two general categories: 1) those related to the “MDX Video CSC,” in other words the generally variable CSC-related costs, and 2) costs related to system and technology operations and maintenance. The primary CSC-related cost is labor. The system operations and maintenance costs relate to both the roadside technology as well as the back office.

## 6.3 Analysis Cases Operating Costs Results

Table 6.2 presents the results of the six cases. The first three rows present the Video CSC and system maintenance and operating costs, and totals, for each case. Note that for Case 3, only results relating to the two ORT routes for FY 2010 are included, so additional revenues and costs

from the cash plaza system on SRs 112 and 836 would be added to provide a total FY 2010 picture. The “Estimated Revenue” rows are calculated using activity levels and the weighted average toll rate for all ORT gantries, which calculates to about \$0.40 for SunPass, and \$0.65 for video, along with all the activity and payment assumptions made in the costs analysis. The last row provides the comparative projection information provided by WSA.

**Table 6.2 - Tabulation of Estimated ORT Operating Costs**

The results of the case analyses are given below. Cases 2, 3 and 4, with only 75% ETC participation, are more dependent upon video tolling and effective violation enforcement to capture all toll revenues. In all cases, projected activity levels (based on current conditions) indicate that the combination of revenue from SunPass and the MDX Video CSC should meet the WSA revenue projections.

Case	1	2	3	4	5	6
FY	2010	2010	2010 <sup>3</sup>	2011	2015	2020
Routes	All	All	874/878 and 924	All	All	All
Video CSC Ops Costs	\$12,584,246	\$16,535,919	\$7,748,151	\$17,334,546	\$15,625,187	\$19,057,965
ORT System M&O Costs	\$4,296,500	\$4,296,500	\$2,468,000	\$4,468,360	\$5,026,297	\$6,115,259
Total ORT Operations Costs <sup>1</sup>	<u>\$16,880,746</u>	<u>\$20,832,419</u>	<u>\$10,216,151</u>	<u>\$21,802,906</u>	<u>\$20,651,484</u>	<u>\$25,173,224</u>
Estimated SunPass Revenue	\$165,565,059	\$153,518,073	\$62,642,607	\$156,588,461	\$180,826,913	\$191,193,030
Estimated MDX VCSC Revenue	<u>\$19,553,030</u>	<u>\$32,829,369</u>	<u>\$13,396,661</u>	<u>\$33,485,728</u>	<u>\$22,266,533</u>	<u>\$24,238,853</u>
Total Estimated Revenue	<u>\$185,118,088</u>	<u>\$186,347,442</u>	<u>\$76,039,268</u>	<u>\$190,074,189</u>	<u>\$203,093,446</u>	<u>\$215,431,883</u>
WSA Estimated ORT Revenue <sup>2</sup>	\$180,454,000	\$180,454,000	\$70,964,000	\$183,887,000	\$197,615,000	\$209,812,000

Note 1 This does not include costs for legacy cash collection operations.

Note 2 These are the Traffic and Revenue consultant forecasts for ORT only. FY 2010 results are only for SR 874/ SR 878 and SR 924. Therefore there will also be toll revenue from SRs 112 and 836 to complete the revenue picture for FY 2010, which is not shown here.

Note 3 This column data assumes that ORT will be in operation on SR 874/878 and SR 924 during FY 2010, and incurring maintenance and operations costs. Estimates for ORT costs and revenues are for a full year, which may be conservative.

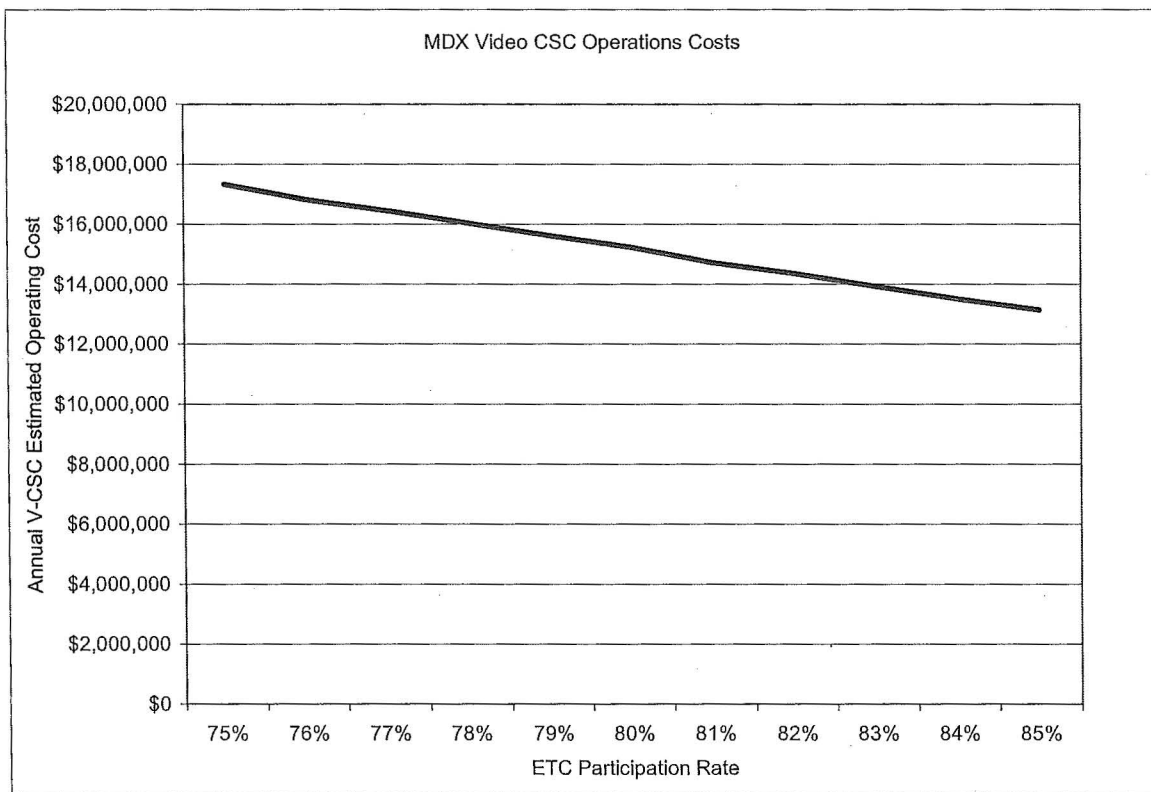
The results indicate, for all cases, that if the estimated activity levels and payment activity are indeed realized, the combination of SunPass and Video CSC revenue will be able to meet the projected Traffic and Revenue forecast. The revenue stream estimated in the case analysis is only provided to a) estimate credit-card costs and b) test the proposed system rates and parameters to see if it will be possible to meet the Traffic and Revenue forecasts.

It is recommended that MDX use the Traffic and Revenue forecasts for future financial planning. The analysis indicates that, even with conservative assumptions about the ability to track each and every license plate and public willingness to pay on violation notices, the MDX ORT system should be able to generate revenue to meet revenue forecasts as long as the projected traffic levels materialize.

It is also recommended that the more conservative “75%” operating cost calculations be used for financial planning for FY 2010 and FY 2011. The analysis considers this to equate to about 80% ETC accountholder participation when one considers image tolling, and this is believed to be slightly more conservative than the 85% number provided. This in turn provides a higher operating cost estimate, which it is believed is appropriate for planning purposes.

### 6.4 Discussion of Impact of ETC Participation Rates

The level of ETC participation impacts the cost estimate model. Figure 6.1 illustrates this, using the FY 2011 analysis results (Case 4), but varying the ETC participation rate from 75% to 85%:



**Figure 1 – Impact of ETC participation rates on estimated operating costs.**

Each percentage increase in ETC participation rate yields approximately a 3% reduction in estimated Video CSC operating costs.

However, the change in ETC participation has a much less dramatic effect on the overall revenue stream, as shown in Figure 6.2:

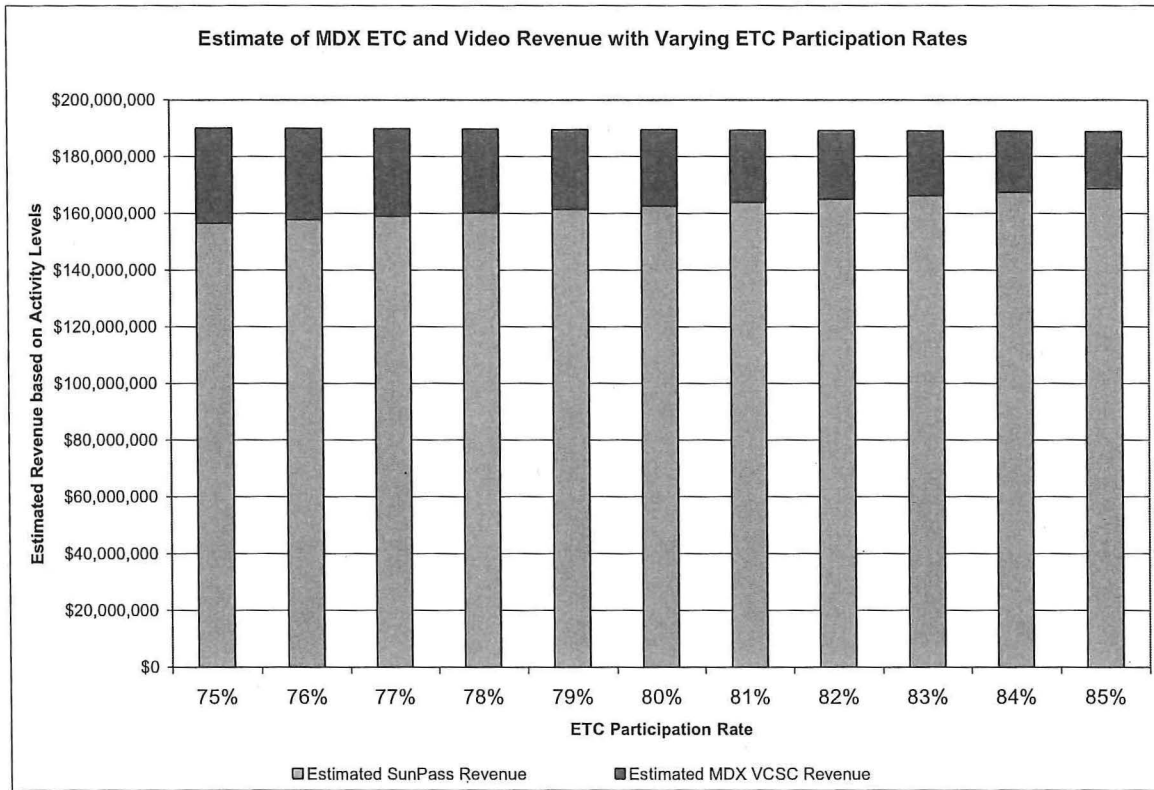


Figure 2 – Impact of ETC participation rates on revenue stream.

Given the assumptions made in the analysis model on percentage of compliance with the video tolling rates and the \$0.25 higher toll rate, and the compliance with the \$25 fine for a violation if paid before going to the court system, there is no appreciable difference in the anticipated revenue stream.

With all other assumptions constant, the only major variable will be in the Video CSC operating costs. Greater transponder penetration will yield lower operating costs.

## 7. CONCLUSION

Although the Miami-Dade Expressway Authority has made improvements to its cash toll collection facilities and improved SunPass lane operation its toll plazas on SRs 112, 874 and 924 are approaching obsolescence. Any toll plaza represents a potential, if not a regular, traffic congestion point. In addition, these plazas are not effective in an equitable manner because the existing plaza configurations allow over two-thirds of the MDX customers to use the road without paying anything. This leaves one-third of the customer base to pay for the maintenance, operations and improvements of the entire MDX network. Not only is this inequitable, but it also constrains revenue generation necessary to fund improvements to the MDX network.

This ORT Master Plan faces two issues: 1) no North American agency has ever operated a major cash toll collection system, and then removed the cash facilities, requiring all drivers to pay electronically by either ETC or license plate, and 2) most free traffic movements currently available will be closed. Each of these issues is challenging. To take on both simultaneously requires deliberate planning and action. Table 7.1 presents a brief matrix of potential project risks and mitigation measures. This is not an exhaustive list, but rather an overview:

Table 7.1 – Summary Risk Assessment of the MDX ORT Master Plan	
Risk	Mitigation Measures
<b>1. Capital program risk threatening costs and schedule</b>	
1.1 Program falls behind schedule.	It will be important for MDX to act quickly to maintain implementation in 2009 and 2010. This time frame is required by SR 874/878 improvements in final design at the time of this report. Capital improvements, system RFPs and procurements, and timely coordination with other toll agencies and other Miami-Dade public entities will be required.
1.2 Program costs are exceeded.	System costs for ETC and video technology have been constant or dropping in recent US procurements when unique design features are avoided. The system and operations RFP(s) should be performance-based specifications with minimum unnecessary technical detail requirements. Infrastructure improvements require small quantities of earthwork, concrete and steel. Good development of design standards using as many standard construction items and simple procedures as possible should be employed.
<b>2. Operations risks threatening revenue stream</b>	
2.1 System falls behind schedule.	System contracts must be developed and procured timely, with strong contract management, and simple but stringent liquidated damages for delays. Design submittal, test and approval requirements must be clearly stated in contract documents. Selection of the contractor team must be based on past performance and qualifications, not just price.
2.2 System does not work properly.	Proper performance specification, selection of a good contractor, and development of an integrated system with modern auditable design architecture will mitigate this risk.



**Table 7.1 – Summary Risk Assessment of the MDX ORT Master Plan**

Risk	Mitigation Measures
2.3 Inaccurate license plate reads.	This is mitigated with thorough testing and ongoing checks of the OCR system element, and good review procedures. This item is critically important, as errant violation notices become public relations problems, which strain political-level support.
2.4 Extensive human review of plates.	This must be addressed with thorough testing of the system.
2.5 Inadequate ETC penetration.	This requires cooperation with Florida's Turnpike Enterprise (FTE) to reduce transponder prices and improve account management options, and continued MDX support.
2.6 Poor interfaces with SunPass.	This requires ongoing cooperation with FTE toll system management to insure stable operations and ongoing improvements, in data transfer, data checks and reporting. This requires staff and support from both parties.
2.7 Inadequate violation payments.	Public information, consistent notice issuances, building large violation database history and registration records to maintain good license plate records, and enforcement by DMV and in the courts will all encourage cooperation.
2.8 Lack of car rental company cooperation.	There are several possible options, including universal rental car fees, video tolling by rental car license plate registries, and regular distribution of transponders.
2.9 Public confusion about ORT.	Clear signing, such as the purple sign initiative, regular notices and advertising targeted toward local drivers, and a comprehensive public awareness campaign.
<b>3. Financial risk</b>	
3.1 Rating agencies' downgrade.	Conservative assumptions on video cooperation, good contractor support, maintaining program schedule and design commitments, and prototyping with the SR 836 extension gantry installation. Good system data and factual analysis of transaction disposition. Also, ongoing coordination with Financial Advisor and rating agency representatives,
3.2 Collectability problems.	System accuracy, regular enforcement and automated procedures, multiple options for payment of video tolls, expanded opportunities for SunPass transponders.
3.3 Ops expenses greatly exceed Forecasts	Ongoing monitoring, constant encouragement for ETC participation, contain the need for human phone responses with a good automated voice response system and good web service.

The effort required for implementation of the ORT Master Plan will allow the Expressway Authority to achieve the following:

- o On SR 112:
  - Remove the existing toll plaza and replace it with strategically placed ORT tolling gantries,
  - Reduce the mainline toll from \$1 in one direction to \$0.50 in each direction,
  - Charge the same user fee for both directions of traffic, allowing for a better of balance of traffic volumes in the area.

- o On SR 836:
  - The new plaza's cash lanes, to open in 2007, will be physically separated from the SR 836 mainline. Once the cash facility is no longer needed for that purpose, there may be adequate physical space for conversion to a different type of facility and parking area. The site could be used for a small service plaza, welcome center, or other customer service venue. This service plaza could be a convenience for MDX drivers and also conceivably a source of revenue. There are many possibilities that can be explored once cash collection operations are no longer needed.
  - Accelerate funding for other needed improvements, both interim and long-term.
  - Charge the same user fee for both directions of traffic, allowing for a better of balance of traffic volumes in the area,
  - Eliminate most free movements, which will allow reduction in the mainline toll from \$1 in one direction to \$0.50 or less in each direction at each location.
  
- o On SR 874 / SR 878:
  - Save MDX money by eliminating the construction of the new cash plaza and the installation of cash toll collection lanes,
  - Save MDX money and spare drivers from significant construction delays through elimination of the centerline lane shifts required for new plaza construction,
  - Remove high existing and proposed cash tolls at the new mainline and ramp plazas as was envisioned in the 87404 contract.
  
- o On SR 924:
  - Remove the existing toll plaza, and
  - Changing toll collection from \$1 at one point to \$0.50 in two points, so that short trips pay a reduced amount.
  
- o For the MDX expressway network as a whole, and the Miami-Dade region:
  - Improve traffic operations safety, with supplemental roadway surveillance cameras provided with each of the 44 ORT gantries,
  - Move operations staff from dangerous roadside operations to safer back office workspaces,
  - Eliminate from future consideration toll plaza changes, traffic engineering concerns and ongoing analyses related to conventional toll plaza operations,
  - Simplify MDX operations by focusing on account-based tolls and violations,
  - Significantly improve the revenue stream to fund improvements for the existing MDX expressway network,
  - Eliminate staff and funding demands related to cash collection.

As important as actual cost savings, elimination of cash operations will allow MDX to focus the agency's resources and energy on roadway operational improvements, which translate to mobility, the core mission of the agency.

Finally, the cost estimates related to the capital and operational requirements to implement Open Road Tolling indicate this program will be a good investment on behalf the toll-paying customers of the Miami-Dade Expressway Authority. ORT will assist in prioritizing unfunded needs in the work program. If toll plazas were retained, they would require ongoing expenses for future upgrades. By channeling this flow of resources away from plaza re-construction, and into Open Road Tolling, MDX is providing improved transportation for Miami-Dade County.

**DRAFT OUTLINE - July 18, 2006- revised**  
**ORT Communications and Outreach Plan – MDX**  
**June to December 2006**

**PREPARATORY PHASE - JUNE TO JULY 2006**

---

- Finalize draft outline for ORT Communications and Outreach Plan - done
- Develop draft schedule for activities until December 2006 - done
- Review outline and schedule with Servando, Alfred, Steve and Marie - done
- Review outline with Chair of Public Communications Committee
- Present draft outline to Public Communications and Intergovernmental Committees
- Prepare talking points and general fact sheet in addition to the Frequently Asked Questions
- Prepare handout exhibits per corridor to explain the concept and the proposed rate scenario. Use SR 874 as first example
- Prepare briefing guide for elected officials
- Determine who will attend elected official briefings: Steve Andriuk, Alfred Lurigados, Maggie C. Kirkpatrick – back up: Jose de Almagro and Tere Garcia
- Determine who will attend MDX Board Members and opinion leaders interviews
- Prepare list of elected officials with key staff and description of districts that they represent where MDX facilities are located - done
- Create working group to include GEC A Public Involvement, Public Relations and Governmental Affairs consultants - done

**PHASE 1 – PRELIMINARY BRIEFINGS WITH ELECTED OFFICIALS - JULY TO OCTOBER**

---

**Goal**

- Provide a general understanding to elected officials of ORT. Elected officials are the first line of communications with the general public.

**Outcomes**

- Establish an understanding of the concept of ORT and specifically
  - Making the system and the toll collection more equitable amongst its users
  - What the ORT Master Plan enables MDX to do
  - Technology regarding SunPass specifically the requirements of affordability and availability
  - How MDX will proceed with a community outreach plan starting with a program of interviews proceeding with a multiyear multilevel education process to provide information and solicit public input.
  - Formal process for approval of rates and non-tolled movements per corridor
  - Recommended schedule for potential implementation
  - Specifics on the SR 874 Corridor
- Identify initial concerns

**Tools and Tactics**

- Schedule visits with MPO Members and key staff as well as with members of the Miami-Dade State delegation
- Preliminary Briefings with MPO Board Members and Miami-Dade State delegation to initially present the concept of ORT, provide a general description of the initial community outreach tasks, specific Corridor public reviews and public hearing and a schedule for potential implementation.

**Deliverables**

- Matrix of elected officials with scheduled briefings
- Report on outcome of completed preliminary briefings

**PHASE 2 – INFORMATION GATHERING – JUNE TO SEPTEMBER**

---

**Goal**

- Thoroughly understand the current environment. The information gathered during Phase 1 and 2 will be used to build a comprehensive communications and outreach plan. Taking the time for this “temperature check” is essential to ensuring a successful plan.

**Outcomes**

- Understand peoples’ knowledge/perceptions of ORT
- Determine knowledge/perceptions of MDX
- Confirm/better understand existing issues
- Surface potentially divisive issues

**Tools and Tactics**

- Preliminary briefings and modified interviews with elected officials
- Interviews with MDX Board Members
- Interviews with community leaders
- Focus group(s) with the general public
- Use of initial Fact Sheet (broad based)

**Deliverables**

- List of interview targets
- Interview guide
- Initial fact sheet (broad-based)
- Phase 2 Report

**PHASE 3 – PLAN AND MATERIALS DEVELOPMENT – SEPTEMBER TO NOVEMBER**

---

**Goals**

- Use the skills and expertise of MDX staff and consultants to develop a comprehensive communications and outreach plan based on information gathered during Phase 1 and 2

### **Outcomes**

- Achieve clarity and consensus among all appropriate staff and board members regarding communications and outreach activities
- Establish a communications protocol that all understand and adhere to
- Confirm roles and responsibilities for carrying out the communications and outreach plan
- Identify initial potential supporters

### **Tools and Tactics**

- Communications and Outreach Workshop: a one- to two-day facilitated event bringing all appropriate staff and board members together to
  - Discuss the information gathered during Phase I
  - Identify issues and audiences
  - Discuss tools for communications, outreach and marketing, including needed materials (fact sheets, newsletters, video, Web site, etc.)
  - Determine appropriate protocols for responding to inquiries from the media and public
  - Develop communication and outreach plan with associated schedule for activities
  - Develop legislative plan for local and state elected officials
  - Include municipalities and respective officials where applicable as part of target markets

### **Deliverables**

- Communications and outreach plan
- Draft materials, potentially including
  - Fact sheet
  - Comprehensive questions and answers sheet
  - Map and schedule
  - ORT graphics / animation

## **PHASE 4 – INITIAL OUTREACH - SEPTEMBER TO DECEMBER**

---

### **Goals**

- Distribute materials and conduct activities that increase understanding of and support for ORT among key audiences

### **Outcomes**

- Establish or enhance relationships with key stakeholders
- Contribute to better educated stakeholders who can speak about the merits of ORT
- Build public understanding of ORT and MDX
- Lay foundation for a successful public hearing in 874 corridor
- Increase the media's knowledge of ORT and MDX

### **Tools and Tactics**

- To be determined during Phase 3, but likely to include:
  - Regular and periodic briefings with elected officials
  - Public information meetings in the 874 Corridor
  - Media outreach including editorial board meetings
  - Neighborhood / small group meetings
  - Marketing/advertising activities

### **Deliverables**

- Press kit
- Other materials as needed

## **PHASE 5 – PREPARATION OF PUBLIC INVOLVEMENT PLAN FOR SR 874 – AUGUST TO DECEMBER**

---

### **Goals**

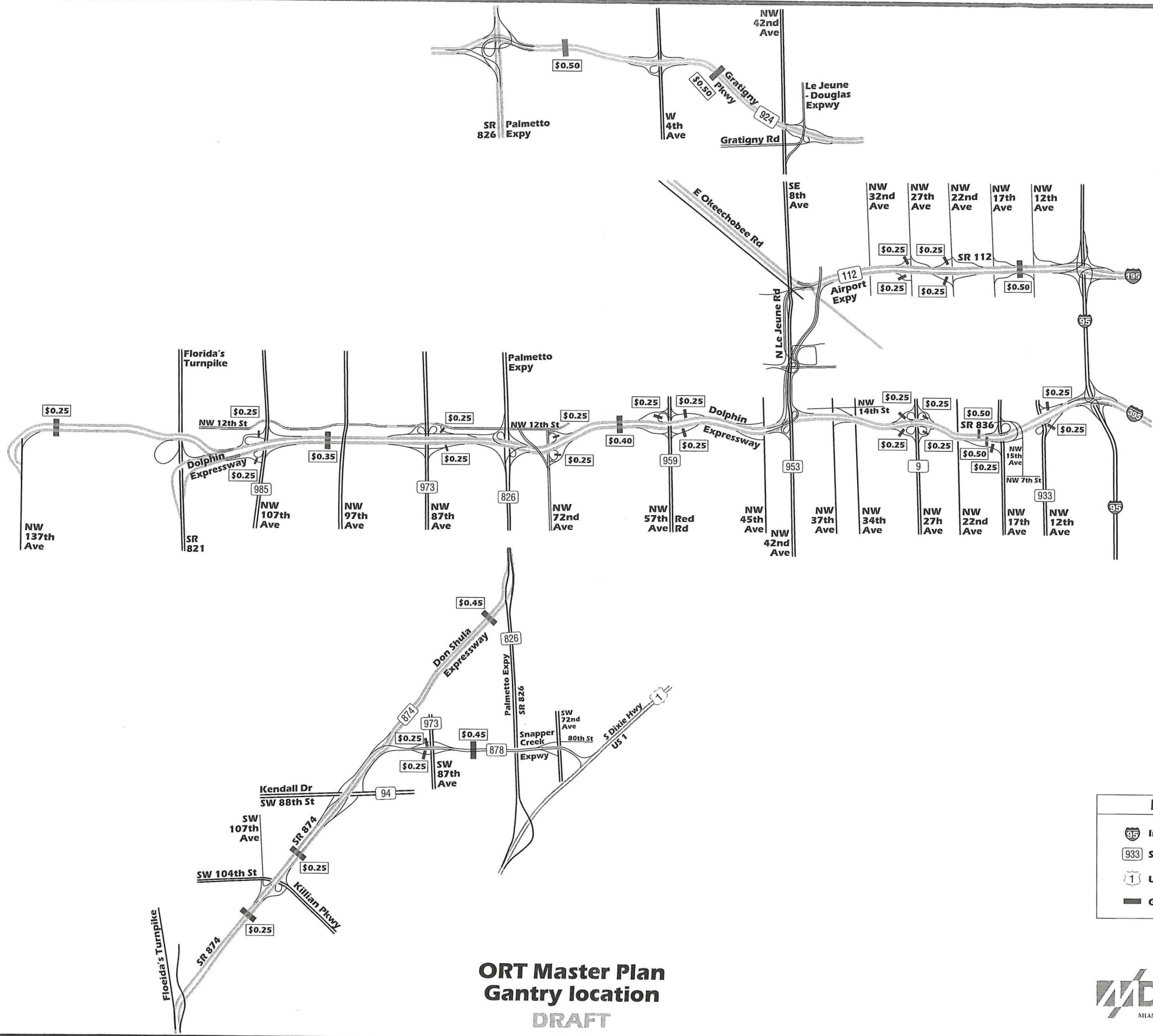
- Provide opportunities for the SR 874 public to obtain a better understanding of the concept of ORT including the provision of a more equitable system and on the electronic only toll collection method.
- Reach a general understanding of the improvements projects planned

### **Outcomes**

- Obtain consensus on the acceptance and buy in from the users of SR 874
- Establish a core support group for the implementation of ORT systemwide.

### **Tools and Tactics**

- Meet with leaders of CANT to strategize in reaching and gathering support other community organizations and elected officials
- Schedule meetings with key leaders of community organizations identified
- Schedule meetings with key entities in the corridor such as the Miami-Dade College, Kendall Federation of Homeowners Associations, Kendale Lakes Homeowners Associations and others
- Advertise and notify residents 500 feet from the corridor of 3 Public Reviews (Open House) to educate, inform and provide an opportunity for formal public input.
- Provide at least two Outreach workshops to discuss details on ORT, Sunpass, business plans, violation and enforcement program
- Schedule and advertise a Public Hearing with the MDX Board on the approval of the rates and non-tolled movements and on the implementation of ORT for SR 874



LEGEND	
	Interstate road
	State road
	US route
	Gantry location

HNTB

**ORT Master Plan**  
**Gantry location**  
DRAFT

