Southeast Florida
EXPRESS LANES
Regional Concept for Transportation Operations
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Disclosure Statement
This document is reflective of the thought and policy at the time of development. As such, some elements discussed in this document may have been addressed or changed at a regional or statewide level since this document was developed. Updates and revisions to this document are expected over time as Florida’s Express Lane program matures. Additionally, many elements are dependent upon the review and approval of Federal, State and local partner agencies and may be subject to change based on their feedback.
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<td>PIO</td>
<td>Public Information Officer</td>
</tr>
<tr>
<td>RCTO</td>
<td>Regional Concept for Transportation Operations</td>
</tr>
<tr>
<td>RFID</td>
<td>Radio-Frequency Identification</td>
</tr>
<tr>
<td>RISC</td>
<td>Rapid Incident Scene Clearance</td>
</tr>
<tr>
<td>ROW</td>
<td>Right of Way</td>
</tr>
<tr>
<td>SIB</td>
<td>State Infrastructure Banks</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>SOV</td>
<td>Single-Occupant Vehicle</td>
</tr>
<tr>
<td>SRTA</td>
<td>State Road and Toll Authority</td>
</tr>
<tr>
<td>STEAM</td>
<td>Surface Transportation Efficiency Analysis Model</td>
</tr>
<tr>
<td>STTF</td>
<td>State Transportation Trust Fund</td>
</tr>
<tr>
<td>TIFIA</td>
<td>Transportation Infrastructure Finance and Innovation Act</td>
</tr>
<tr>
<td>TMC</td>
<td>Transportation Management Center</td>
</tr>
<tr>
<td>TOD</td>
<td>Time of Day</td>
</tr>
<tr>
<td>TOT</td>
<td>Truck Only Toll</td>
</tr>
<tr>
<td>TSM&amp;O</td>
<td>Transportation Systems Management and Operations</td>
</tr>
<tr>
<td>USDOT</td>
<td>U.S. Department of Transportation</td>
</tr>
<tr>
<td>V/C</td>
<td>Volume to Capacity</td>
</tr>
<tr>
<td>VDOT</td>
<td>Virginia Department of Transportation</td>
</tr>
<tr>
<td>VDS</td>
<td>Vehicle Detection System</td>
</tr>
<tr>
<td>VES</td>
<td>Vehicle Enforcement System</td>
</tr>
<tr>
<td>WSDOT</td>
<td>Washington Department of Transportation</td>
</tr>
</tbody>
</table>
Southeast Florida suffers from severe roadway congestion. According to the Texas Transportation Institute’s February 2012 Urban Mobility Report, the Miami region ranks 11th in the nation for total annual hours of delay and 14th nationally in terms of travel time index, which is the ratio of free-flow travel time to travel time in congestion.

This resulted in 174 million hours of annual delay and an estimated cost of congestion of $3.74 billion in 2011. Transportation agencies responsible for providing surface transportation in Southeast Florida recognize that newer approaches are needed to provide mobility options for customers.

To that end, the Florida Department of Transportation (FDOT) recently embarked upon a pilot project that explores using congestion pricing to manage congestion on its busiest and most congested roadway, I-95. That project, known as 95 Express, has been successful in improving congestion and providing options for a reliable trip time, among the other benefits express lanes (ELs) provide.

DEFINING EXPRESS LANES (ELs)

A managed lane is a transportation systems management and operations tool that uses operational strategies to ensure established operating conditions are achieved. These strategies can include access control, pricing and vehicle eligibility. In Florida, ELs are defined as a type of managed lane located within an existing facility that uses pricing in combination with other techniques to maintain reliable trip times.

95 Express generates revenue to help pay for its operating costs and has improved operations on the facility significantly. The December 2012 performance report shows the 95 Express travel lanes operating at an average speed of 56 mph in the p.m. peak period (which is the more heavily congested period), an 180 percent increase from the 20 mph average experienced in the former high-occupancy vehicle (HOV) lanes. The general purpose lanes also have experienced significant improvement in the average travel speeds, from 20 mph to 42 mph in the p.m. peak period – a 110 percent increase.
Building upon the success of the 95 Express project, FDOT and its partners – hereafter called the RCTO Team – hope to construct multiple EL corridors across the Southeast Florida region, eventually connecting the corridors to create an EL network (ELN). The RCTO Executive Committee’s vision for the ELN is to provide: “A reliable, interconnected Express Lanes Network that provides mobility options for users.”

1-1: PROJECT PURPOSE

Across the United States, 17 EL projects currently exist, and 21 are in development and will open in the next five years. Not only are EL projects emerging as a solution to help manage congestion, several metropolitan areas are developing and deploying networks of ELs.

Southeast Florida stands on the cutting edge of ELN implementation. The current status of EL projects in Southeast Florida is shown in Figure 1-1. In addition to these projects, which are anticipated to open within 10 years, there is a regional vision for 186 centerline miles of ELN (Figure 1-2).

Unique to the Southeast Florida ELN is that four entities – FDOT District 4, FDOT District 6, FDOT Florida’s Turnpike Enterprise (FTE) and the Miami-Dade Expressway Authority (MDX) – will be involved in its deployment. It is the primary purpose of the Southeast Florida Express Lanes Network Regional Concept for Transportation Operations (RCTO) project to resolve and document how these agencies collaborate and resolve issues, so the ELN can function cohesively regardless of ownership or operation.

The first step in the plan development process was to identify the full spectrum of issues that impact the implementation of an integrated ELN. Through this process, the RCTO Team developed a list of 36 potential issues, and, subsequently, assessed and proposed options to resolve the issues. The potential ELN issues fall into at least one of six functional categories (and many cut across multiple categories) that make up the chapters of this Southeast Florida Express Lanes RCTO document:

- Planning and Policy;
- Physical, Design Features;
- Operations;
- Communications;
- Financial; and
- Legal.

Each of these six topics are explored as they relate, not only to the system, but to standalone projects. Wherever possible, the chapters herein are organized consistently in the following manner:

- Each of the issues begins with a discussion of its “Implication” in regard to the ELN;
- The “Alternatives, Considerations, and Pros and Cons” for each issue are then discussed;
- Where feasible, the “Best Practices and/or Current State of the Practice” for each issue are then provided; and
- A “Recommendations” section then summarizes each issue.

1-2: STUDY PROCESS

1-2.1: Stakeholder Outreach

The RCTO process involved extensive and sophisticated stakeholder engagement which helped frame the discussion and drive study progress. Stakeholders were organized into groups based on their knowledge area, as shown in Figure 1-3. With this structure, discussions could be tailored to their interest and expertise.

The 36 issues identified for ELN implementation first were vetted through these stakeholder groups and transformed into an annotated outline for the final document. This annotated outline served as the basis for developing the more detailed RCTO document.

The stakeholder groups were brought together to provide input at key milestones in the study process (Figure 1-3) and have helped frame the process and drive decision-making. Appendix A provides detailed documentation of these efforts.
NOTE: Vision Projects represent the potential Future Express Lanes Network in Southeast Florida. Please note, some segments are not yet through the programming process and, therefore, do not have identified funding. The viability of Express Lanes will be further assessed through studies on these corridors.

DATE: March 1, 2014
FIGURE 1-2: FUTURE VISION OF THE ELN

NOTE: Vision Projects represent the potential Future Express Lanes Network in Southeast Florida. Please note, some segments are not yet through the programming process and, therefore, do not have identified funding. The viability of Express Lanes will be further assessed through studies on these corridors.

DATE: March 1, 2014
1-2.2: Case Studies

In addition to input from key stakeholders, the RCTO Team gained insight from agencies across the country who have implemented EL projects. Detailed summaries of the interviews can be found in Appendix B.

Lessons learned and best practices on the following projects served as a tool for developing recommendations for the Southeast Florida RCTO:

- FDOT (95 Express);
- GDOT (I-85 N HOT Lanes);
- Houston METRO (Katy Freeway and METRO system);
- MnDOT (MnPASS corridors);
- VDOT (I-495); and
- WashDOT (SR 167).

1-3: HOW to USE this DOCUMENT

Each chapter of this RCTO report pertains to one of the six functional categories being addressed. This report is a “living” document that will be updated as the ELN develops and evolves. This RCTO report could also be described as an implementation and operational guide for the ELN, and therefore, it is
CHAPTER 1: INTRODUCTION

Not meant to be read from front to back. Rather, chapters can be utilized individually. When project practitioners – those working on a specific EL project or transportation project that would impact an EL project – reference this report for recommendations or guidance on how to deviate from recommendations, they can use the chapter that contains the information they need.

The consistent information among chapters ensures that when practitioners reference a particular chapter, they have background information to inform their work.

1-4: LOOKING to the FUTURE

During the course of the RCTO project development process, it became apparent that all ELN issues were not the same in terms of size, complexity and impact. It also became apparent that while certain decisions had to be made for the ELN as a whole, other decisions could be corridor-based until some time in the future.

As the ELN matures and the corridors begin to physically connect, those decisions that were left at the corridor level will need to be revisited and resolved to ensure coordinated operation.

It will also be necessary to review the ELN’s operations and administration to determine if efficiencies can be gained and whether a more robust administrative approach would be beneficial. Also, a common modeling approach and platform should be adopted to evaluate EL corridors at various stages of the network development process.


The development of a regional Express Lanes Network (ELN) in Southeast Florida requires consideration of various planning and policy issues. Some policies that were enacted for the original 95 Express project were developed to deliver certain commitments to the community and in conjunction with federal requirements (as part of the Urban Partnership Agreement and the Congestion Reduction Demonstration Program).

While many of these policies could apply to individual projects across the region, it is necessary to evaluate what policies are needed on an ELN level, to ensure efficiency across the network. This chapter evaluates the most important of these policies, which require resolution to ensure that a coordinated ELN can function in Southeast Florida.

2-1: OVERSIGHT FRAMEWORK

2-1.1: Implication

This issue includes considerations about defining how decisions will be made and the roles of each agency in various aspects of the ELN, including operation, maintenance, enforcement, incident management, transit operations and user information.

2-1.2: Background Information

In order for a system of ELs to operate efficiently, it requires more than tolling infrastructure and new or converted lanes. The network requires a well-defined organizational structure to successfully coordinate planning, management and operations activities. This task is critical, especially in an area such as Southeast Florida, where multiple owners exist. The following sections provide background on the entities which own facilities within the future Southeast Florida ELN and how they might coordinate future ELN activities.

2-1.2.1: Florida Department of Transportation

The study area spans two FDOT Districts. District 4 covers Broward and Palm Beach Counties within the study area and District 6 includes Miami-Dade County within the
CHAPTER 2: PLANNING AND POLICY

study area. FDOT owns, operates and maintains all interstates and State Routes not owned by FTE or MDX (as shown in Figure 2-1 and described in the following sections).

On a statewide level, FDOT’s Central Office is working with the Districts, FTE, expressway authorities and other entities to develop a statewide policy for managed lanes. This effort will help ensure consistent business rules are put in place for managed lanes throughout the state.

Within Southeast Florida, FDOT, FTE and MDX currently have organizational arrangements for different aspects of toll collection and processing, and operations and maintenance. Moving forward with an ELN requires examining these institutional arrangements to determine how they need to be modified, added to and codified.

2-1.2.2: Florida’s Turnpike Enterprise

Florida’s Turnpike Enterprise (FTE) has been operating toll roads in Florida since 1957. FTE operates eight toll roads comprised of 450 centerline miles of toll facilities. FTE operates in 16 counties in Florida, including the Miami-Dade, Broward and Palm Beach Counties within the ELN study area. FTE works closely with regional toll authorities across the state, including the Miami-Dade County Expressway Authority (MDX).

Within the ELN study area, FTE owns three facilities. These include the original section of Florida’s Turnpike (from the Golden Glades Interchange north to Fort Pierce); the Homestead Extension of Florida’s Turnpike (HEFT); and the Sawgrass Expressway.

As the owner of these facilities, some of which are being considered for express lanes (ELs), FTE is currently responsible for all aspects of operations, tolling and maintenance of these facilities. Electronic tolling on these corridors is through SunPass, Florida’s electronic prepaid tolls program, or by toll-by plate on the southern 47 miles.

FTE is currently examining the feasibility of constructing ELs on some of its existing toll facilities. These ELs would function as a separate system and be priced to ensure reliable travel time. How ELs on toll roads will function with ELs on non-toll facilities with regard to goal-setting and performance measurement requires discussion and resolution.
2-1.2.3: Miami-Dade Expressway Authority

To locally control regional toll roads separate from FTE facilities, the Miami-Dade County Commission established the Miami-Dade Expressway Authority (MDX). In 1996, Florida passed legislation that enabled MDX to obtain operational and financial control of state roads. MDX began operations in early 1997 and now maintains and operates five of Miami-Dade county’s busiest roads (Figure 2-1). These roads, covering about 31 centerline miles, serve as key east-west connections. They include the following corridors, all of which are within the ELN study area:

- State Road 112/Airport Expressway
- State Road 836/Dolphin Expressway
- State Road 874/Don Shula Expressway
- State Road 878/Snapper Creek Expressway
- State Road 924/Gratigny Parkway

All MDX facilities are tolled; therefore, if ELs are included on these facilities, they would operate as enhanced toll lanes with fees for use plus the base toll rate. Regardless of whether these corridors will include ELs on system, MDX is a key stakeholder, as connections will need to be made to its facilities.

2-1.3: Organizational Framework – Alternatives, Considerations, and Pros and Cons

As noted, the key to successful decision-making and, efficiency of the ELN is to establish an organizational framework which defines how decisions are made and tasks performed for all aspects of the ELN. Table 2-1 describes the organizational options for the key activities that require coordination. The following sections provide the pros and cons for each of these organizational options.

2-1.3.1: Roles and Responsibilities

Decision-making and general oversight for the Southeast Florida ELN can be accomplished in two ways (Table 2-2).

<table>
<thead>
<tr>
<th>TABLE 2-1: ORGANIZATIONAL FRAMEWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM</td>
</tr>
<tr>
<td>OVERSIGHT FRAMEWORK</td>
</tr>
<tr>
<td>Project funding</td>
</tr>
<tr>
<td>Toll setting</td>
</tr>
<tr>
<td>Toll collection/back office</td>
</tr>
<tr>
<td>Enforcement</td>
</tr>
<tr>
<td>Corridor maintenance</td>
</tr>
<tr>
<td>Toll maintenance</td>
</tr>
<tr>
<td>Incident management (Road Rangers)</td>
</tr>
<tr>
<td>Transit operations</td>
</tr>
<tr>
<td>Emergency response</td>
</tr>
<tr>
<td>ITS/Communications/TMC</td>
</tr>
<tr>
<td>Project delivery</td>
</tr>
<tr>
<td>Design standards</td>
</tr>
<tr>
<td>Toll revenue</td>
</tr>
<tr>
<td>Violation revenue</td>
</tr>
</tbody>
</table>
1. A regional or network-based oversight board with agency representation could be established;

2. A new department within FDOT, FTE or MDX could be created for ELN oversight.

Though one of these oversight structures would be in place, who makes initial decisions pertaining to various ELN functions will still vary. The following sections lay out alternatives for the organizational structure and responsibility of decision making for these items.

2-1.3.2: Finance

Finance-related activities requiring organizational consideration are project funding, toll setting and toll collection/back office (Table 2-3).

Project funding can be accomplished on a corridor-by-corridor basis or via a regional or systemwide structure. Likewise, toll setting could be controlled by the individual owner of each facility or regionally. Details concerning how a regional approach to funding and toll setting would be performed could be developed at a later date. Toll operations and back-office processing could be controlled via existing arrangements or new arrangements could be made to reflect the added complexity of an ELN.

2-1.3.3: Operations

A number of agencies and service providers currently coordinate back office operations via FTE to ensure efficient incident management, emergency response, enforcement and

### TABLE 2-2: COMPARISON OF ELN OVERSIGHT ALTERNATIVES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGIONAL OR ELN OVERSIGHT</td>
<td>• Promotes consistency and top-down integration</td>
<td>• Requires new structure/organization</td>
</tr>
<tr>
<td>FDOT, FTE, MDX OVERSIGHT</td>
<td>• Promotes consistency and top-down integration</td>
<td>• Difficult to determine “parent” agency</td>
</tr>
<tr>
<td></td>
<td>• Potential staffing efficiencies</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 2-3: COMPARISON OF FINANCE AND REVENUE ALTERNATIVES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ALTERNATIVES</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT FUNDING</td>
<td>Defined by project</td>
<td>• Can better define the project when applying for funds</td>
<td>• Limits funding options</td>
</tr>
<tr>
<td></td>
<td>Systemwide or regional</td>
<td>• Allows for pooling of funds</td>
<td>• Can complicate funding requests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can make a better case for need and preparedness when promoting the whole system</td>
<td>• Requires structured project prioritization process to determine where/when funding is attributed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Requires strict processes to track the use of money</td>
</tr>
<tr>
<td>TOLL SETTING</td>
<td>Segment owner</td>
<td>• Institutional knowledge of corridor</td>
<td>• May introduce disconnect across the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Driver confusion if rates/policies different</td>
</tr>
<tr>
<td></td>
<td>Regionalized</td>
<td>• Promotes consistency</td>
<td>• Requires new organization/ staffing</td>
</tr>
<tr>
<td>TOLL COLLECTION/ BACK OFFICE</td>
<td>FTE in consultation with MDX</td>
<td>• Enables staffing efficiencies</td>
<td>• Requires additional coordination or new structure</td>
</tr>
<tr>
<td></td>
<td>FTE and MDX functioning separately</td>
<td>• Already performing these functions independently</td>
<td>• May introduce disconnect across the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Driver confusion if process/policies different</td>
</tr>
</tbody>
</table>
maintenance of the existing highway network. With the introduction of ELs on these corridors, structured coordination will become even more important. For most operational activities, the options are either to manage these activities on a corridor level or to regionally consolidate these efforts (Table 2-4).

2-1.3.4: Laws and Contracts

Decisions pertaining to laws, contracts and financial decisions such as project delivery, design standards and who receives revenue can be made on a corridor basis or at a systemwide level (Table 2-5).

2-1.4: Best Practices and Current Deployment

The organizational framework of oversight

---

**TABLE 2-4: COMPARISON OF OPERATIONAL STRUCTURE ALTERNATIVES**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ALTERNATIVES</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>Segment owner</td>
<td>Already in place for general purpose lanes</td>
<td>Not as cost-effective</td>
</tr>
<tr>
<td></td>
<td>Regionalized</td>
<td>Staffing and equipment efficiencies</td>
<td>Redundancies with maintenance of general purpose facilities</td>
</tr>
<tr>
<td>Toll Maintenance</td>
<td>Segment owner</td>
<td>Can be focused on specific corridor equipment</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Regionalized</td>
<td>Efficiencies in staffing, equipment, etc.</td>
<td>If back office is not centralized, may have different equipment</td>
</tr>
</tbody>
</table>

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**TABLE 2-5: COMPARISON OF STRUCTURE PERTAINING TO LAWS AND CONTRACTS**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ALTERNATIVES</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Delivery</td>
<td>Defined by segment</td>
<td>• Delivery method can be customized to the characteristics/scope of the project, funding needs, etc.</td>
<td>• None</td>
</tr>
<tr>
<td></td>
<td>All use same delivery method</td>
<td>• Owners become familiar with delivery method, so the process becomes more efficient</td>
<td>• Delivery method chosen may not align with the needs of all projects</td>
</tr>
<tr>
<td>Design Standards</td>
<td>Design exceptions by project</td>
<td>• Retains the integrity of FDOT Standards</td>
<td>• Redundant process, especially with some that should apply to all ELN projects, without question</td>
</tr>
<tr>
<td></td>
<td>Define systemwide design exceptions</td>
<td>• Improves efficiencies in the design process</td>
<td>• Exceptions may be appropriate on one project and not on another</td>
</tr>
<tr>
<td>Toll Revenue</td>
<td>Segment owner</td>
<td>• Funds remain where they were collected, which follows current law</td>
<td>• Limited options for allocating funds</td>
</tr>
<tr>
<td></td>
<td>Regional entity or combination of stakeholders</td>
<td>• Money can be spent where it is needed within the system or for system expansion</td>
<td>• Complicates the logistics of collecting and distributing money</td>
</tr>
<tr>
<td></td>
<td>Segment owner</td>
<td>• Funds remain where they were collected, which follows current law</td>
<td>• Limited options for allocating funds</td>
</tr>
<tr>
<td>Violation Revenue</td>
<td>Regional entity or combination of stakeholders</td>
<td>• Money can be spent where it is needed within the system or for system expansion</td>
<td>• Complicates the logistics of collecting and distributing money (i.e. complexities with using money collected in one corridor to fund projects in another)</td>
</tr>
</tbody>
</table>
of an ELN and the activities associated with implementing, operating and maintaining such a system depends on several factors. One factor is the existing ownership of the roadway network and processes for the coordination of roadway implementation and maintenance activities. Also, the geography of the region and timeframe for implementing the projects can also affect how ELN organization can develop over time. Because each region has a unique governance structure, planning processes and vision for the future ELN, organizational arrangements will depend on the specific needs of that region.

Nationally, Southeast Florida is a pioneer in terms of considering network-scale decisions for its ELs. Though ELs have been implemented across the nation, they have typically been planned in isolation, and few regions have proactively defined a future network in order to ensure coordination among the lanes from a planning, operational and customer perspective.

One region that joins Southeast Florida in thinking of the potential future network of ELs is Atlanta. Through its Managed Lanes System Plan, the Georgia Department of Transportation (GDOT) identified and prioritized a network of projects; provided guidance on legal, financial and regulatory issues; and provided a plan for implementation.

Georgia’s current structure involves two partner agencies: GDOT is the owner of the highway system, and the only entity that can designate a road as a tolled facility; and Georgia State Road and Toll Authority (SRTA) is the toll operator. This somewhat linear arrangement, with predefined roles and responsibilities, means that many of the organizational decisions are simplified. For example, toll collection and back office are a responsibility of SRTA, and all maintenance and incident management is coordinated by GDOT. Project delivery approaches have been defined on a corridor-by-corridor basis by GDOT.

The first GDOT EL project, I-85 HOT lanes, was implemented as a Congestion Reduction Demonstration project, with $115 million in federal funds (of which 85 percent were transit funds) and $67 million in state funds.

The second project, which is now in procurement, was originally procured as a Design, Build, Finance, Operate, Maintain (DBFOM) model, but due to concerns of relinquishing toll setting control to a private operator for an extended period of time, GDOT cancelled the procurement and re-let it using a Public Private Partnership (P3) procurement in the form of Design-Build-Finance (DBF) structure in which the state maintains toll collection responsibilities. The next two projects in the pipeline are Design-Builds on the I-85 North extension project and the I-75 South ELs. GDOT has performed oversight on a network level, in coordination with SRTA through its Office of Innovative Program Delivery.

In Houston, ELs were implemented on corridors as the need arose, without an identified network for the future. For this reason and because current projects do not physically connect to one another, the ELs have operated independently. Currently, two separate private agencies – who previously had agreements with the Texas Department of Transportation (TxDOT) to operate and maintain the HOV lanes (which were converted to HOT lanes) – operate the corridors. Once tolling was introduced, they entered into a new agreement. They also entered into an agreement with the Harris County Toll Road Authority to be able to operate the lanes.

2-1.5: Recommendations

There is recognition that the development of a network of ELs in Southeast Florida is occurring and requires network level decisions regarding its development and ongoing administration. It is also recognized that the network will develop in phases over time, and some decisions regarding its administration will occur in phases.
The vision for the ELN during the next ten years includes additional EL corridors becoming operational on I-95, I-75, SR 826, the HEFT and I-595. To achieve this, it is recommended that FDOT Districts 4 and 6 and FTE continue to coordinate with each other as EL corridors become operational. As more corridors are implemented – involving more agencies and physical connections – ELN administration will need to be revisited with the potential for more regionalized efforts.

An executive committee was formed during the writing of this report to guide the project development process. It is recommended that this committee meet quarterly to coordinate development of the ELN. Other recommendations related to administration include:

- Project funding will occur at the project level.
- Toll setting will occur per project corridor with structured coordination upstream and downstream.
- Toll collection will be via SunPass only and administered by FTE.
- TMC oversight of EL corridors will occur by corridor with coordination and redundancies. Migrating to a future consolidated effort will be re-evaluated for future phases of the network.
- In-field maintenance activities for the EL corridor itself and associated toll collection equipment will be performed on a corridor level and folded into existing contracts per entity to the extent allowable. Future efficiencies of consolidated efforts will be sought out after significant network rollout has occurred.
- EL design standards will follow the existing FDOT design standards with exceptions being sought on a project by project basis per current FDOT procedures.
- All financial decisions (e.g. use of toll revenues) regarding the network will comply with State policy currently being formulated by FDOT. Exceptions to that policy may be required for FTE and MDX facilities depending on their financing method and any associated limitations due to bond covenants.

2-2: VEHICLE ELIGIBILITY

2-2.1: Implication

Vehicle eligibility can be managed by type (i.e. high occupancy vehicle [HOV] single occupant vehicles, trucks, transit vehicles, motorcycles, hybrids) and minimum occupancy. Though not typically used to dynamically manage traffic, like pricing strategies, eligibility can vary by time of day or day of the week. Eligibility requirements can be used as standalone lane management strategies or in conjunction with a pricing strategy. For the purpose of this RCTO report, eligibility requirements are being considered only in conjunction with a pricing strategy.

2-2.2: Alternatives, and Pros and Cons

When business rules are established for an EL, considerations on what types of vehicles will be allowed and whether they will pay full price or be offered a free or reduced rate. The following sections describe both the types of vehicles...
### TABLE 2-6: ELIGIBILITY OPTIONS AND EXPRESS LANE TYPES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUCKS ALLOWED</td>
<td>• Increased revenue potential</td>
<td>• Can impact operational performance</td>
</tr>
<tr>
<td></td>
<td>• Help provide reliable travel times for freight partners when using EL facility</td>
<td>• Driver expectations/comfort</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can require more capital cost for higher design standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complex design and operations when providing connections to other EL facilities on which trucks are not allowed</td>
</tr>
<tr>
<td>TRANSIT ALLOWED</td>
<td>• Travel time benefit to transit users</td>
<td>• Can impact operations due to bus speeds</td>
</tr>
<tr>
<td></td>
<td>• Potential increase in person throughput</td>
<td>• Potential need for other transit enhancements (such as park and ride lots) to meet the demand</td>
</tr>
<tr>
<td></td>
<td>• Optics/general public support</td>
<td>• Increased Incident Management services within EL facility</td>
</tr>
<tr>
<td>MOTORCYCLES USE EL FOR FREE</td>
<td>• Travel time benefit to motorcycles</td>
<td>• Revenue loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Equity issues – why not allow other fuel-efficient cars?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Revenue loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Drives pricing up. Can cause lane to reach toll cap and operate inefficiently.</td>
</tr>
<tr>
<td>HYBRIDS USE EL FOR FREE</td>
<td>• Travel time benefit to hybrids</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Environmental benefits</td>
<td></td>
</tr>
<tr>
<td>EXPRESS LANE TYPES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIGH OCCUPANCY TOLL</td>
<td>• Increase effective lane capacity</td>
<td>• Costs to implement and operate the toll collection process</td>
</tr>
<tr>
<td></td>
<td>• Revenue generation</td>
<td>• Public perception of tolls</td>
</tr>
<tr>
<td></td>
<td>• Ability to dynamically manage lanes</td>
<td>• Enforcement is more difficult</td>
</tr>
<tr>
<td></td>
<td>• Provides benefit to carpools by offering discounted or free use of lane</td>
<td></td>
</tr>
<tr>
<td>EXPRESS TOLL LANES</td>
<td>• Same as HOT with added benefit of increased revenue</td>
<td>• May have perceptions of inequity</td>
</tr>
<tr>
<td></td>
<td>• Enforcement is simplified when compared with HOT</td>
<td></td>
</tr>
<tr>
<td>TRUCK ONLY LANES</td>
<td>• Improved safety due to separation of trucks</td>
<td>• No revenue collection</td>
</tr>
<tr>
<td></td>
<td>• Improved efficiency due to varying operational characteristics of autos and trucks</td>
<td>• Inability to dynamically managed demand</td>
</tr>
<tr>
<td></td>
<td>• Revenue collection infrastructure/operations not necessary</td>
<td>• Not feasible if truck percentage is not significant</td>
</tr>
<tr>
<td></td>
<td>• Improves reliable delivery</td>
<td>• Underutilized capacity most of the time</td>
</tr>
<tr>
<td></td>
<td>• Reduced long-term infrastructure/maintenance costs</td>
<td></td>
</tr>
<tr>
<td>TRUCK ONLY TOLL LANES</td>
<td>• Improved safety due to separation of trucks</td>
<td>• Costs to implement and operate the toll collection process</td>
</tr>
<tr>
<td></td>
<td>• Improved efficiency due to varying operational characteristics of autos and trucks</td>
<td>• Not feasible if truck percentage is not significant</td>
</tr>
<tr>
<td></td>
<td>• Revenue generation</td>
<td>• Trucking industry negative</td>
</tr>
<tr>
<td></td>
<td>• Improves reliable delivery</td>
<td>• Underutilized capacity most of the time</td>
</tr>
<tr>
<td></td>
<td>• Reduced long-term infrastructure/maintenance costs</td>
<td>• The role of travel time savings and reliability in a complex logistical supply chain may not be the primary reason for EL use.</td>
</tr>
</tbody>
</table>
that are typically involved in the eligibility conversation as well as the resulting EL types. The following sections describe these options for vehicle eligibility and the pros and cons of each alternative (Table 2-6).

2-2.2.1: Vehicle Types

2-2.2.1.1: Trucks

Trucks with two axles are typically allowed in the ELs as toll-paying vehicles. Trucks with three or more axles are not allowed on the 95 Express lanes, and many other facilities, unless they are designated as emergency vehicles responding to specific incidents. In some instances, trucks are defined by weight.

Truck eligibility for other EL projects around the country is described in Table 2-7. Trucks are typically restricted from ELs mainly because truck traffic can impact operations, and increase capital cost and design complexity. The inclusion of trucks requires more costly design standards and makes it more difficult to obtain design variances or exceptions.

Safety is often another factor in whether trucks

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>HOV</th>
<th>TRANSIT</th>
<th>TRUCKS</th>
<th>MOTORCYCLES</th>
<th>HYBRID</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-85 HOT LANES ATLANTA</td>
<td>HOV3+ free</td>
<td>Free</td>
<td>Over 2 axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-10 KY FREEWAY HOUSTON</td>
<td>HOV3+ free</td>
<td>Free</td>
<td>Over 2 axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>MNDOT (MN PASS)</td>
<td>HOV2+ free</td>
<td>Free</td>
<td>Over 2 axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-495/CAPITAL BELTWAY</td>
<td>HOV3+ free</td>
<td>Free</td>
<td>Over 2 axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>SR 167 HOT LANES SEATTLE</td>
<td>HOV2+ free</td>
<td>Free</td>
<td>No trucks over 10,000 lbs.</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>SR 91 EXPRESS LINES ORANGE COUNTY</td>
<td>HOV 3+ free (except M-F EB from 4-6 p.m., when 50% discount is applied)</td>
<td>Free</td>
<td>No vehicles over 10,000 lbs. (except M-F EB between 4-6 p.m., when 50% discount is applied)</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-15 FASTRAK EXPRESS LINES SAN DIEGO</td>
<td>HOV 2+ free</td>
<td>Free</td>
<td>2 or more axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-25 HOV EXPRESS LINES DENVER</td>
<td>HOV 2+ free</td>
<td>Free</td>
<td>4+ axles pay $18 fee in addition to the base toll rate</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-15 EXPRESS LINES SALT LAKE CITY</td>
<td>HOV 2+ free</td>
<td>Free</td>
<td>No vehicles over 12,000 pounds</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-110 FASTRAK LOS ANGELES</td>
<td>HOV 2+ free</td>
<td>Free</td>
<td>2+ axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
<tr>
<td>I-10 FASTRAK LOS ANGELES</td>
<td>HOV3+ free</td>
<td>Free</td>
<td>2+ axles not allowed</td>
<td>Free</td>
<td>Tolled</td>
</tr>
</tbody>
</table>
should be permitted to use ELs, as well as driver preference because many people use the ELs to avoid trucks. The I-595 implementation is the only corridor currently considering allowing 3+ axle trucks in the EL facility for a one-year pilot period.

2-2.2.1.2: Transit

Many ELs across the country were originally built as dedicated HOV and Transit lanes. There are proven benefits to allowing transit vehicles in the EL. These include enhanced transit service, which can result in increased ridership and reduced VMT. Express bus service can also increase the overall capacity of the corridor. There are also disadvantages to allowing transit in ELs. Transit vehicles, due to operational characteristics and requirement to follow posted speed limits, can impede motorists in the EL. Also, enhancing transit service through use of the ELs can bring about the need for new and/or expansion of existing park and ride facilities and other transit improvements to meet increased demand.

2-2.2.1.3: Motorcycles

All of the agencies interviewed allowed motorcycles to use the lane for free. The advantage of this is that it provides travel time benefits to motorcycles, which are fuel-efficient vehicles, thus, providing an environmental benefit. The disadvantage of this is the loss of revenue from a potential paying customer.

2-2.2.1.4: Hybrids

Pre-registered hybrid vehicles are allowed to ride for free on 95 Express (several other agencies allow registered alternative vehicles to ride for free, but these numbers are very low in the state’s employing this option). The advantage of this is that it provides the incentive of travel time benefits to these users, thus, providing an environmental benefit. The disadvantage of this is the loss of revenue from a potential paying customer and operational impacts of allowing this relatively larger (and growing) group of customers use the lane free of charge. Also, the definition of what a fuel-efficient vehicle is can be a point of contention for the public.

2-2.2.2: Express Lane Types

In addition to vehicle type restrictions, vehicle occupancy often determines eligibility. The following EL types are defined based on occupancy as well as vehicle type. The three most prevalent options for defining vehicle eligibility for ELs are:

- High Occupancy Toll (HOT);
- Express Toll Lanes (ETL); and
- Truck Only Toll lanes (TOT).

2-2.2.2.1: High Occupancy Toll

HOT lanes introduce a paid option for eligibility. In HOT lanes, HOVs still can travel for free while those that do not meet the HOV requirement can pay a fee to use the lanes. The fee is set to ensure the lane meets predefined operational metrics and can be static or dynamically priced. As with HOV lanes, guidelines on use of lanes by motorcycles, hybrids and transit vehicles must be set for each facility. In addition to collecting revenue, the pricing component allows the owner to better utilize the capacity of the lane. This option also provides a benefit to HOVs who can still use the lane at no cost. However, revenue collection also requires capital investment and long-term operation and maintenance costs. The concept of tolling can also receive a negative public reaction.

2-2.2.2.2: Express Toll Lanes

ETLs, as defined by the tolling industry, are managed lanes that require all vehicles using the lane to pay a toll. This is different than how the RCTO defines ELs, which includes HOT lanes and ETLs. Though this option offers additional revenue potential and ability to manage congestion to meet operational goals, there can be negative public perceptions due to the fact that all users must pay.

2-2.2.2.3: Truck Only Toll Lanes

TOT lanes combine vehicle eligibility with pricing. These lanes provide a dedicated facility for trucks, as with TOLs. The difference is that TOT lanes are priced to ensure efficient movement of goods. TOT
lanes are only effective where truck percentages are high enough to fully utilize the capacity of the lane. By separating the trucks from the general purpose lanes, safety and operations can be improved and maintenance costs reduced. Trucks also benefit from the guarantee of a reliable trip. However, the tolls used to provide that reliable trip are often criticized by the trucking industry.

2-2.3: Best Practices and Current Deployment

There are many different regulations on vehicle restrictions on ELs regarding HOV levels, motorcycles, hybrid vehicles, transit vehicles, and others. It is important to consider how allowing a vehicle to travel in the EL for free will affect congestion levels and revenues and plan restrictions based on that. These vehicle restrictions should be evaluated over time and adjusted as necessary. Table 2-7 describes the current vehicle eligibility requirements of the regions involved in the case studies performed for the RCTO effort, which are included in Appendix B.

2-2.4: Recommendations

Based on operational considerations, intended purpose for the network and current state of the practice, it is recommended that all vehicles be allowed in the ELN with the exception of trucks with more than two axles. I-595 ELs in Broward County will have a one-year pilot program allowing trucks to operate within the ELs. After that trial period ends, truck eligibility on I-595 should be revisited.

2-3: TOLL PRICING

2-3.1: Implication

There are three options for setting and adjusting toll pricing:

1. Static tolling is a constant toll price for the entire day (e.g. traditional greenfield toll facilities);

2. Time of day (TOD) pricing is set to a fixed price for each hour of the day; and

3. Dynamic pricing adjusts continuously (typically on 15-minute intervals) depending on current traffic conditions, in order to maintain a certain operational goal.

This section defines the pros and cons for these pricing options, including whether these will be systemwide policies or determined on a corridor-by-corridor basis. It should be noted that static pricing is not an option for ELs in Florida because FDOT defines ELs as a “type of managed lane located in a separate tolled corridor inside an existing facility where congestion is managed with pricing, access, eligibility and dynamic tolling.” However, because this RCTO report will be a guide for other implementing agencies, this option is still discussed.

2-3.2: Alternatives, and Pros and Cons

The alternatives considered – static, TOD (table pricing) and dynamic pricing – are discussed in...

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATIC</td>
<td>- Reduced driver confusion</td>
<td>- Less ability to manage lane operations</td>
</tr>
<tr>
<td></td>
<td>- Can be more efficient when travel patterns are consistent</td>
<td>- Can result in operational breakdowns</td>
</tr>
<tr>
<td></td>
<td>- Cheaper to operate and maintain</td>
<td>- Less ability to maximize revenue</td>
</tr>
<tr>
<td>TOD</td>
<td>- Toll rate can be clearly communicated to user</td>
<td>- Less ability to manage lane operations</td>
</tr>
<tr>
<td></td>
<td>- Cheaper to operate and maintain than Dynamic</td>
<td>- Can result in operational breakdowns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Less ability to maximize revenue</td>
</tr>
<tr>
<td>DYNAMIC</td>
<td>- Enhanced operations compared to static</td>
<td>- More costly to implement</td>
</tr>
<tr>
<td></td>
<td>- Can “guarantee” reliable trips</td>
<td>- Requires additional staffing resources</td>
</tr>
<tr>
<td></td>
<td>- Ability to optimize revenue and throughput</td>
<td>- Challenging to communicate to public</td>
</tr>
</tbody>
</table>
The Katy Freeway Managed Lanes EL system in Houston uses a TOD pricing schedule.

### Table 2-8

**TOLL RATE SCHEDULE**

<table>
<thead>
<tr>
<th></th>
<th>EASTBOUND</th>
<th>WESTBOUND</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sun</td>
<td>Mon</td>
</tr>
<tr>
<td>Midnight</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>1:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>2:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>3:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>4:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>5:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>6:00 AM</td>
<td>$0.40</td>
<td>$1.00</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>$0.40</td>
<td>$2.20</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>$0.40</td>
<td>$2.20</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>$0.40</td>
<td>$1.10</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>Noon</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>8:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>11:00 PM</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
</tbody>
</table>

3-exit rate is set at $7.00 per tolling plaza at all times. This is an HOV/EZ TAG/TxTag-only read. The violation/non-tag toll rate equals the posted toll rate +25%. 2-exit rates are subject to change based on traffic conditions.

2-3.2.1: Static

Static pricing sets a single toll rate for a facility that applies to all times of day. This pricing strategy is most effective on facilities with relatively stable traffic volumes throughout the day with no significant peaking of volumes. Static pricing does not require real-time monitoring and toll rate setting, and thus it is less expensive to operate. Toll rates are constant, which enables clear communication to the user and, therefore, less driver confusion. The fixed pricing scheme reduces the ability to manage operations and revenue. This can result in operational breakdown of the lanes.

2-3.2.2: Time of Day

For TOD pricing, toll rates are set to account for the variation in traffic demand throughout the day. Prices are set for time segments, which vary throughout the day, and by day of week, but are predefined. For example, the 7 to 9 a.m. period will differ from the 1 to 3 p.m. period, but it will be the same every Monday. The length of the time segment can vary depending on travel characteristics along the corridor.

Again, because tolls are set to certain rates for each time period, this allows for clear advanced communication of the rates to the user and, therefore, less driver confusion. Unlike static pricing, TOD pricing allows for better use of lane capacity in off-peak periods by lowering the toll rate; however, it is not as responsive as dynamic pricing to changing traffic conditions.
2-3.2.3: Dynamic

Dynamic pricing links toll rates to traffic demand, and rates are monitored and adjusted to meet predefined performance targets. Tolls rates can vary at almost any interval, but typically are adjusted in the range of every five to 15 minutes. This is most effective on roadways with high volumes or where traffic patterns are volatile or irregular.

The ability to adjust with changing traffic conditions makes this pricing strategy the most capable of managing traffic demands to achieve performance objectives such as vehicle throughput, minimum speed or trip reliability. The equipment and resources needed to monitor traffic and adjust toll rates in real time, makes it more expensive to operate than static or TOD pricing. It can also be difficult to communicate this type of pricing to the public. Typical ranges can be provided in advance of use, but the exact rate cannot be communicated via dynamic signs until just before use of the facility.

2-3.3: Best Practices and Current Deployment

Most of the agencies interviewed for the national scan utilize dynamic pricing with tolls updated in the range of every five to 15 minutes, stating various reasons for this choice. The Minnesota Department of Transportation (MnDOT) stated that this method was necessary, given harsh weather conditions and the lack of physical separation from the general purpose lanes. SRTA noted that dynamic pricing offered the best option for actively managing traffic in the lane.

Houston METRO began with dynamic pricing, but it later changed to table-based pricing on its METRO HOT lanes. The agency said it made this change based on its experience gained during operation of the I-10 and the ease of managing table-based toll rates. Table 2-9 illustrates the current state of the practice for pricing alternatives.

2-3.4: Recommendations

---

**TABLE 2-9: PRICING – STATE OF THE PRACTICE**

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>LOCATION</th>
<th>STATIC</th>
<th>DYNAMIC</th>
<th>TOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 EXPRESS</td>
<td>Miami</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>595 EXPRESS</td>
<td>Miami</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SR 91 EXPRESS LANES</td>
<td>Orange County</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>I-15 EXPRESS LANES</td>
<td>San Diego</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I-25 HOV EXPRESS LANES</td>
<td>Denver</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>I-394 MN PASS</td>
<td>Minneapolis</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>I-35W MN PASS</td>
<td>Minneapolis</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>QUICKRIDE US 290</td>
<td>Houston</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I-10 KATY FREEWAY</td>
<td>Houston</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>I-45, HOT LANES</td>
<td>Houston</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>US 59 HOT LANES</td>
<td>Houston</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>I-15 EXPRESS LANES</td>
<td>Salt Lake City</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SR 167 HOT LANES</td>
<td>Seattle</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I-85 HOT LANES</td>
<td>Atlanta</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I-110 FASTRAK EXPRESS LANES</td>
<td>Los Angeles</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I-495/CAPITAL BELTWAY</td>
<td>Arlington</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
A number of travel characteristics are used to determine the best pricing alternative for a project or a region. Most critical to the decision, though, are the level of congestion and the consistency of traffic conditions. Where congestion is minimal, static pricing can serve as an appropriate, less expensive and less labor-intensive, option. In locations where travel patterns are consistent, TOD pricing can be an option. Dynamic pricing offers the most control in managing operations, but is also the most complex option.

FDOT’s EL definition precludes static pricing. Additionally, heavy congestion in the Southeast Florida region, especially during the peak travel periods, would not be effectively mitigated using static pricing. With the future plans for an extensive ELN in Southeast Florida, it will be necessary that operators be able to manage usage efficiently, especially where connections are made.

Because TOD pricing is less responsive than dynamic pricing, it is recommended that dynamic pricing be used on all EL facilities in Southeast Florida.

**2-4: TOLL RATE GOAL – THROUGHPUT, REVENUE or HYBRID**

**2-4.1: Implication**

Toll rates can be set to achieve a variety of project or network goals such as maximizing revenue or throughput. Policies must be defined to determine whether to maximize throughput or revenue. Another option is to define a hybrid approach which maximizes throughput in peak hours and revenue during off-peak periods. This includes establishing whether these will be systemwide policies or will be determined on a corridor-by-corridor basis.

**2-4.2: Alternatives, and Pros and Cons**

ELs can be managed to maximize the number of people or vehicles travelling through the corridor or to produce the maximum revenue based on market demand. Table 2-10 summarizes pros and cons of these options as well as a hybrid approach. More detail on each option is provided in the following sections.

**2-4.2.1: Throughput**

Throughput can be measured by the number of persons or vehicles through a given point per unit of time. Therefore, this is a measure that is closely correlated with congestion and mobility. Pricing to maximize throughput indicates the objective of not only utilizing the full capacity of the lane, but also ensuring smooth shifts in usage so that drastic price changes do not overwhelm or empty the lane.

As noted, throughput can be measured by the persons or vehicles. Optimal vehicular throughput occurs when the flow rate reaches a level at which the speed begins to decline below the posted speed limit, which has been observed to occur

---

**TABLE 2-10: COMPARISON OF THROUGHPUT VS REVENUE MAXIMIZATION**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
</table>
| THROUGHPUT | • Allows for maximum use of lane capacity  
• Maximizes overall person or vehicle throughput  
• Greater environmental/fuel saving benefits | • Loss of potential revenue, especially in non-peak period |
| REVENUE   | • Maximizes revenue  
• Encouraged ridesharing and transit if policy allows HOV and transit travel | • Reduces the effective use of capacity of the facility  
• Negative public perception |
| HYBRID    | • Allows for maximum use of lane capacity  
• Additional revenue when throughput is not a concern  
• Greater environmental/fuel saving benefits | • Could require multiple toll algorithms  
• Could be perceived negatively |
in the range of 1,500 to 1,900 vehicles per lane per hour. Although there is a distinct threshold for optimal vehicle throughput, the capacity of a facility can be increased via policies that promote ride-sharing and transit, such as carpool and vanpool incentives and reduced fares for carpools.

Therefore, maximizing throughput allows for the optimal use of the facility’s capacity. It also incentivizes non-single occupant trips through allowed usage of surplus capacity in the EL, which provides air quality improvements and reduced fuel consumption.

2-4.2.2: Revenue

To offset capital costs as well as long-term operations and maintenance expenses, toll rates are sometimes set to maximize revenue. A revenue maximization scenario strives to capture as much revenue as possible through a higher, more variable toll structure in order to maximize the financial capacity of the project. This is primarily done in instances where private entities control the financial risk, and therefore, revenue potential for a facility. This tolling option provides the greatest amount of revenue, but at some cost.

Setting toll rates to maximize revenue can cause some operational deterioration and may cause some users to shift to other routes or modes. Also, the concept of using ELs to generate revenue can have a negative public perception.

2-4.2.3: Hybrid

The final option employs the maximum throughput approach during peak hours and maximum revenue during the off-peak period. This ensures the facility meets operational performance metrics during the peak period, but allows for higher rates during the off-peak period, when capacity in the EL is not near the vehicular threshold, thus combining the benefits of the two approaches. However, this would be a more complicated process for the toll operator, as it would require multiple tolling algorithms.

2-4.3: Best Practices

2-5: DELIVERY APPROACH

2-5.1: Implication
In recent years, the transportation industry has explored the benefits of innovative project delivery strategies that deliver projects at a lower cost and reduced schedule, while maintaining quality. Public Private Partnership (P3) project arrangements have been utilized with success in other industries for many years and more recently have seen success in the transportation industry. By employing P3s, agencies can leverage limited transportation funds as well as innovation to deliver projects that would likely be impossible to deliver using traditional approaches.

The following sections describe the various delivery options, the pros and cons of each option, and the recommendations for the ELN. This includes consideration of whether these decisions will be made on a corridor or network level and how delivery teams will coordinate with one another.

2-5.2: Alternatives, and Pros and Cons

A range of delivery options, from the traditional Design Bid Build (DBB) to numerous P3 approaches, were assessed for the ELN. The introduction of tolling to highway projects heightens the opportunity for P3s. These agreements form an organizational and legal structure between a public agency and a private sector entity that enables greater private sector involvement in the financing and implementation of transportation projects.

There are a number of P3 structures that differ in public versus private responsibility and risk. Depending on owner preference and project characteristics, any number of these options can be applied to the projects of the ELN.

For the P3 delivery options, there is also the choice of terms between availability payment and concession agreement. With an availability payment, the owner collects tolls and provides predetermined fixed periodic payments to the private sector entity. In a concession, the private sector is given the right to collect the toll for a decided period of time, which could be the life of the facility. The four delivery alternatives are:

- DBB;
- Design Build (DB);
- Design Build Operate Maintain (DBOM); and
- Design Build Finance Operate Maintain (DBFOM).

These options are summarized in Table 2-11 and described in detail in the following sections.

2-5.2.1: Design Bid Build

Traditionally, transportation projects have been implemented using the DBB delivery model, in which the owner contracts separately with the designer and contractor. Engineering design work is first selected typically based on qualifications. Upon design completion, construction is procured, typically based on lowest bid. With this delivery option, the owner maintains oversight responsibility for both the design and construction phases, the designer has no contract with the contractor.

2-5.2.2: Design Build

Transportation agencies have been moving toward alternative delivery approaches to expedite critical projects. The DB project delivery approach allows the design and construction phases of a project to be combined into one contract, usually awarded on either a low-bid or best-value basis. This enables the designer and contractor to work concurrently, thus expediting project delivery. This also allows for a single procurement effort that includes both the design and construction phase, thus improving procurement efficiency.

2-5.2.3: Design Build Operate Maintain

The DBOM model builds upon the DB procurement by adding the responsibility of operations and maintenance. For this delivery option, the owner is responsible for securing project funding, while the design, construction and operations and maintenance is procured using a single contract.

Through this delivery method, the owner maintains toll setting responsibilities and, therefore, control of the facility. This means that the owner maintains any surplus revenue, but also the revenue risk.

In addition to the expedited delivery enabled by
the design-build procurement, the combining of design, construction and maintenance functions encourages lifecycle cost efficiencies. For example, the contractor’s knowledge of every detail of the project design, and of the materials and equipment utilized, ensure a focused maintenance plan that reduces future risk and cost. However, for this to be successful, owners must put forth additional effort in detailing design, construction and maintenance specifications through the contract, as this delivery option requires them to relinquish control of these functions.

2-5.2.4: Design Build Finance Operate Maintain

With the DBFOM approach, the function of project financing in addition to the design, construction, operations and maintenance tasks are transferred to the private sector through a single contract. Financing is either partially or wholly financed by debt leveraging revenue streams, which often come in the form of direct user fees (tolls).

Funding also comes in the form of public sector grants and equity investments by the private sector. The repayment of debt accumulated by the private sector can be structured in two forms, as a full concession agreement or an availability payment, both of which are described below.

This delivery option offers the same cost and schedule benefits as the DB and DBOM methods. Again, care must be taken to fully specify design, construction, operations and maintenance requirements in the contract phase, as control of these functions shifts to the private sector. The DBFOM delivery option can also shift revenue risk to the private sector, if using a concession agreement.

2-5.2.4.1: Concession Agreement

This option for the DBFOM model allows the private
sector to collect all revenues generated during the concession period (typically 25 to 75 years), in exchange for the design, construction, finance and operation services. The ownership of the facility remains with the public sector, which also sets maintenance and performance standards that must be achieved throughout the concession period. As noted, this method transfers financial risk, which is a benefit to the public sector. However, this means that the control of toll rate setting is also transferred to the private sector. Public perception of this transfer of control can be negative.

2-5.2.4.2: Availability Payment

With availability payments, the public sponsor pays the private partner a pre-established periodic payment as compensation for the design, construction, maintenance and operations of the facility. The payments, which typically do not begin until the facility is in operation, are determined based on the facility’s availability and level of service achieved for operations and maintenance.

Availability payments are common for transit as well as highway projects because they keep control with the public sector. However, the fixed payments may exceed toll revenues, thus putting the financial risk on the public sector, as with the other delivery options.

2-5.3: Best Practices and Current Deployment

Several factors drive the selection of an appropriate delivery approach including funding availability, costs to deliver and project readiness. Projects of a smaller magnitude, such as conversion projects, can often be delivered using the traditional DBB approach, as was the case with I-85 in Atlanta. Additional capacity projects often rely on innovative financing approaches, such as the P3 utilized on I-495 in Virginia.

No single delivery approach was consistently selected in locations where multiple EL projects have been implemented, indicating that this decision is best made on a project level rather than a network level. However, the following key points were established as state of the practice:

• The majority of EL projects to date have been publicly financed.

• Public agencies are interested in innovative delivery by partnering with other public agencies and some private concessionaires.

• Only a few of the operational ELs (including the first) have had significant private investment and the majority of those in development rely on public financing.

• The viability of widespread private financing remains to be seen and will need to be reexamined after there is enough financial data from projects such as I-495 in Washington D.C. and I-595 in Fort Lauderdale, FL.

2-5.4: Recommendations

All delivery methods will be considered to finance the ELN. Project funding will occur on a corridor-by-corridor basis and may include a mix of traditional and innovative financing methods. Business rules and operational policies may need to be negotiated if delivering an EL corridor with a private partner.

2-6: COMMUNICATIONS

2-6.1: Implications

Communication during the planning, design, construction and operation phases of implementation of the ELN is critical in educating the customer and gaining support for the system. To facilitate an efficient communications and outreach effort, a plan must be established to define how, when and who will develop and deliver the messages.

2-6.2: Alternatives

Active engagement with the public should start early, with public education and branding efforts to introduce the public to the concept, why it is being done, how to use it and to begin to build
recognition and familiarity with the ELN.

With the magnitude of the ELN, considerations should be made with regards to employing dedicated communications staff, assigned to developing and implementing a communications strategy. Upon project implementation, customer service staff will be required to provide travel information and general customer support.

Another key communications tool is the sharing of performance data, which, if done on a regular basis can build trust and support of the project.

Table 2-12 and the following sections describe these key tasks, the alternatives for accomplishing them and the pros and cons of each.

2-6.2.1: Public Education/Outreach

<table>
<thead>
<tr>
<th>TABLE 2-12: COMPARISION OF COMMUNICATIONS ALTERNATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM</td>
</tr>
</tbody>
</table>
| PUBLIC EDUCATION/OUTREACH | Project specific             | More detailed information on project-specific issues | • Effort required to customize for each project  
|                           | Networkwide                  | • Enforces network planning approach | • Difficult to provide detailed information to users  
| STAFFING/ORGANIZATION OF COMMUNICATIONS | Public Information Officer (PIOs) for each segment/project | • Allows for more detailed, project-specific knowledge | • Lack of knowledge of other ELN projects can fragment message |
|                           | Regionalized PIO             | • Better cross-communication of information  
|                           |                             | • More efficient use of PI budget | |
| CUSTOMER SERVICE STAFFING | SunGuide TMC                 | • Existing staff in place (but there is a need for more) | • Less ability to provide system level information |
|                           | ITS                         | • More detailed information on corridor level  
|                           |                             | • Existing staff in place  
|                           |                             | • More detailed information on corridor level | • Loss in staffing efficiencies  
|                           | Consolidated EL call center  | • Staffing efficiencies can be achieved  
|                           |                             | • Better cross-communication across the system. Reduces segmentation | |
| CONTINUED PERFORMANCE MONITORING AND REPORTING | Corridor owner               | • Existing collection equipment/process in place | • Differing data collection methods may not be able to integrate into system-level analyses |
|                           | Regionalized contract       | • Standardization of collection and analysis methods | • May require capital to switch projects/corridors to common process |
| PERFORMANCE FEEDBACK TO PUBLIC | Individual project website | • Allows for more detailed, project-specific knowledge | • Fragments information by project, does not paint ELN picture |
|                           | Regionalized ELN website    | • Enforces network planning approach  
|                           |                             | • Allows for efficiencies in managing | |
Outreach must be performed throughout planning, implementation, and operation of the ELN. In the beginning, this will consist of educational outreach focused on communicating the purpose of the lanes and how customers will use them. As the projects move toward implementation, this will shift to a customer service role. These efforts can be structured from a network approach or on a project level, or some combination thereof. Outreach on a network level would instill a sense of consistency and build recognition for the ELN, but would make the dissemination of project specific information would require a separate process for this.

Project-level outreach would enable more focused messages, but would not promote the system and would require an entirely new effort for each project.

2-6.2.2: Staffing/Organization of Communications

Due to the magnitude of the ELN, the challenges of communicating a relatively new concept and the various agencies involved in planning and implementing the ELN, there is a need for dedicated communications staff. This can be accomplished via a centralized public information officer (PIO) for the ELN or via project specific PIOs. The first option would provide for better information sharing between the projects and would be a more efficient use of staff while the second option would enable more detailed, project-level knowledge.

2-6.2.3: Customer Service Staffing

Upon project implementation, communications needs shift toward customer service. This includes roadside communications (changeable message signs and 511 Transportation Information System), toll rate setting, and incident management oversight. Currently, this function is handled by FDOT D6’s Transportation Management Center (TMC), called SunGuide.

As the system expands, customer service functions can be handled by individual TMCs or by a consolidated customer service center for ELs. The benefit of using owner specific TMCs is that they are already in place, however, a consolidated customer service center could offer the ability to share staffing resources and would also promote enhanced communication across the entire system, thus improving operational efficiency.

2-6.2.4: Continued Performance Monitoring

To ensure that the system is operating to its potential, it is critical to continuously monitor performance. This can be done on a project level or by a centralized contract. The benefit of doing this on a corridor or project level is that the equipment and procedures for collecting and reporting this data has already been established.
The reason for instituting a system approach to data collection and reporting would be to provide a sense of consistency, thus promoting the system as a whole, not as individual projects.

2-6.2.5: Performance Feedback to the Public

One good way to build trust and support of the project is to make performance data readily available. Though data will likely be presented on a corridor basis, this information can be shared via a centralized ELN website or project specific sites. Using an ELN site, communications staff could promote the entire system, thus building recognition and acceptance. Project specific sites would allow for more detailed and project-focused information.

2-6.3: Best Practices and Current Deployment

Agencies interviewed through the national scan varied greatly in the level of outreach performed and the organization of these efforts. There was a general consensus on a few items that were deemed critical for a successful communications program. These included:

- The earlier you can begin educating the public and stakeholders about the project, the better;
- It is important not only to educate, but to advocate. Make sure users understand the benefits; and
- The roles of all partner agencies, as they relate to communications, should be clearly defined to avoid duplication of efforts.

2-6.4: Recommendations

Communication activities will be broken out by project phasing. When EL corridors are in development, communications will be handled by the project PIO. Each project PIO will be equipped with fact sheets, frequently asked questions handouts and ELN talking points to ensure consistency in messaging. This PIO will work, in coordination with the District and ELN entity, to coordinate with FDOT Central Office, ensuring status updates are communicated regularly.

When corridor projects become operational, communication functions will then fall to agency PIOs and Customer Service Center representatives.
This chapter contains high-level discussion of basic design elements for express lane (EL) facilities, along with their pros and cons, illustrations from various deployments around the country, relevant best practices and recommendations for the EL network (ELN).

This information, along with a project decision process, provides guidance to project practitioners, who are responsible for developing individual projects, which will eventually be part of an interconnected ELN in Southeast Florida.

By understanding and addressing some fundamental design criteria early in the project development process, individual projects can avoid future incompatibility issues such as inconsistent signage and physical design of the lane. Further, as agencies continue employing innovative project delivery, generating preliminary design concepts during the planning phases reduces the unknowns and exposes risk early in the project development process.

Careful consideration of the issues discussed in this chapter at the project and network level can help ensure that the ELs operational strategy is effective in meeting the goals and objectives of both the corridor and network, and optimizes the useful life of the project. This chapter addresses typical design elements to provide guidance for the developing ELN in Southeast Florida but does not attempt to address every possible design issue that may arise during detailed engineering analysis.

**PROJECT DECISION PROCESS**

As noted, the RCTO describes guidelines for the development of an interconnected network of ELs in Southeast Florida. However, specific corridor and project issues may require decisions be made that deviate from the guidelines.

The process diagram in Figure 3-1 details the decision process as it relates to the design and physical features. It is expected that a project practitioner will follow the RCTO guidelines as shown on the top horizontal portion of the process chart, and study the considerations and their impacts listed below prior to finalizing the decisions. Figure 3-1 provides high-level guidance when project specific deviations from the RCTO guidelines are required.
### FIGURE 3-1: PROJECT PROCESS

<table>
<thead>
<tr>
<th>Area</th>
<th>Questions</th>
</tr>
</thead>
</table>
| **Safety**                | DOES IT IMPROVE SAFETY OF CUSTOMERS?  
  - If yes, no change or not applicable, move down  
  - If no, follow RCTO guideline |
| **Policy Compliance**     | DOES IT MEET STATE EL POLICY?  
  - If yes or not applicable, move down  
  - If no, follow RCTO guideline |
| **Standards Compliance**  | DOES IT FOLLOW FDOT DESIGN STANDARDS?  
  - If yes or not applicable, move down to next step; if no, are there known design exceptions and/or variances?  
  - If yes, move down; if no, follow RCTO guideline |
| **Operate**               | DOES IT ALLOW FOR CONSISTENT EL OPERATIONS – TMC, TOLL, INCIDENT MGT./ENFORCEMENT?  
  - If yes or not applicable, move down  
  - If no, follow RCTO guideline |
| **Maintain**              | DOES IT ALLOW FOR EASIER MAINTENANCE – ROADWAY, ITS, TOLLS AND OTHERS?  
  - If yes or not applicable, move down,  
  - If no, follow RCTO guideline |
| **Understand**            | IS IT UNDERSTANDABLE BY THE CUSTOMER AND WON’T LEAD TO CUSTOMER CONFUSION?  
  - If yes or not applicable, move down  
  - If no, follow RCTO guideline |
| **Consistent**            | IS IT AS CONSISTENT AS POSSIBLE WITH THE NETWORK, PARTICULARLY ADJACENT SEGMENTS?  
  - If yes or not applicable, move down  
  - If no, follow RCTO guideline |
| **Construction Costs**    | DOES IT LOWER CONSTRUCTION COSTS AND ALLOW FOR A FASTER IMPLEMENTATION SCHEDULE?  
  - If yes or not applicable, move down  
  - If no, follow RCTO guideline |
| **Lifecycle Costs**       | DOES IT REDUCE LIFECYCLE COSTS?  
  - If yes or not applicable, it is acceptable to deviate  
  - If no, follow RCTO guideline |
3-1: SEPARATION

3-1.1: Implication

ELs are controlled-access facilities that typically operate adjacent to general purpose lanes. Typical separation techniques used for ELs fall into two broad categories (Table 3-1): barrier separation and buffer separation.

Separation is one of the key early design decisions that influence the project’s feasibility and constructability. Other major design issues discussed in this chapter – access, basic roadway, toll and Intelligent Transportation System (ITS) design elements – are also largely dependent on type of separation chosen for a project. Overall project implementation costs, operations and maintenance costs, safety characteristics, type and level of enforcement, and traffic management are greatly influenced by type of separation treatment.

3-1.2: Alternatives, Pros and Cons

The following sections describe the alternatives for separation of EL lanes as well as the associated pros and cons of each alternative.

3-1.2.1: Barrier Separation

The three types of barrier separation techniques (Table 3-1) discussed in this document are:

1. Concrete barrier separation;
2. Grade separation; and
3. Longitudinal pavement markings with delineators.

These barrier separation techniques provide the following two major benefits:

- Lower violation rates as they restrict vehicle access to ELs at intermediate points; and
- Improved traffic management operations and safety by reducing driver weaving behavior between general purpose lanes and ELs.

Also, it should be noted that among the barrier separation techniques, the greater the physical barrier separation, the better the independence of the operating performance of the express lanes from the general purpose lanes.

3-1.2.1.1: Concrete Barrier Separation

In this lane separation type, concrete barriers are placed continuously as separators between ELs and general purpose lanes. Some of the key benefits of this type of barrier separation are lowest crossover violations, the perception of a safer corridor by motorists, least distraction to adjacent general purpose lanes, and better access control. However, the presence of continuous barriers is likely to increase project construction costs, increase response time for emergency responders, and may require additional right of way (ROW) to accommodate the additional inside shoulders on both the EL and general purpose lanes.

Another option is a moveable barrier. Movable barriers can provide benefits of a physical separation with the flexibility of active lane management. Movable barriers are typically employed for contraflow conditions as they allow flexibility to change lane configurations based on the time of day.

The benefits of this system should be weighed against the initial capital costs and the annual operating and maintenance costs incurred for setting up and successfully utilizing this system.

3-1.2.1.2: Grade Separation

ELs are grade separated from the general purpose lanes. Physical separation between the ELs elicits a greater feeling of safety for the users; however, this separation technique typically involves additional planning, construction time, additional ROW and is the most expensive separation option. A grade-separation option could also create trapped conditions during emergencies causing difficulty for the motorists to vacate the system.

3-1.2.1.3: Longitudinal Pavement Markings with Delineators

ELs are separated from general purpose lanes using a combination of a paint-striped buffer (pavement markings) along with a series of
## CHAPTER 3: DESIGN

### TABLE 3-1: COMPARISON OF SEPARATION TECHNIQUES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BARRIER SEPARATION</strong>&lt;br&gt;SEPARATED FROM THE OTHER GENERAL PURPOSE LANES BY A PHYSICAL MEDIUM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRADE SEPARATION</td>
<td>• Lower maintenance costs than buffer separated with delineators option</td>
<td>• Highest cost and time to implement</td>
</tr>
<tr>
<td></td>
<td>• No cross-over violation from traffic using general purpose lanes</td>
<td>• Does not allow emergency responders continuous access from general purpose lanes, thus increasing the difficulty of emergency / incident management</td>
</tr>
<tr>
<td></td>
<td>• Motorists may perceive this as a safer option</td>
<td>• Increased footprint may require additional ROW for some corridors to accommodate the new alignment, complex design and construction of new ingress/egress points</td>
</tr>
<tr>
<td></td>
<td>• Accidents on general purpose lanes do not affect the operations of grade separated express lanes</td>
<td>• Longer project implementation schedules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Limits or prohibits future expansion of both the GP lanes and ELs</td>
</tr>
<tr>
<td><strong>CONCRETE BARRIER SEPARATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provides lower maintenance costs when compared to buffer separated with delineators and grade separated options</td>
<td>• Require higher project construction costs when compared to buffer separated with delineators</td>
</tr>
<tr>
<td></td>
<td>• No cross-over violation from traffic using general purpose lanes</td>
<td>• Specially designed barriers at regular intervals to allow access for emergency responders may be needed, which may require additional drainage infrastructure.</td>
</tr>
<tr>
<td></td>
<td>• Motorists may perceive this as a safer option</td>
<td>• Increased emergency/incident management time (i.e. motorists may be trapped within the concrete barrier system in the event of an emergency)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A wider corridor is required, which may require additional right-of-way (ROW) for some corridors to accommodate the barrier and required shoulders. Additional pavement due to additional shoulders would generate more runoff requiring pond sizes to be larger.</td>
</tr>
<tr>
<td><strong>LONGITUDINAL PAVEMENT MARKINGS WITH DELINEATORS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lower project construction costs when compared to barrier separated or grade separated options</td>
<td>• High recurring delineator replacement and associated maintenance costs. ELs will be closed during delineator maintenance activities</td>
</tr>
<tr>
<td></td>
<td>• Easier access for emergency responders</td>
<td>• Motorists may drive over delineators (cross-over violation between ELs and general purpose lanes) to avoid tolls in ELs and/or congestion in GP lanes</td>
</tr>
<tr>
<td></td>
<td>• Easier for incident clearance procedures. Motorists can drive over the delineators in cases of extreme emergency</td>
<td>• Law enforcement and incident response can be challenging if shoulder area is limited</td>
</tr>
<tr>
<td></td>
<td>• Easier to retrofit existing expressways thereby faster project implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Easy to accommodate possible future modifications to the roadway including lane configuration changes, widening, etc.</td>
<td></td>
</tr>
<tr>
<td><strong>BUFFER SEPARATION</strong>&lt;br&gt;SEPARATED FROM ADJACENT GENERAL PURPOSE LANES BY NARROW BUFFER AREA (NO DELINEATORS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LONGITUDINAL PAVEMENT MARKINGS ONLY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Minimal capital and maintenance costs</td>
<td>• Potential for higher cross-over violation traffic to/from general purpose lanes</td>
</tr>
<tr>
<td></td>
<td>• Lower project construction costs when compared to barrier separated</td>
<td>• Greater friction between the ELs and the general purpose lanes due to speed differential. This results in lower performance reliability on ELs</td>
</tr>
<tr>
<td></td>
<td>• Easier access for emergency responders</td>
<td>• Potential increase in violations could warrant stricter enforcement and increased costs</td>
</tr>
<tr>
<td></td>
<td>• Easier for incident clearance procedures; motorists can drive over the delineators in cases of extreme emergency</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 3: DESIGN

3-1.2: Buffer Separation

ELs are separated, by a distance typically ranging from 18 inches to 4 feet, from general purpose lanes using longitudinal pavement markings only. No delineators are used in this separation option. Because no posts or barriers are used, this option is one of the least expensive separation techniques. Similar to the longitudinal pavement markings with delineators, the buffer separation technique provides the most convenient access for emergency responders to the ELs, and minimal capital and maintenance costs since no delineators or concrete barriers are involved.

Some of the disadvantages are higher cross-over violations compared to barrier separation options, and greater friction between faster moving EL traffic versus slower moving traffic in the adjacent general purpose lanes. This option could result in increased toll violations prompting stricter enforcement strategies and increased costs. It is also the easier option for the operating/maintenance agencies to retrofit.

3-1.3: Best Practices/
Current State of the Practice

Table 3-2 shows the separation techniques currently in use in EL projects around the country.

3-1.4: Recommendation

Project goals, design specifications, safety

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>LOCATION</th>
<th>SEPARATION TECHNIQUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 EXPRESS</td>
<td>Miami and Ft. Lauderdale, Fla.</td>
<td>Barrier Separation – Longitudinal pavement markings with delineators</td>
</tr>
<tr>
<td>595 EXPRESS</td>
<td>Ft. Lauderdale</td>
<td>Barrier Separation – Concrete barrier</td>
</tr>
<tr>
<td>SR 91 EXPRESS LAKES</td>
<td>Orange County, Calif.</td>
<td>Barrier Separation – Longitudinal pavement markings with delineators</td>
</tr>
<tr>
<td>I-15 FASTRAK EXPRESS LAKES</td>
<td>San Diego County, Calif.</td>
<td>Barrier Separation –</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Concrete exterior with moveable (zipper) barrier interior for 16 miles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Buffer separation for 4 miles</td>
</tr>
<tr>
<td>I-25 HOV EXPRESS LAKES</td>
<td>Denver</td>
<td>Barrier Separation – Concrete barrier</td>
</tr>
<tr>
<td>I-394 MNPASS</td>
<td>Minneapolis</td>
<td>• Buffer Separation – Longitudinal pavement markings 8-mile section</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Barrier Separation – Concrete barrier for 3-mile reversible segment</td>
</tr>
<tr>
<td>I-35W MNPASS</td>
<td>Minneapolis</td>
<td>Buffer Separation – Longitudinal pavement markings</td>
</tr>
<tr>
<td>QUICKRIDE, US 290</td>
<td>Houston</td>
<td>Barrier Separation – Concrete barrier</td>
</tr>
<tr>
<td>I-10 KATY FREEWAY</td>
<td>Houston</td>
<td>Barrier Separation – Longitudinal pavement markings with delineators</td>
</tr>
<tr>
<td>I-15 EXPRESS LAKES</td>
<td>Salt Lake City</td>
<td>Buffer Separation – Longitudinal pavement markings</td>
</tr>
<tr>
<td>SR 167 HOT LAKES PILOT PROJECT</td>
<td>King County, Wash.</td>
<td>Buffer Separation – Longitudinal pavement markings</td>
</tr>
</tbody>
</table>
3-2: ACCESS

3-2.1: Implication

On EL facilities, one of the fundamental tools to manage traffic flow is regulating access. Limiting access allows vehicles to enter (ingress) and exit (egress) at designated locations, called access points. For an EL corridor, it is equally important to select both the location of the access points and design treatment early in the planning phase along with the separation type to help minimize the traffic weaving conditions, and at the same time provide safe travel for users when entering and exiting the system. In addition, for an individual EL project whose main objective is to encourage long distance trips, access restrictions can be a great tool in ensuring unimpeded travel and elimination of bottlenecks caused by short distance trips.

The various access treatments for EL corridors fall into three broad categories (Table 3-3), which are:

1. Grade-separated or direct access;

### TABLE 3-3: COMPARISON OF ACCESS TREATMENTS

<table>
<thead>
<tr>
<th>ACCESS TREATMENT ALTERNATIVE</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRADE SEPARATED OR DIRECT ACCESS RAMPS</td>
<td>• Provides easier access across two facilities in a network</td>
<td>• Higher construction costs and longer construction schedules</td>
</tr>
<tr>
<td>PROVIDES ACCESS TO AND FROM THE EXPRESS LANES USING DEDICATED GRADE-SEPARATED OR DIRECT ACCESS RAMPS</td>
<td>• Reduces traffic weaving conditions and competition with general purpose lanes traffic</td>
<td>• Larger footprint, may require additional ROW and complex design</td>
</tr>
<tr>
<td>AT-GRADE ACCESS OR SLIP RAMPS</td>
<td>Weave zone: Combined ingress and egress created by short breaks in the barrier striping at carefully selected locations. Requires no new roadway width; easier to retrofit on existing expressways thereby faster project implementation</td>
<td>Creates high weaving turbulence and requires mitigation strategies in the form of additional signing, enhanced pavement markings, increased lighting and others</td>
</tr>
<tr>
<td></td>
<td>Weave lane: Combined ingress and egress, which is facilitated by a weave or speed change lane. May require some new roadway width to incorporate the speed lane without creating a bottleneck</td>
<td>Creates medium weaving turbulence and requires some mitigation strategies in the form of additional signing, enhanced pavement markings, lighting and others</td>
</tr>
<tr>
<td></td>
<td>Merge lane: Separated ingress and egress utilizing dedicated merge lanes. Smoother traffic operations in both express lanes and general purpose lanes than other slip ramp options</td>
<td>Larger footprint needs, may require additional ROW acquisitions</td>
</tr>
<tr>
<td>CONTINUOUS ACCESS</td>
<td>ALLOWS VEHICLES TO ENTER OR EXIT AT ANY POINT; NO SPECIFIC INGRESS/EGRESS LOCATION DESIGNATED</td>
<td>• Low roadway construction costs</td>
</tr>
<tr>
<td></td>
<td>• Higher operational costs (e.g. additional enforcement, toll collection and processing)</td>
<td>• Requires stricter enforcement violations</td>
</tr>
</tbody>
</table>
2. At-grade access or slip ramps; and
3. Continuous access.

Some of the key design factors that influence the selection of an access treatment and its applicability to a project are major interchange spacing, location of mainline bottlenecks, traffic volumes in both general purpose and ELs, enforcement criteria, design speed and separation type. In addition, ROW constraints, project costs and construction schedules are a few other major decision factors that a project practitioner needs to consider prior to selecting the access treatments. It should also be noted that the access type and separation techniques selected can impact the tolling options. Table 3-4 shows the various access treatments in implementation.

### 3.2.2: Alternatives, Pros and Cons

The following sections describe the various options for access treatments on ELs.

#### 3.2.2.1: Grade-Separated or Direct Access

This access treatment includes providing access to and from the ELs using dedicated grade-separated or direct access ramps. These types of ramps are desirable treatments for EL facilities, where sufficient ROW is available and high traffic volumes in both EL and general purpose lanes dictate the need for such exclusive connections. Direct ramps are also used to provide connections between adjacent EL facilities, access from adjacent major arterials and park-and-ride facilities for express bus operations.

Advantages of using grade-separated or direct access treatments include reduced complex weaving conditions, improved safety and increased travel time savings for EL traffic. When used to connect two EL facilities, this access treatment provides the EL users a seamless travel option to continue using the ELs. In addition, the ramps provide acceleration and deceleration areas, which allow high-speed merges and diverges.

Major disadvantages for this type of access treatment are higher construction costs, longer construction schedules, complex design, a larger construction footprint and potentially the need for additional ROW. Some of the typical grade-separated ramp alignments and configurations used for EL facilities are T-ramps, drop ramps, flyover ramps and Y-ramps and are shown in Figures 3-2 to 3-6.

### Table 3-4: Access Treatments Currently in Use

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>LOCATION</th>
<th>ACCESS TECHNIQUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 EXPRESS</td>
<td>Miami and Ft. Lauderdale, Fla.</td>
<td>At-grade midpoint (upon opening of Phase 2) access and grade-separated access</td>
</tr>
<tr>
<td>SR 91 EXPRESS LANES</td>
<td>Orange County, Calif.</td>
<td>Access at the boundaries of the facility (no intermediate access)</td>
</tr>
<tr>
<td>I-15 FASTRAK EXPRESS LANES</td>
<td>San Diego County, Calif.</td>
<td>Five grade-separated direct access for bus rapid transit (BRT) and six at-grade access points</td>
</tr>
<tr>
<td>I-25 HOV EXPRESS LANES</td>
<td>Denver</td>
<td>Access from general purpose lanes and some dedicated access at the boundaries of the facility, no intermediate access points.</td>
</tr>
<tr>
<td>I-394 MNPASS</td>
<td>Minneapolis</td>
<td>Five access points in the eastbound and six in the westbound</td>
</tr>
<tr>
<td>I-35W MNPASS</td>
<td>Minneapolis</td>
<td>Nine access points in the northbound and seven in the southbound</td>
</tr>
<tr>
<td>NORTHWEST US 290 QUICKRIDE, US 290</td>
<td>Houston</td>
<td>Access is via grade-separated ramps and no mid-point at-grade access</td>
</tr>
<tr>
<td>I-10 KATY FREEWAY</td>
<td>Houston</td>
<td>Grade-separated access to/from park and ride facilities and transit centers. At-grade access for intermediate locations</td>
</tr>
<tr>
<td>I-15 EXPRESS LANES</td>
<td>Salt Lake City</td>
<td>Access at the boundaries of the facility and at 14 intermediate locations</td>
</tr>
<tr>
<td>SR 167 HOT LANES PILOT PROJECT</td>
<td>King County, Wash.</td>
<td>Six access points in the northbound and four in the southbound</td>
</tr>
</tbody>
</table>
FIGURE 3-2: TYPICAL T-DROP RAMP ACCESS CONFIGURATION

Source: Atlanta Regional Managed Lane System Plan, GDOT, 2010

FIGURE 3-3: TYPICAL HALF-DROP RAMP ACCESS CONFIGURATION

Source: Atlanta Regional Managed Lane System Plan, GDOT, 2010

FIGURE 3-4: TYPICAL FULL-DROP RAMP ACCESS CONFIGURATION

Source: Atlanta Regional Managed Lane System Plan, GDOT, 2010
FIGURE 3-5: TYPICAL FLYOVER RAMP FOR REVERSIBLE EXPRESS LANE AT THE TERMINUS CONFIGURATION

Source: Managed Lane Handbook, FHWA, 2005
FIGURE 3-6: TYPICAL Y-RAMP FOR A TWO-LANE REVERSIBLE EXPRESS LANES CONFIGURATION

*Activated in P.M. and Off-Peak Period
3-2.2.2: At-Grade Access or Slip Ramps

An at-grade access treatment consists of providing ingress/egress to ELs via slip ramps. Slip ramps provide connections between the ELs and the local lanes using breaks in the separation type (e.g. barrier or delineators) along restricted-access facilities. Typically, a separate weave lane requires additional roadway width to add/drop the weave lanes.

3-2.2.2.1: Weave Zone

This type of slip ramp combines both ingress and egress to or from ELs by creating breaks in the barrier striping at strategically chosen locations. The weave zone requires no extra roadway width and is easier to retrofit on existing expressways which in turn leads to faster project implementation. This type of access also creates high weaving turbulence that needs to be mitigated with additional signing and enhanced pavement markings. Figure 3-7 shows a slip ramp with a weave zone configuration.

3-2.2.2.2: Weave Lane

This type of slip ramp provides ingress and egress to or from ELs via a weave lane that is buffer separated from the local lanes. To arrive at the desired lane, the weaving traffic has to make two lane changes with this type of access arrangement. The weaving lane also helps in maintaining better speeds and flow in the ELs. This configuration typically causes medium weaving turbulence which could be mitigated with additional signing and enhanced pavement markings. Also a separate weave lane requires additional roadway width. Figure 3-8 shows a slip ramp with a weave lane configuration.

3-2.2.2.3: Merge Lane

A dedicated merge lane is provided separately for ingress and egress to or from ELs. This option promotes smoother traffic operations in both ELs and general purpose lanes than the other two options discussed above. This option requires a larger foot print and hence the most expensive option among various slip ramp configurations discussed in this section. Figure 3-9 shows a slip ramp with a merge lane configuration.

3-2.2.3: Continuous Access

Continuous access allows vehicles to enter and exit the ELs for the entire stretch without any specific ingress/egress treatments. The paint striping that separates the ELs from general purpose lanes accompanied by signing and pavement markings indicate that entry and exit could occur at any point. This option requires the lowest construction costs of all the access treatment options discussed in this report, since no new roadway width or any special treatment is required. However, the operational costs can be higher due to additional enforcement and a higher frequency of toll violations and toll back office expenses.

3-2.3: Current State of the Practice

Table 3-4 illustrates the current state of the practice for access on ELs across the nation.

3-2.4: Recommendations

It is recommended that dedicated access points be the preferred access treatment, and that project practitioners choose from the various types of grade-separated (direct access ramps) or
CHAPTER 3: DESIGN

FIGURE 3-7: TYPICAL SLIP RAMP ACCESS WITH WEAVE ZONE CONFIGURATION

Source: A Guide For HOT Lane Development, FHWA, 2003

FIGURE 3-8: TYPICAL SLIP RAMP ACCESS WITH A WEAVE LANE CONFIGURATION

Source: A Guide For HOT Lane Development, FHWA, 2003

FIGURE 3-9: TYPICAL SLIP RAMP ACCESS WITH SEPARATE MERGE LANE FOR INGRESS AND EGRESS CONFIGURATION

at-grade (slip ramps) access treatments based on project-level conditions and cost-to-benefit ratio. Continuous access is not recommended for the ELN in Southeast Florida.

3-3: DESIGN ELEMENTS

3-3.1: Implication

In conjunction with the planning of separation and access for an EL project, other major design elements such as typical cross-sections, roadway geometrics, design exceptions and variances, drainage, signing, ITS elements and toll technology elements must be defined. Although many decisions involving design elements are made at the project level, the need for consistency at the ELN level is essential for customer understanding and uniformity.

3-3.2: Alternatives, Pros and Cons

This section broadly covers the following topics:

1. Roadway geometric elements;
2. Drainage;
3. Signing;
4. ITS elements; and
5. Tolling elements.

3-3.2.1: Roadway Geometric Elements

ELs need to be designed to the same standards as the adjoining expressway facility, which include the Florida Department of Transportation’s (FDOT) Plans Preparation Manual (PPM); FDOT Design Standards; American Association of State Highway and Transportation Officials’s (AASHTO) Policy on Geometric Design of Highways and Streets; the Federal Highway Administration’s (FHWA) Manual on Uniform Traffic Control Devices (MUTCD); and other design guidelines from FDOT and another operator agency. To make the EL design responsive to some of the constructability considerations such as ROW constraints, project costs, physical constraints, etc., design exceptions and variations may need to be developed and approved for individual projects similar to a regular roadway design project.

3-3.2.1.1: Design Exceptions and Design Variations

As stated in the FDOT PPM, when it becomes necessary to deviate from any of the standard criteria, early documentation and approval are required. Two approval processes are used.
by designers: design exceptions and design variations. Design exceptions are required when any of the 13 controlling proposed design elements (design speed, lane widths, shoulder widths, bridge widths, structural capacity, vertical clearance, grades, cross-slope, superelevation, horizontal alignment, vertical alignment, stopping sight distance and horizontal clearance) are below both the FDOT's governing criteria and AASHTO's new construction criteria. Table 3.5 discusses two of the most common types of exceptions that could be expected on EL Projects.

Design exception is a federal process. FHWA is responsible for design decisions, specifically including approval of design exceptions on National Highway System (NHS) projects. This authority exists regardless of the funding source for the project. Design variation is a state process and is required when proposed design elements are below the FDOT's criteria and where a design exception is not required. The Project Practitioners need to refer to FDOT's PPM and the FTE's Turnpike Plans Preparation and Practices Handbook (TPPPH) for more detailed discussion on the Design Exception and Design Variation processes for the Southeast Florida Express Lanes Network.

Designs with exceptions and variations reflect the inability to meet desirable criteria due to certain pre-existing roadway geometric conditions (expressways built before the current standards were adopted), lack of available ROW, or other significant limitations and priorities. The consideration of design exceptions and variations should be given on a case-by-case basis based on sound engineering practices.

3-3.2.1.2: Drainage

Drainage is an important design feature of any expressway facility, hence projects that involve construction of ELs within an existing expressway facility need to ensure drainage impacts are considered. Properly designed and constructed drainage facilities will protect the EL facility, adjacent general purpose lanes, roadways, structures and the traveling public while maintaining water quality and protecting other environmental resources. For existing expressway facilities where Express Lanes are added by restriping, in such cases cross-slope corrections may be needed to mitigate or adjust existing drainage breaks.

Some of the design decisions that influence the placement and location of drainage facilities for ELs include the type of separation method used (e.g. concrete barriers), horizontal and vertical alignment of the existing facility and the cross sections of the new EL facility and the remaining general purpose lanes.

The standards in the FDOT Drainage Manual provide a basis for uniform design practice for typical roadway drainage design situations and shall be followed for EL facilities. Any deviations from the FDOT Drainage Manual must be approved by the local FDOT District Drainage Engineer.

3-3.2.2: Signing

The function of signs is to communicate regulations, warnings, and guidance information for road users. In addition to the traditional signing, specific EL signing is required to inform and alert motorists of the available choice regarding use of free general purpose lanes, tolled general purpose lanes or the tolled ELs.

EL signing needs to communicate information regarding access locations (ingress and egress points) and the toll amount to specific destinations in a clear, concise and timely manner without causing information overload. Consistency of signing across the ELN is important for easier EL usage and public acceptance. Other EL related signing should communicate vehicle eligibility requirements and occupancy requirements, if applicable.

All EL facilities need to adhere to the MUTCD for compliance. It is important to note that the current Administrative Rule 14-100.003 limits the number of destinations displayed to two for pricing signs, and efforts are currently under way to modify to support the ability to display up to three destinations.
Assuming the rule change will be in effect sometime in 2013, general guidance for ELs pricing signing indicates two concepts:

- **Concept 1** – Signing for next exit; next logical termini; and a major destination between these two destinations.
- **Concept 2** – Signing for next three possible destinations.

Project practitioners need to carefully consider the implications of both these concept options at an individual project level. For future EL projects, it is recommended that pricing sign structures should generally be designed to handle three destinations even when an individual project may use only one or two destinations in the beginning. As the ELN expands, this additional design provides the flexibility to add additional destinations at a later time.

In addition to the traditional static signage, use of dynamic message signs (DMS) for dissemination of toll and traffic management is an integral part of the EL signing and is further described in the ITS section.

### 3-3.2.3: Intelligent Transportation System Elements for Express Lanes

ITS is the application of advanced integrated technologies to improve mobility and safety, and at the same time actively manage the roadways in real time.

At a minimum, the EL projects need to incorporate DMS, closed circuit television (CCTV) cameras, a vehicle detection system (VDS), communications infrastructure, power infrastructure and transportation management center (TMC) integration. Additionally, consideration should also be given to:

- **Highway Advisory Radio (HAR)**: HAR is used to broadcast verbal traveler information messages from roadside transmission sites. In addition to the transmission sites, a HAR system includes static highway signs with remotely operated flashing beacons to notify motorists of HAR broadcasts. Similar to DMS, HAR can be used to disseminate real-time traveler information and corridor-specific public information to the motorists.
- **Design Guidelines**: The designer should be aware of the Federal Communications Commission (FCC) regulations and shall coordinate with the FDOT ITS Telecommunications Office for information on licensing, frequency allocation, and other specifics. The location of the transmitter and the signs shall meet the corridor specific requirements and ensure that the planned locations are accessible and maintainable without the need to require any facility or lane closures.

Because ITS is rapidly evolving, project practitioners are encouraged to be vigilant as to the latest technology solutions that are available and consider them for EL projects. At the same time, there is a need to ensure that these newer technology solutions are reliable, interoperable and be integrated within the existing SunGuide® system.

The FDOT PPM, FDOT Design Standards and Specifications, MUTCD and other ITS design guidelines from FDOT or another other operator agency should be the standards for ITS design on ELs.
3-3.2.3.1: Express Lanes DMS

EL DMS are primarily used to disseminate real-time traveler information relevant to toll rates, lane status information, incident management information and special events information. New DMS implemented for the ELN should be full color.

Three types of DMS commonly used on existing Southeast Florida ELs are:

- Toll Amount DMS: Used to display real-time toll rate information to users about the cost of using the ELs to a specific destination.

- Lane Status DMS: Used to provide real-time EL status (i.e. tolls enforced, closed, or congested) to users.

- Incident Management DMS: Used to provide real-time traffic and event management information.

**DMS Location Guidelines**

Both lane status and toll amount DMS should be strategically placed in advance of ELs ingress points (entrances) so that they can be observed by users before entering the ELs. The toll amount DMS shall be placed at locations as specified in the MUTCD. However, the location of lane status DMS’s is a not explicitly stated in the MUTCD, hence as a general guidance the lane status DMS’s needs to be co-located along with the ELs entrance static guide signs or along an EL segment prior to the egress point of the segment, thereby allowing users to exit the EL facility before entering the next segment.

The MUTCD specifies location of the ELs entrance guide signs (typically at the entrance, ½ mile, 1 mile, and 2 miles ahead of the entrance). Careful consideration needs to be employed during the design of signing concepts to ensure that there is no overloading of information on the users, hence the project specific decision of whether to install all four lane status DMSs at each of the ELs entrance guide signs or less.

It is recommended that at a minimum, the ELs signing design should incorporate two lane status signs per entrance for redundancy. Another key consideration is to ensure that the planned locations are accessible and maintainable without the need to require any facility or lane closures.

3-3.2.3.2: Closed Circuit Television Cameras

There are typically two types of CCTV cameras needed to support the EL operations, which are the incident management cameras and confirmation cameras. The incident management cameras are primarily used to detect, monitor, and manage events on the EL facility. The confirmation cameras are used to confirm and verify the messages posted on the DMS from the TMC.

The incident management camera location guidelines for ELs include the need for 100 percent coverage of the facility with no blind spots. For new EL projects on facilities with existing ITS infrastructure, CCTV camera coverage should be reviewed and supplemented as needed to get full coverage of the entire facility (both ELs and GP lanes).

**Closed Circuit Television Camera Location**

The confirmation cameras are typically deployed at upstream locations of EL DMSs to verify operation and messages posted on toll amount DMS, lane status DMS and incident management DMS, as applicable. Another key consideration for camera
sites is to ensure that the planned locations are accessible and maintainable without the need to require any facility or lane closures.

3-3.2.3.3: Vehicle Detection System

VDS is primarily used on the EL facility for obtaining real-time traffic data (e.g. volume, occupancy and speed) from the expressway. This traffic information collected through the VDS is used by the operators for incident detection; and, to determine toll amounts based on the toll amount adjustment logic (i.e. a set of algorithms that use real-time traffic data to determine toll amounts under different scenarios).

In Florida, the widely used VDS is the microwave (MVDS), which uses a Federal Communications Commission (FCC)-certified, low-power microwave radar beam to detect vehicle presence and generate volume, occupancy and speed data. It is recommended that the project practitioner in conjunction with the facility operator analyze and determine the most applicable VDS (or a combination of technologies) suitable for the project.

VDS Location Guidelines

General vehicle detection system location guidelines for ELs include the need for a VDS site at every 1/4 mile to 1/3 mile providing coverage of all lanes. For new EL projects on facilities with existing ITS infrastructure, project practitioners need to review existing VDS coverage and supplement as needed to get full coverage of the entire facility (for both EL and general purpose lanes). Another key consideration is to ensure that the planned locations are accessible and maintainable without the need to require any facility or lane closures.

It should be noted that the spacing of the VDS sites impacts the granularity of the data collected e.g. more granularity when the sites are closer and vice-versa. Another advantage of closely spaced VDS will ensure there is redundancy of data on a segment, even when a few VDS sites do not produce accurate data at a given time.

Some of the disadvantages of closely spaced VDS are higher recurring maintenance costs (due to more devices along a segment), and increase in data storage and processing needs. It is recommended that an early systems engineering process approach is needed prior to developing the system requirements for the ELN projects.

3-3.2.3.4: Communications System

The majority of the Southeast Florida’s ITS infrastructure uses fiber optic cable and ethernet based communications system to
provide communications from the TMC to field devices, such as CCTV, DMS, MVDS and ramp signals. As EL projects are implemented, the existing communications system will need to be supplemented or upgraded to support new project needs. It should be noted that the ITS communications system will also support the tolling components of the ELs and needs close coordination with the tolls operations. The criteria for the communications system will likely overlap between ITS and Tolls operations and may also have specific requirements for each system. A key design consideration would include developing redundancy across all communications systems to ensure the ELN is reliable and operates with minimal downtime.

Communications System Location

The key consideration is to ensure that the planned locations are secure from vandalism/theft and accessible and maintainable without the need to require any facility or lane closures.

3-3.2.3.5: Power Systems

Providing reliable power services to the EL facility is critical to ensure that there is minimal downtime of the ITS infrastructure, and thereby more reliable EL operations. In addition to the main power distribution, a backup power system consisting of generators, uninterruptible power supply (UPS) and other associated components need to be planned and designed to support power requirements for all ITS and toll components.

UPS systems and power generators provide continuous power supply in the event of an outage thus minimizing potential revenue loss. On the downside, this drives up additional capital and operating costs. Vandal resistant hardening needs to be incorporated into the power system design.

Power Systems Location Guidelines

Key considerations are to ensure that the planned locations are secure from vandalism/theft, and accessible and maintainable without the need to require any facility or lane closures.

3-3.2.3.6: Transportation Management Center Infrastructure

The TMC is an around-the-clock operation that requires continuous staffing every day of the year. This nerve center for real-time traffic management is critical to successful EL operations. Currently there are three regional transportation management center buildings (MDX/D6, D4, FTE) that are operational within the Monroe, Miami-Dade, Broward, and Palm Beach counties. For the near term, it is recommended to leverage and use these existing TMC facilities to operate all new EL as they are implemented.

An early design consideration during the EL implementation should include planning for any expansions as related to the TMC building infrastructure to handle these new operations. However, as the ELN reaches a level of maturity in the next five to 10 years, other options such
as a regionalized ELN operations center can be planned and implemented.

### 3-3.2.4: Tolling Elements

 ITS and tolling infrastructure are the two most critical components of the EL operations to help manage the traffic in real-time and to ensure that performance targets are achieved. Below are some design considerations for the tolling infrastructure.

#### 3-3.2.4.1: Automated Vehicle Identification

Automated Vehicle Identification (AVI) toll technology is currently used in the State of Florida by the SunPass Toll Program. In addition to being used on toll facilities around the state and in Southeast Florida, SunPass is also used on the current 95 Express operations. FDOT has decided to continue to use SunPass for all on-going deployments, and upcoming planned EL projects.

The AVI System consists of AVI readers, antennas and transponders using Radio Frequency Identification (RFID) to detect vehicles subject to tolls. The vehicle transponders are available in hard case or sticker tag. EL tolls will be collected solely electronically via the SunPass AVI system, video tolling will not occur within the ELs.

#### 3-3.2.4.2: Video Tolling

Video tolling, known locally as toll-by-plate, is an image based electronic toll collection system that uses photographic images of the vehicle’s license plate to identify the customer responsible for payment. Video tolling can be an alternate toll payment method for customers. Design elements for this tolling technique include need for license plate recognition (LPR) cameras and supporting software, communications and power connectivity to the cameras, back office processing infrastructure and advance video tolling or toll-by-plate signage.

#### 3-3.2.4.3: Toll Gantries

On EL facilities, the number of toll gantry locations is dependent upon factors such as length of roadway, the number of access (ingress/egress) points, pricing policies and tolling concepts. The goal is to make sure that no segment of the EL allows for free passage.

Toll gantries typically consist of overhead structures which are used to mount in-lane toll system equipment such as AVI antennas, cameras and other supporting equipment for toll collection. The design of these gantries should comply with the FDOT Structures Manual, FDOT Design Standards and Specifications, Turnpike Plans Preparation and Practice Handbook (TPPPP) and other toll gantry design guidelines (i.e. FTE and MDX guidelines) and should be designed to serve the intended functional use rather than as signature structures. Another key consideration is to ensure that the planned locations are accessible and maintainable.

Conduit size requirements and equipment load withstanding capacity of the gantries should be designed to allow for future needs such as for deploying occupancy cameras and/or other automated vehicle detection equipment.

Overhead status indicators that are mounted on gantries in ELs consist of LED light arrays that can flash different colors to provide visual indication of a valid transponder and to possibly differentiate between exempt and non-exempt vehicles. This is a low-cost tool for enforcement purposes.
### TABLE 3-6: ITS AND TOLLING ELEMENTS CURRENTLY IN USE

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>LOCATION</th>
<th>ITS AND TOLLING TECHNOLOGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 EXPRESS</td>
<td>Miami</td>
<td>• Toll gantries and communication hubs, AVI and SunPass transponders, Violation enforcement system, Toll System loop detectors, TMC, CCTV cameras, DMS confirmation cameras, DMS, Vehicle detectors – microwave and loops, Fiber optic cable, Ramp signals along the corridor</td>
</tr>
<tr>
<td>SR 91 EXPRESS LANES</td>
<td>Orange County, Calif.</td>
<td>• Toll Gantries, Transponders, TMC, In-lane cameras for toll violation, Optical character recognition for toll violation, Toll rate DMS, CCTV cameras</td>
</tr>
<tr>
<td>I-15 FASTRAK EXPRESS LANES</td>
<td>San Diego County, Calif.</td>
<td>• Toll Gantries, Transponders, Toll-Rate DMS, Vehicle Detection Systems (Scanners), Toll Enforement Cameras (not used for trip matching/violations yet), Traffic Management and Traffic Operations Centers, DMS, CCTV cameras, Highway Advisory Radios, Road Weather Information Systems, Vehicle detectors in GP Lanes, Fiber Optic Cable, Barrier Transfer Machines</td>
</tr>
<tr>
<td>I-25 HOV EXPRESS LANES</td>
<td>Denver</td>
<td>• Toll Gantries, Transponders, TMC, Video tolling, DMS, CCTV cameras, Automated traffic recorder</td>
</tr>
</tbody>
</table>
3-3.2.4.4: Automated Vehicle Detection and Classification

Automated vehicle detection and classification systems are deployed in tolled lanes to detect and classify the vehicles. Basically there are two typical types of systems: in-ground inductive loops and overhead laser scanners which may be used separately or in combination.

3-3.3: Best Practices and Current Deployment

ITS and tolling elements used for ELs often depend on the existing ITS, signage and other infrastructure. Therefore, decisions made regarding this are typically done on a corridor level, but with consistencies within a region, due to ITS typically being a regionalized effort rather than a corridor specific improvement.

Table 3-6 illustrates ITS and tolling elements used on ELs across the nation.

3-3.4: Recommendations

Table 3-7 summarizes the recommendations for EL design elements as described in the previous sections.

### TABLE 3-7: DESIGN RECOMMENDATIONS

<table>
<thead>
<tr>
<th>DESIGN ELEMENT</th>
<th>RECOMMENDATION FOR ELN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROADWAY GEOMETRIC ELEMENTS AND DRAINAGE</td>
<td>• Follow same standards as the adjoining expressway facility</td>
</tr>
<tr>
<td></td>
<td>• Early documentation and approval of design exceptions and variations are required</td>
</tr>
<tr>
<td>SIGNING</td>
<td>• Need consistency in signing across the ELN</td>
</tr>
<tr>
<td></td>
<td>• Adhere to the MUTCD for compliance</td>
</tr>
<tr>
<td></td>
<td>• All pricing sign structures be designed to handle three (3) destinations</td>
</tr>
<tr>
<td>ITS ELEMENTS</td>
<td>• Develop redundancy across all communications systems for more reliable EL operations</td>
</tr>
<tr>
<td></td>
<td>• Leverage and use existing TMC facilities to operate all new ELs, however plan for any expansions as related to the TMC building infrastructure to support new operations</td>
</tr>
<tr>
<td></td>
<td>• Consider more regionalized ELN operations as the network is deployed over the next five years</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the planned locations are secure from vandalism/theft, and accessible and maintainable without the need to require any facility or lane closures</td>
</tr>
<tr>
<td></td>
<td>• Analyze the benefits and determine the ramp signal system applicability during the planning stages of EL projects</td>
</tr>
<tr>
<td>TOLLING ELEMENTS</td>
<td>• Use SunPass AVI tags exclusively</td>
</tr>
<tr>
<td></td>
<td>• Toll gantries to be designed to allow for future needs</td>
</tr>
<tr>
<td></td>
<td>• No segment of the ELs allows for free passage</td>
</tr>
</tbody>
</table>
This chapter presents industry best practices and options relative to several key issues that impact the operations of the Southeast Florida Express Lanes Network (ELN). These issues were selected to be discussed at a high level in this document based on the importance these operations topics have garnered on a national level coupled with the expected relevance to the ELN.

These many issues were combined into categories and include pricing and toll rates, operations organization, toll system operations, traffic management center (TMC) operations, enforcement strategies, lane management, and vehicle eligibility. This section presents many options relative to each of these issues and the considerations, pros, and cons of these options to assist the project partners in making informed decisions. Recommendations are also provided based on national experience and best practices, current local operating environment, planned future conditions, and direct feedback, input, and decisions from key stakeholders at this point in the project.

4-1: PRICING and TOLL RATES

4-1.1: Implication

There are several options for setting pricing on express lanes (ELs). Static tolling refers to a constant toll amount for the entire peak period, while time of day (TOD) or table-based pricing is set to a fixed price, typically for each hour of the day. Dynamic pricing, however, does not employ a fixed price schedule. As the name denotes, dynamic pricing adjusts continuously (typically on intervals ranging from five to 15 minutes) depending on current traffic conditions, in order to maintain certain operational, or level of service (LOS) goals. This section discusses the considerations of defining the pricing strategies and toll rate concepts and the impacts those decisions will have on operations.

4-1.2: Background Information

While revenue generation is definitely considered as part of every ELN implementation, the primary focus of most implementations scanned across the country is to use the most appropriate pricing strategy to maximize throughput while prudently considering revenue optimization. Due to the increase in complexity of a dynamically controlled,
congestion pricing environment, it is often preferred to initially implement a strategy based on static or peak-hour (TOD) pricing for a new EL facility. This allows both the users and operators to get comfortable with the fare structures in a predictable environment. However, many EL facilities operators quickly transition to a dynamically priced strategy to fully utilize the system’s real-time management capabilities. Because any roadway has an unpredictable nature due to crashes or other incidents in the general purpose lanes, the ability to dynamically manage toll rates allows the greatest flexibility and direct means of ensuring a reliable trip as a value to the user for the advertised toll rate.

Toll rate policies should be set early to determine project-specific toll minimums and caps. Most agencies set a maximum toll rate. These maximum rates are typically set so that the system rarely meets the cap. In addition, the tolling structure and rates could be designed to encourage longer commute trips which increase the operational efficiency of a lane. Also, to effectively manage EL congestion in facilities that advertise rates in advance (as with TOD), the difference in rates at the peak and nonpeak travel times must be significant.

4-1.3: Alternatives, Considerations, and Pros and Cons

These are key areas to consider when discussing how toll rates and pricing will impact operations:

- Pricing update options;
- Dynamic pricing concepts;
- Determining the price to be paid;
- Tolling concepts;
- Business policies;
- Pricing coordination with interfacing roadways;
- Communication of rates; and
- Options for toll rate display on DMS.

4-1.3.1: Pricing Update Options

Dynamic pricing allows for automated adjustment of pricing based on actual traffic conditions. Dynamic pricing is often used on ELs with multiple entry/access points and over longer distances or where there is potential for greater variance in traffic conditions and high traffic density.

Table-based pricing based on criteria like time of day or historical pricing (or a hybrid) allows for changes in pricing but it is based on predefined tables. It is often used on shorter ELs subject to less variation in traffic density and with limited access/egress points, such as at terminus points.

The pros and cons of each option are described in Table 4-1.

4-1.3.2: Dynamic Pricing Concepts

Within the concept of dynamic pricing, there are several different measurements that can be used to determine how the rates are actively managed. The pros and cons of dynamic pricing alternatives are shown in Table 4-2 and defined as follows:

- **Density-based**: Based on the traffic density and/or level of service (LOS) in the EL.
- **Speed-based**: Based on the speed of traffic in the EL.
- **Lane capacity**: Based on the usage of capacity in the EL. The less the remaining capacity, the higher the price charged in the EL.
- **Travel time (EL versus general purpose)**: Based on the travel time saved in the EL versus the travel time in the general purpose lanes.
- **Hybrid**: A combination of the above pricing concepts, with differing weighting of factors.

4-1.3.3: Pricing Information

As the pricing structure is solidified, a decision needs to be made on where the price to be paid by users of the ELN should be displayed. This will determine whether the customer will know the amount of the full trip before using the EL.

Dynamic signing can communicate to users how to access the ELs, how much they will cost, and current travel conditions. In situations where dynamic pricing occurs, signage may be the only way to
TABLE 4-1: COMPARISON OF PRICE UPDATE OPTIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYNAMIC PRICING</td>
<td>• Allows for charging based on actual demand and usage in near-real time, thereby reflecting actual value of using ELs.</td>
<td>• Requires additional design and development and can be difficult to factor in and adjust for all conditions in the design, particularly if trying to make pricing adjustments to reflect conditions downstream.</td>
</tr>
<tr>
<td></td>
<td>• Allows for more exact management of lane capacity than table-based option.</td>
<td>• Requires more regular monitoring than a TOD solution and therefore more ongoing management costs, sometimes it is seen that pricing is not reacting fast enough, raising the question of predicting traffic conditions adding to complications. In most cases, even if there is a dynamic pricing scheme, most agencies (including FDOT for 95 Express) have default TOD pricing based on historic operations and seasonal trends.</td>
</tr>
<tr>
<td></td>
<td>• Can be used as a tool to manage incidents and other non-recurring congestion.</td>
<td>• During the initial stages of dynamic pricing, the monitoring can be intense with manual over-rides until it stabilizes. When implementing pricing, an agency needs to have a feel for what the price should be and assess if the dynamic pricing is providing expected values.</td>
</tr>
<tr>
<td>TOD (TABLE-BASED) PRICING</td>
<td>• Is simple to implement and easy to change.</td>
<td>• Does not allow for near real-time changes based on actual traffic conditions.</td>
</tr>
<tr>
<td></td>
<td>• Pricing is predictable and it is easy to convey the rate information to customers.</td>
<td>• Is not easily used to manage lane capacity if traffic conditions are different from normal conditions. Therefore, pricing may not reflect actual express lane “market” conditions.</td>
</tr>
</tbody>
</table>

TABLE 4-2: COMPARISON OF DYNAMIC PRICING OPTIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE EL LANE MEASUREMENTS ALONE</td>
<td>Using density, speed, or lane capacity based pricing or a combination thereof is more straightforward than a travel time saved algorithm.</td>
<td>By not taking the general purpose lanes traffic conditions into consideration in the pricing, it may initially be more difficult to convey the actual time savings to users if these measurements are not included.</td>
</tr>
<tr>
<td>ALSO USE GENERAL PURPOSE LANE MEASUREMENTS</td>
<td>While traffic conditions in the general purpose lanes should not control the pricing in the ELs, it may be used as a trigger to assess the value of the ELs.</td>
<td>The travel time saved concept requires using traffic information from the general purpose lane as well as the EL and makes the algorithm much more complicated to develop and manage. (For example, if a speed measurement for a general purpose lane is not available, the software must be programmed to disregard, and use an alternative method to determine price.)</td>
</tr>
</tbody>
</table>

communicate the price to users, and therefore must be clear, concise and prevalent. There are two options for notifying customers of their trip price, described in Table 4-3. These options are:

• At time of entry (for trip-based tolling): Pricing takes into consideration traffic conditions downstream and pricing to downstream segments are displayed at entry.
• **At each zone (for zone-based tolling):**
  Pricing is determined for individual zones independently, and pricing for downstream zones may change after the motorist has entered the ELs, so motorist doesn’t know the total trip price upon entry.

### 4-1.3.4: Tolling Concepts

Several different tolling concepts should be considered when deciding how to price and manage the EL. Nationwide scans and best practices have indicated that the tolling concept adopted is highly dependent on the physical characteristics of the EL corridor and may even be different for corridors within the same ELN or project. The most important factors to consider when choosing the tolling concept are the number and geometric configuration of entry/exit points; the length of the corridor segment in the ELN; and the type of lane separation being employed to define the EL.

The basic options for the tolling concepts are:

- **Rate per mile:** Based on the per-mile rate at time of entry for overall distance traveled (entry and exit points, and potentially at intermediate toll points). Per-mile pricing could include downstream conditions in toll pricing in a dynamic pricing update option environment.

- **Trip-based:** Typically computed ahead of time and based on an established rate per mile. Fares are displayed at time of entry for overall distance traveled (at entry and exit points, and potentially at intermediate toll points). Trip-based pricing could include downstream conditions in toll pricing in a dynamic pricing update option environment.

- **Zone or segment pricing:** Pricing is based on the number of toll zones or segments traveled during the entire ELN trip.

- **Toll within a toll:** A premium toll charged for the use of the EL within an already tolled facility must be accommodated in the toll

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**RCTO Executive Committee decision:**

The tolling concept will be either trip-based or zone/segment-based and will be a corridor-level decision.
The two most widely used tolling concepts are trip-based and zone-based tolling. The pros and cons of each tolling concept are shown in Table 4-4.

4-1.3.5: Business Policies

There are specific business policies that must be considered when establishing the operations for an ELN. For example, if the corridor was previously implemented as a high-occupancy vehicle (HOV) facility, there are federal guidelines (Federal-Aid Highway Program Guidance on HOV Lanes, 23 U.S.C. § 166: US Code – Section 166: HOV facilities) that require the continued eligibility for HOV users at a free or reduced rate.

One benefit of a policy that allows free or reduced rates for HOVs is that it allows for active mobility management. However, there is a negative impact of this policy if the number of HOVs begins to impact operations, as these vehicles are not actively managed in the high-occupancy/toll (HOT) scenario. Also the allowance of HOVs for free or reduced rates will reduce potential revenues.

Another business policy that must be considered is how to handle incidents in the ELN. The options are to stay open, close the ELN to new traffic, or to waive tolls. For example, the decision to continue charging customers when there is an incident may differ from what was guaranteed. If pricing is already reflective of the operations due to the incident downstream and the customer entered the ELN under these conditions there may be no need to waive the toll. If the policy is to waive the toll, then it can be done in real time at the lanes by initiating an “incident mode,” or tolls can be waived after the fact.

Additionally, it must be determined who has the responsibility of deciding whether the facility system design and operations and can employ any tolling concept described above.

### Table 4-4: Comparison of Tolling Concept Options

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER MILE</td>
<td>- Allows for charging based on actual distance traveled.</td>
<td>- Requires knowing entry and exit points and trip matching in case a read at one location is missed.</td>
</tr>
<tr>
<td></td>
<td>- Viewed as an “equitable” tolling concept since the user pays only for the distance traveled in the EL.</td>
<td>- Requires the patron to compute total trip charge if only rate per mile is advertised.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not as effective for longer ELs since traffic conditions could significantly change downstream.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- May require more equipment to capture entry and exit.</td>
</tr>
<tr>
<td>TRIP-BASED</td>
<td>- Allows for charging based on actual distance traveled and is more straightforward and more widely adopted than per mile charging.</td>
<td>- Might require more infrastructure and system complexity to provide exact trip measurement for every possible trip combination.</td>
</tr>
<tr>
<td></td>
<td>- Viewed as an “equitable” tolling concept since the user pays only for the distance traveled in the EL.</td>
<td>- Requires the patron to compute total trip charge if only rate per mile is advertised.</td>
</tr>
<tr>
<td>ZONE OR SEGMENT</td>
<td>- Does not necessarily require tolling for entry and exit but is based on number of tolling segments traveled through on the EL zone.</td>
<td>- If there are many intermediate access points this concept may become more difficult to implement.</td>
</tr>
<tr>
<td></td>
<td>- Optionally, may charge one rate for being read one or more times at segments within the defined zone which may encourage longer trips through the zone.</td>
<td>- Zone charging may not be viewed as equitable as trip based.</td>
</tr>
<tr>
<td>PREMIUM TOLL (EL ON TOLL FACILITY)</td>
<td>- Provides an additional tool for managing congestion on a toll facility that already has capacity issues in peak period.</td>
<td>- Difficult to get public to accept paying a toll and not having access to all lanes (although there is the precedent of cash versus electronic toll collection).</td>
</tr>
</tbody>
</table>
should remain open or be closed. In Southeast Florida, the Florida Department of Transportation (FDOT) makes this decision.

A related business policy is to determine if the EL will remain in operation 24 hours per day, seven days per week, thus requiring a toll even in nonpeak overnight or weekend travel hours when demand is traditionally low. One advantage of implementing a business policy for operations 24 hours per day, seven days per week is that users will associate use of the lane with something of value and will not be tempted to ride only when the lanes are free or inactive. Furthermore, even though historical traffic trends may indicate that there is little or no congestion in nonpeak travel hours, dynamically priced and actively managed ELs will provide relief in the event of unexpected incidents or events and will provide additional revenue generation. Signage will also be simplified, as there will always be a cost to display and additional explanation will not be needed.

4-1.3.5.1: Parameters

In addition to business policy decisions that need to be made for the ELN, there are specific business rule parameters that should be determined, especially for a facility using dynamic pricing to manage traffic throughput.

Frequency of Toll Rates Updates

The toll rate update frequency chosen is dependent upon the location of signs relative to entry points, the length of the upcoming EL segment or zone (since the length of the zone and the speed of traffic will determine how long a vehicle may be traveling within the zone), and the rate at which the road congestion can occur throughout the EL corridor. Typical settings for the update frequency across the nation vary from every six minutes to every 60 minutes.

It may also be advisable to be set the rate of increase to a more frequent parameter, but set the rate of decrease to a longer parameter to allow the service levels more time to improve before reducing the advertised toll rates. Additionally, the system and business rule parameters should have the flexibility to adjust the update frequency on a project level or on a corridor-by-corridor basis.

Default Rate Settings

Default rates are the rates that the system will use in the absence of updates for a dynamically priced ELN. The rates can be set to a default TOD price structure that is established or programmed based on typical traffic flow for the day of the week or known traffic pattern for the day if there is an absence of reliable measurement data for computing the toll prices in real time.

Speed Thresholds

Speed measurements can be used to trigger certain actions for the ELN. For example, if the corridor is highly congested, an absolute minimum speed threshold may be used to trigger a closure of the lanes. Other speed thresholds may be used to alert enforcement vehicles or first responders. For example, if the speed of the ELN suddenly transitions from 45 mph to less than 5 mph, there may be an incident impacting the ELN passage upstream and response vehicles may need to be dispatched. Houston Metro measures speed because there are minimum levels of speed for reporting as part of its Federal Transit Authority (FTA) requirements from converting existing HOV lanes that were built with HOV funds.

Peak and Off-Peak Triggers

More specific speed thresholds may be used to trigger peak and off-peak congestion pricing tables. These speed thresholds, coupled with proximity to time-of-day ranges can allow slight fluctuations in the pricing algorithms to more
precisely adjust toll rates to the actual peak and off-peak travel period for the day. For example, any time after 6 a.m. and when the speed of the EL drops below 50 mph or no later than 6:30 a.m. (regardless of speed in the EL), then increase the rates to peak rate table “A.”

4-1.3.6: Coordination with Pricing for Interfacing Roadways

Because the different corridors within the ELN may be seamlessly connected, there should be well-planned and consistent pricing methodologies that are implemented for interfacing roadways.

These decisions are important for signage and communication consistency to the users. The best practice is to show the user what the price will be and then honor that price throughout that users travel. This means that each user may have their price structure guaranteed at entry and valid until they exit the corridor, or potentially until they exit the network depending on what is communicated to the user on initial entry. The pros and cons for these decision points are discussed in Table 4-5.

4-1.3.7: Communication of Rates

In order to actively manage and maximize throughput in the ELN, toll rates need to be clearly and consistently communicated to users. In a complex and expansive network of interconnected ELs, it is recommended that all available methods — including DMSs, websites and smartphone applications – be used to communicate the rates to the users. This is especially important with a dynamic update option being employed. In addition to the rates being communicated to the users, the displayed and charged rates should be stored and available for historical reference in support of customer service-related activities.

Some pros and cons for available ways to communicate toll rates are discussed in Table 4-6.

### TABLE 4-5: PRICING COORDINATION WITH INTERFACING ROADWAYS

<table>
<thead>
<tr>
<th>OPTION</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARGE FOR ENTIRE TRIP BASED ON RATE UPON ENTRY</td>
<td>• Pricing at entry is easiest to communicate and works best if network segments are controlled by the same operator and if distances are relatively short. • This is currently the most popular pricing method used.</td>
<td>• If intersecting roadway is not managed by the same operator, it will be more difficult to display actual price at entry. • The longer the roadway or network the more difficult it is to include a price that reflects actual traffic conditions downstream.</td>
</tr>
<tr>
<td>SHOW CURRENT RATE TO DESTINATIONS AT THE PRESENT TIME BUT SUBJECT TO CHANGE BASED ON FULL TRIP</td>
<td>• Recognizes that it is impossible to accurately predict traffic conditions downstream across long networks.</td>
<td>• It is not as customer-friendly as displaying actual price and more difficult to communicate the policy.</td>
</tr>
<tr>
<td>HYBRID</td>
<td>• Allows for some certainty in pricing but accommodates the need to recognize downstream changed traffic conditions.</td>
<td>• It is not as customer friendly as displaying actual price and more difficult to communicate the policy.</td>
</tr>
<tr>
<td>DISPLAY PRICING UP TO DEFINED END POINT (COULD BE ZONE OR PER MILE) THEN DISPLAY PRICING FOR INTERFACING ROADWAYS IN ADVANCE OF THE INTERCHANGE</td>
<td>• May be useful for users planning longer trips throughout the ELN. • Network websites and smartphone applications could display the current rate pricing with a strong disclaimer that the rates are subject to change every “X” minutes due to dynamic traffic conditions.</td>
<td>• May require too many signs and may distract or confuse drivers with too much information.</td>
</tr>
</tbody>
</table>
4-1.3.8: Options for Toll Rate Display on Dynamic Message Signs

Table 4-7 shows some different options for displaying toll rates on DMSs, and pros and cons for each option. Note that each of the options may be used in combination.

For example, the San Diego Association of Governments’ (SANDAG) I-15 managed lanes initially proposed to display the toll rate per mile to users as they approached the entry, but then decided that the signs would instead display minimum toll and tolls to specific destinations. SANDAG’s thinking was that, for most customers, this was more simple to compute or estimate than a rate per mile.

4-1.4: Recommendations

The recommendations for pricing and toll rates are shown in Table 4-8.

### TABLE 4-6: COMMUNICATION OF RATES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMS</td>
<td>• Provides near real-time information as customer is entering roadway so customer knows what will be charged.</td>
<td>• Does not provide advance information for travel planning.</td>
</tr>
<tr>
<td>WEBSITE</td>
<td>• Good tool for trip planning.</td>
<td>• Does not provide information in near real-time and pricing shown may not be indicative of price customer pays based on current conditions by the time the user travels to the EL entry point.</td>
</tr>
<tr>
<td>PDA/SMARTPHONE APPLICATIONS</td>
<td>• Applications that allow for checking of pricing when customers may be closer to entry into the EL may be more accurate.</td>
<td>• Still may not be in near real time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Safety implications if done while driving, due to distractions.</td>
</tr>
</tbody>
</table>

### TABLE 4-7: OPTIONS FOR TOLL RATE DISPLAY ON DYNAMIC MESSAGE SIGNS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER-MILE RATE: DISPLAYS THE CURRENT PER-MILE RATE ON ENTRY</td>
<td>Provides straightforward information on cost to travel.</td>
<td>Assumes knowledge of miles traveled and customer must do calculation of total cost.</td>
</tr>
<tr>
<td>RATE TO SPECIFIC LOCATION(S)</td>
<td>Allows for customers to know how much they will pay to major locations or terminus points.</td>
<td>If there are multiple egress points then customer may not be informed of how much they are paying to a specific exit point.</td>
</tr>
<tr>
<td>MINIMUM RATE (TO NEXT TOLL LOCATION)</td>
<td>Provides useful information on the relative cost of current travel particularly if used in combination with other information such as rate to a specific location.</td>
<td>Does not provide information on multiple locations and can be somewhat confusing as to what &quot;minimum&quot; means.</td>
</tr>
<tr>
<td>RATE FOR TRAVEL IN ZONE(S)</td>
<td>Useful in the case of zone based pricing and can give an indicator of the cost of travel.</td>
<td>Does not provide for a full indicator of cost to further downstream destinations.</td>
</tr>
<tr>
<td>CONSIDERATION</td>
<td>RECOMMENDATIONS OR DECISIONS</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>PRICING UPDATE OPTIONS</td>
<td>• Dynamic Pricing is recommended over static or time-of-day pricing since it has already been effectively implemented in the region on 95 Express and allows the most flexibility for actively managing performance of the ELN in high density areas.</td>
<td></td>
</tr>
<tr>
<td>DYNAMIC PRICING CONCEPTS</td>
<td>• Performance of the EL for 95 Express is currently being actively managed using dynamic pricing using speed-based performance measurement goal (in the EL alone) of 45 mph or greater for 90 percent of the time.</td>
<td></td>
</tr>
<tr>
<td>PRICE DETERMINATION AND SIGNING</td>
<td>• Based on the pending decision to use trip or segment based pricing depending on the corridor-level best fit, the general recommendation is consistent with the RCTO Executive Committee Decision: Signing will follow MUTCD guidelines and show up to 3 price decision points at the entry. Vehicle eligibility information will also be included, pending legislative approval. It is also recommended that if trip-based pricing is selected that signing for the next exit; the next logical termini; and a major destination between these two destinations be displayed at the entry. If segment-based pricing is selected, signing for next three possible destinations is recommended.</td>
<td></td>
</tr>
<tr>
<td>TOLLING CONCEPTS</td>
<td>• RCTO Executive Committee Decision: The Tolling Concept employed will be either trip-based or zone/segment based and will be a corridor level decision. Based on current existing conditions, either trip or segment-based options are preferred, with zone-based being the least attractive overall option. While trip-based tolling would be preferred to longer trips and less weaving, there may be solid reasons to implement segment-based tolling for corridors allowing numerous ingress-egress points to manage congestion with pricing options that are easier for the public to understand.</td>
<td></td>
</tr>
<tr>
<td>BUSINESS POLICIES</td>
<td>• The general recommendation is consistent with the RCTO Executive Committee Decision: All users of the EL will be required to have a valid SunPass transponder and all vehicles will pay a toll on ELs with the exception of 95 Express. 95 Express business rules will remain in place. Any vehicle detected in the lane without a registered, valid SunPass will be processed as a toll violator. The Hours of Operation of the ELN will be 24/7 with the exception of closures required for pre-scheduled / planned maintenance activities.</td>
<td></td>
</tr>
<tr>
<td>OPERATIONAL BUSINESS PARAMETERS</td>
<td>• Frequency of toll rates updates: Recommend starting updates potentially every 15 minutes at a minimum, but the system should be able to support updates every 6 minutes if needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Default rate settings: Recommend defaulting to the time-of-day pricing that is typical for that day of the week in the event that Dynamic Pricing measurements are temporarily unavailable. These defaults should be reviewed and set periodically based on a review of historical ELN performance.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Speed thresholds: Recommend triggering emails to ELN supervisory staff when the ELN speed falls below the 45 mph threshold and in any event where the speed is at or near zero mph.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Peak and Off-peak triggers: Recommend programming the dynamic algorithms for peak travel times which may be less sensitive to price increases than off-peak rates at the same speed. These can be set after some history is established in the ELN to optimize revenue in off-peak hours.</td>
<td></td>
</tr>
<tr>
<td>PRICING COORDINATION WITH INTERFACING ROADWAYS</td>
<td>• Recommendations are highly dependent on the type of tolling concept selected for the corridor; however, the goal is to be consistent across the region and to limit customer confusion. If trip-based charging is implemented, the charging for the entire trip based on the displayed rate at entry is most popular.</td>
<td></td>
</tr>
<tr>
<td>COMMUNICATION OF RATES</td>
<td>• It is recommended that all available methods, including dynamic message signs, websites, and smart phone applications, be used to communicate the rates to the users.</td>
<td></td>
</tr>
<tr>
<td>OPTIONS FOR TOLL RATE DISPLAY ON DMS</td>
<td>• Rates will be determined per EL corridor and current rates for the corridor will be displayed to the furthest logical terminus, a short range terminus (e.g. the next available exit), and a major destination between these two destinations. Current toll rates will be displayed at the entry point and honored. In the future as EL corridors become longer and interconnected signing will increase in complexity and may reduce pricing flexibility during the most congested travel periods due to the lack of ability to predict traffic flows well into the future.</td>
<td></td>
</tr>
</tbody>
</table>
4-2: OPERATIONS ORGANIZATION

4-2.1: Implication

The organizational structure and responsibilities for the ELN will be an important consideration in the planning, implementation, and ongoing operations of the ELN. This section discusses some different options for organizational structure and coordination that have been used on similar projects throughout the country, considerations for defining the organizational roles and responsibilities and how those decisions may impact operations.

For example, the Washington Department of Transportation (WSDOT) has implemented HOT lanes in the Seattle region, and although WSDOT is the state toll agency, the TMC is not part of the toll division. Regardless of whether there is one agency overseeing all operations and maintenance, or multiple entities sharing responsibilities, standard operating procedures (SOPs) and incident management plans are required under any scenario, and regular meetings should be scheduled to ensure efficiency and coordination.

The pros and cons of single-agency responsibility and multiple-agency responsibility sharing for the EL facility is shown in Table 4-9.

4-2.1.1: Existing Agencies

Within the Southeast Florida region, several different transportation agencies operate and maintain roadways that are within the vision and scope of the planned ELN.

4-2.1.1.1: Florida Department of Transportation

FDOT has two main districts that serve the area. District 4 (FDOT D4) serves Broward, Palm Beach, Martin, St. Lucie and Indian River counties. FDOT D4 is responsible for I-95, I-595, and I-75 in Broward County. Traffic management in this district is performed via the TMC in Broward County. District 6 (FDOT D6) serves Miami-Dade and Monroe counties and is responsible for I-95, I-75 and SR 826 in Miami-Dade County. The FDOT D6 SunGuide® TMC in Miami-Dade County is the regional command post for traffic operations in this district. It operates 24 hours per day, seven days per week.

4-2.1.1.2: Florida’s Turnpike Enterprise

Florida’s Turnpike Enterprise (FTE) currently operates several tollways and turnpikes throughout the state of Florida and currently maintains the very successful SunPass® prepaid toll program. The SunPass is a radio-frequency identification

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<th>ITEM</th>
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<tr>
<td>SINGLE POINT OF RESPONSIBILITY FOR THE ELN</td>
<td>• Allows for coordinated decision making and possibly better management of traffic and pricing across the network</td>
<td>• Without coordination, a regionalized TMC could make decisions that negatively affect toll system/operations and revenue, safety on individual roadways. • Considering safety and knowledge of current and planned events the roadway operator and TMC has the best local insight.</td>
</tr>
<tr>
<td>DIVISION OF RESPONSIBILITIES AMONG TOLLING OPERATIONS, ROADWAY, AND ITS OPERATIONS</td>
<td>• Tolling is a specialized and complex operations area requiring toll expertise, so it is most efficient to have this operation separate • If tolling is already in place at the agency, the organization can benefit from economies by managing out of Toll Operations.</td>
<td>• Coordination with other operating areas is required to ensure timely response and efficient operations. • ITS elements and tolling elements have commonality so efficiencies may be gained from shared staff and operations</td>
</tr>
</tbody>
</table>
(RFID) transponder that allows nonstop payment of tolls. The SunPass program includes a complete centralized back-office customer service center (CSC), which provides services for SunPass distribution, account management, toll-by-plate and violation enforcement.

Within the Southeast Florida region, the FTE operates the Turnpike Mainline, the Sawgrass Expressway, and the Homestead Extension of Florida’s Turnpike (HEFT). FTE also operates two fully staffed TMCs located at the Turnpike Operations Center in Pompano Beach and at the Turkey Lake Headquarters complex in Orlando.

4-2.1.1.3: Miami-Dade Expressway Authority

Miami-Dade Expressway Authority (MDX) currently operates several toll facilities within Miami-Dade County. These include SR-112, SR-836, SR-874, SR-878 and SR-924. MDX currently uses (and plans to continue to use) the SunPass transponder program for automated toll collection. However, MDX does provide a back-office support to their toll-by-plate video tolling program for all-electronic tolling (AET). MDX has collocated its TMC within the FDOT D6 TMC.

4-2.1.2: Coordinated Back-Office Operations

The RCTO Executive Committee has agreed that a SunPass transponder will be required for all users of the ELN going forward. Using the SunPass transponder as the universal standard and requiring it for ELN travel greatly simplifies the toll collection responsibilities for the network for transponder based transactions. For the exception cases where a valid SunPass is not read, a violation image is captured and requires processing. This processing includes license plate verification through a high-quality image review process. Current violation processes will continue for each agency with potential for consolidation in the future.

4-2.1.3: Operations and Maintenance Responsibilities

The general consensus for the Southeast Florida ELN is that responsibilities for all system maintenance and management responsibilities will need to be divided geographically. Interlocal agreements and SOPs will be written to define roles and responsibilities, and to extend logical borders for jurisdictions beyond traditional district and agency borders. This is also relevant to incident management plans and procedures discussed elsewhere in this document.

4-2.1.4: Responsibilities for Management and Monitoring of Pricing

4-2.1.4.1: Tolling Operations

Integrating the pricing algorithm into the overall toll system operations function allows for efficient operations and management of pricing.

4-2.1.4.2: Another Group (Possibly within Transportation Management Center)

The pricing algorithm for dynamic pricing could be managed by another group with that responsibility outside of toll operations, possibly within the TMC (either centralized, by roadway or both). The TMC is in a good position to know current congestion conditions for general purpose and EL lanes that may be impacting pricing on the roadway.

4-2.1.5: Responsibilities for Maintenance of Toll and ITS Equipment

4-2.1.5.1: Toll Maintenance

If tolling operations already monitors and controls pricing as a part of the back-office toll system operations (such as the planned FTE statewide back office) and the pricing algorithm is maintained within the toll system application it already maintains, it may allow for efficient operations and management of pricing for the EL corridors with its jurisdiction and others as appropriate.

4-2.1.5.2: ITS Maintenance

DMS may be one of many electronic signs on the roadway, and it may be more efficient for signs to be procured and maintained outside the toll system. Care must be taken to ensure that procurement and maintenance are coordinated with toll system requirements.
4-2.2: Best Practices and Current Deployment

The Southeast Florida ELN is fairly unique, as the current implementations of actively managed ELs across the country typically do not involve as many different agencies with transportation operations in the same region. Therefore, the decisions reached for the ELN will be setting the standard for many other regions implementing wide-spread networks in the future.

95 Express, which became operational as the first EL project within the region in 2008, has already set some local precedents with regard to organizational structure, but these will need to evolve as more projects are added to the network in coming years. The concept of a coordinated back office for CSC operations using a common (or at least interoperable) transponder seems to be very prevalent.

In areas where statewide interoperability predated ELs, there are additional hurdles to overcome for operations support, but Southeast Florida has avoided these issues by selecting SunPass as the only acceptable transponder in the EL and by requiring a SunPass for valid passage.

Current 95 Express lanes operations are at the SunGuide TMC, which provides monitoring support and operation of the dynamic pricing software, DMSs, and incident management and detection. As 95 Express Phase 2, I-595, SR 826, the HEFT and I-75 are deployed, operations will be at District 4 and FTE as well.

As the network continues to grow, decisions will have to be made about whether the current facilities can or should scale to support the whole region, or if localization of these activities makes more sense from an efficiency and a service perspective.

4-2.3: Recommendations

FDOT D6 and D4 and FTE will work cooperatively to operate and maintain their EL corridors as they go “online” over the next 10 years. As additional EL corridors go online the operational arrangements will be reviewed and system efficiencies will be sought where practical. It is recommended that the project partners establish SOPs and incident management plans and procedures, and then meet regularly to refine and update their plans.

4-3: TOLL SYSTEM OPERATIONS

4-3.1: Implication

The toll collection system is the backbone of the EL system. Not only is it required to collect the toll revenue, but the system also provides vital measurements and inputs that can be used to monitor and maintain the performance of the ELN. The RCTO Executive Committee has decided that all users of the ELN will be required to have a valid SunPass transponder for travel in the ELs (including any qualified transit, hybrid or HOV vehicles), therefore the toll system will be required to be able to register and maintain potential “special” vehicles that may qualify for reduced or exempt toll rates in the ELN.

Additionally, if the decision is made to use a video-based tolling system for enforcement (discussed in a later topic), then the tolling system will be required to be tightly integrated and operated with a tolling system violation enforcement system (VES). This means that the tolling system components will need to be closely monitored and maintained to ensure that transactions are accurately processed (forming the appropriate trip, if required) and assigned the proper toll rate (based on the advertised rate in the lane).

In order to support inquiries or disputes, and especially if violation notices are being sent, there needs to be an extremely high confidence that the system is being maintained properly and that accurate records and reports are available to support that all the equipment in the lane was functioning properly at the dates and times in question.

Also, because it has already been decided that the ELN will be open and available for business policy (except for preplanned maintenance periods), the toll operations will be staffed to support the toll systems 24 hours per day, seven days per week.
as well. As discussed in Section 2-2: Operations Organization, it is important that the toll systems operations are coordinated with the overall network and roadway operations. Incidents that may impact toll operations or toll rates, must be tightly coordinated from TMC operations to tolling operations and should have performance standards and incentives defined to minimize impact to travel times and toll revenues.

4-3.1.1: Toll System Operations Monitoring

Toll systems typically include maintenance online management systems (MOMS) that are used to monitor and maintain the toll system. MOMS can be used to track the health of the entire system from the status of the equipment in the lanes, to the network, to the status of the back-office equipment, transaction processing, and data availability.

MOMS can be used to troubleshoot and correct problems, to maintain inventory of equipment and spares, and to also calculate performance of the system and measure and report the response/repair times of those organizations responsible for maintaining the system. Typical MOMS applications provide alerts with an escalation hierarchy via email and/or text and also allow for role-based, multiple-user access via Web-based applications or portals.

4-3.1.2: Back-Office Processing

4-3.1.2.1: Toll System Operations and Financial Reporting

It is important that the toll system have the ability to properly track customer transactions from the lane through posting and settlement. EL transaction data must be sufficiently detailed to be able to track how the toll was constructed and charged. This is particularly the case with dynamic pricing where matching of trip by locations (or zones) and assignment of rates must be understood. Furthermore, the history of the performance measurement (speed of EL, general purpose, or differential) used to calculate the toll rates, the toll rate history, and incident history should also be recorded and maintained for a period of time to support customer inquiries or disputes. If the incident history is not stored in the back office, then it should be made available to customer service representatives (CSRs) to support inquiries or toll disputes on the ELN. Operational and financial reporting will be required to be accurate and available by location, corridor/project and network to provide transparency and information vital to project communications.

Operational and financial reporting will be required to be accurate and available by location, corridor/project, and network to provide transparency and information vital to project communications.

4-3.1.2.2: Interface and Reporting and Reconciliation across the ELN

If a customer uses multiple ELN roadways and toll rate computations are extended across the multiple corridors within the network, technical interfaces may be required among the toll systems in the network to handle communications such as pricing adjustments; rate communications; and system issues (in addition to communications outside the toll system on roadway conditions and issues).

4-3.1.2.3: Coordinated Back-Office and Computer Operations

Coordinated back-office processing and computer operations are needed to handle the transmission, receipt, storage, and management
of transactions, images, and accounts for the collection of tolls for the EL network. In addition, the traffic performance data and associated toll rate data and any potential toll rate adjustment information (based on incidents or pricing issues) must be properly recorded and available for historical reference and reporting.

4-3.1.3: Customer Service Operations

4-3.1.3.1: Customer Service Center Considerations

Customer service operations utilize the back-office information system to ensure customer service, transaction processing, account management and maintenance, violation invoicing, and payment processing, and collections are performed professionally, accurately and efficiently. Functions typically include customer contact management via walk-in visit, call centers or Web; customer account management; review of license plate images; accounting and reconciliation, payment processing and correspondence handling. A CSC could be specific to a roadway or it could also be provided on a regional or ELN basis.

Benefits of a consolidated CSC operation include economies of scale. As this is a labor intensive operation the benefits of the economies of scale could be large. One disadvantage with a centralized CSC is that individual agencies have less control over operational decisions regarding how the CSC deals with customers.

As stated earlier, the FDOT Executive Committee has decided that the FTE SunPass operations will be used as the consolidated toll back office and CSC. It is recommended that the participating agencies create and agree to a suite of standard key performance indicators (KPIs) measurements and meet to review service levels on a monthly or quarterly basis.

4-3.1.3.2: Issues Related to Customer Service System Design and Operations

Depending upon the system design selected, the CSC design and operation may need to be account-based or violations-based, or have the ability to handle both options. The account capabilities should reflect options for postpaid and prepaid accounts. Payment options should be eventually made available by Web or smartphone applications in addition to phone calls, mail and walk-in visits. This information can be set up to be automatically transmitted to the centralized back office, or a hyperlink can be provided to a CSR if the information is stored and available remotely.

The CSC should also be prepared to handle toll disputes related to price that was charged in the EL. 95 Express uses a delay of rate, so final rates are transferred to FTE approximately 2 hours after the

The FTE SunPass operations will be used as the consolidated toll back office and CSC for the planned ELN.
transaction. It might also be beneficial if this data were available directly to the customer in an online Web interface (understanding that there would be a delay in when this information would be available).

4-3.1.4: Transit-Based (Universal) Accounts

The system may include functionality for account management for multimodal transportation support such as transit or parking. This CSC functionality may require special accounts, business rules, and interfaces to facilitate multiple fare programs (time-based or value-based passes) and transportation rewards programs.

4-3.1.5: Enhanced Service Toll

A premium toll charged for the use of ELs within an already tolled facility must be accommodated in the toll system design and operations. The system and operations should be set up to incorporate the additional toll transactions, to compute an adjusted premium toll based on travel in the EL, and to properly charge and display the tolls on customer accounts and invoices.

4-3.1.6: Performance Measures

Performance measures and KPIs should be in place for the system itself to measure throughput and/or travel times in the EL versus the general purpose lanes, for maintenance of the system (including system up-time, response time, and mean time to repair), and for the performance of those operating the system.

These measurements might reside at the TMC responsible for the EL corridor. Also, to ensure adequate customer support, account management, violation notice generation, and related payment processing activities, the centralized back office might implement its own set of performance measurements. There should also be a performance model in place to review the performance and efficiency of pricing relative to lane capacity and to revenue expectations.

4-3.1.7: Capabilities for ELN Expansion

System and operations should have modular design in order to be able to expand both from a physical capacity and adding of system interfaces and modules to accommodate new technology. For example, it is intended that new corridors will be added in phases over a period of time. The toll system should be able to facilitate adding new EL corridors (including new tolling locations and trip calculations) without substantial effort or modification to the back-office software or hardware infrastructure. The accounting, reconciliation, and reporting of revenue on newly added projects or facilities should be seamless.

4-3.2: Best Practices and Current Deployment

Current EL implementations across the U.S. typically have implemented or utilized a single, centralized tolling operations center for the processing of transactions and to conduct customer service operations. This method offers the most cost-effective and consistent means of providing the services required to collect the toll revenues. All interviewed agencies (state departments of transportation for Georgia, Minnesota, Virginia and Washington; Georgia State Road and Toll Authority [SRTA]; and Houston Metro) use one centralized back office to collect the tolls for their respective ELs.

The best practice for any toll collection system is to have a maintenance online management system to ensure that the system is being monitored and maintained to the expected levels in order to guarantee collection of the revenues. For a modular, tiered system, it might be appropriate to have a separate MOMS for the roadside toll systems and potentially the toll calculation/trip building host and one for the centralized back office that can be updated to include monitoring of the different facilities as they come online.

As a forward looking objective of merging transit and toll, the use of a transit-based (universal transportation) account is something that has been accomplished in other large metropolitan areas such as London and Hong Kong. The idea has been pursued on a much smaller scale in the United States with varying degrees of success,
but could possibly be something worth pursuing in the Southeast Florida region as the program moves forward. However, it is recommended that it not be a high priority at this point, except for planning and requirements into the new statewide CSC back office for SunPass.

4-3.3: Recommendations

The Executive Committee’s decision to leverage the FTE SunPass operations as the consolidated back office and CSC is also endorsed by the RCTO, as it will eliminate inefficiencies and redundant processes, and will eventually lead to a consistent customer experience throughout the region. It is recommended that the participating agencies create and agree to a suite of standard KPI measurements and meet to review service levels on a monthly or quarterly basis.

A consolidated back office will allow for transparent and auditable financial reconciliation, tracking and reporting. The system should also provide clear and consistent operational statistics and reporting. It is recommended that transactions not be formed across facility or project boundaries, but if they are, the back-office system needs to be able to split the revenue back to the appropriate project account.

The system should also be able to compute, process, or display a toll premium for EL tolls charged within a tolled facility.

A consolidated back office will also facilitate the sharing of administrative, maintenance, and operations staff as well as computer facilities, hardware, and software required to process tolls. It is highly recommended that there be a duplicate back-office facility available for disaster recovery services in case the primary location is unavailable for an extended period of time.

The system should also be designed to be scalable for growth both in number of transactions processed and in the ease of adding more facilities/corridors in multiple phases. The systems should also provide very flexible toll computation and adjustment functionality for the management of multiple variations of managed facilities.

4-4: TRANSPORTATION MANAGEMENT CENTER OPERATIONS

4-4.1: Implication

Currently four TMCs operate within the study area. As the ELN continues to grow and expand, it is recommended that the local TMCs serve the initial ELs as they roll out, with coordination among the TMCs. As the system evolves and more projects are incorporated into the ELN, it is recommended that TMC efforts be consolidated.

The FDOT D6 SunGuide TMC has implemented the software, hardware, staffing and processes necessary to operate the 95 Express project and can serve as an example to the other local TMCs as they implement projects. The expansion of the current 95 Express into future Phases will require updates and enhancements to the existing software and infrastructure at the District 6 TMC. In addition, the expanded integration to include a VES (via tolling, if selected) will require additional integration and operational controls.

As new or additional EL corridors are implemented, the multiple TMC facilities operating ITS for the region’s roadways need to be integrated and coordinated to be as efficient as possible. This includes the sharing of software, business rules, incident management response teams, policies, and SOPs to operate with consistency, interoperability, and redundancy as much as practical.

4-4.1.1: Software

The expanded complexity of multiple-facility operations will require the software and support systems to handle increased EL operations, to allow multiple tolling strategies for the entire ELN, to provide the ability to work across multiple regional operating agencies, and to facilitate performance measurement and reporting. Any new EL software implemented will need to work in conjunction with and be compatible with the FDOT’s SunGuide software to take advantage of the existing ITS infrastructure.
4-4.1.2: Staffing

TMC operations will require well-trained and skilled operators 24 hours per day, seven days per week to support the incident management services, including Road Rangers and dedicated command center staffing. Additional corridor implementations may require work equivalent to shift supervisors and/or lead operators for each EL corridor and may relate to higher operations costs. As the network expands, a customer service supervisor or public information officer (PIO) may be needed to support the TMC for ELs operations to handle customer questions, respond to data requests from peer agencies, researchers and the general public, and facilitate media relations for the corridor for ongoing operations.

Additionally, well-trained and skilled ITS maintenance technicians will be required to provide response for repairs and troubleshooting that meet performance objectives and established service levels. Technicians will also be required for handling ELs physical closures and MOT duties. Lastly, there needs to be qualified EL management staff available and operating procedures need to be developed. The procedures should include detailed system performance assessments at both corridor and network levels.

4-4.1.3: Event Management

Well-documented SOPs and supporting business rules for EL facility operations for event management will also need to be developed. These procedures should include advanced event notifications to all transportation partners, including: transit agencies, SunPass operations, Florida Highway Patrol (FHP), adjoining ELN operating agencies and TMC operations, as well as other users.

The software should include toll rate override functionality for qualifying events that can force reduced or refunded tolls for a specified condition.
4-4.1.4: Incident Management

The TMC or assigned responsible party needs to have access to required specialty equipment and vehicles for quicker clearance in an EL impacted by an incident. This includes tow vehicles that are appropriately sized and equipped to remove any buses, coaches or oversized trucks throughout the corridor (if they are allowed in the EL). If incident management responsibility for the EL and general purpose lanes is shared, then the cost for equipment and staffing resources can also be shared. Well-documented SOPs for EL facility closures due to incident management will need to be developed. In addition, diversion routes for motorists on the EL facility need to be developed, as well as procedures for using the EL facility as a potential diversion route for general purpose lanes. Incentive-based contracts similar to the rapid incident scene clearance (RISC) used for 95 Express need to be tailored for each EL facility to optimize EL throughput and revenue. Off-the-road staging areas for incident management vehicles can be implemented for faster response times and, if the design will allow, full lane and shoulder widths will help incident management services to maximize safety on the roadways.

Lastly, close coordination with law enforcement and other emergency responders will be necessary for ongoing operations.

4-4.2: Best Practices and Current Deployment

The FDOT D6 SunGuide® TMC is already providing most of the essential operational services for the 95 Express Phase 1 systems. As new or additional EL corridors are implemented, then the multiple TMC facilities need to be integrated and coordinated to be as efficient as possible. This includes the sharing of software, business rules, incident management response teams, policies and SOPs to operate with consistency, interoperability and redundancy as much as practical.

4-4.3: Recommendations

TMC operations will occur within applicable agencies and will be coordinated. Future consolidated TMC operations will be reconsidered once multiple corridors are open and operating.

4-5: ENFORCEMENT OPTIONS

4-5.1: Implication

There are different ways to enforce ELs such as fines, physical lane separation, and police staging in designated enforcement areas. In areas that rely on visual identification as opposed to electronic toll collection, or those that do not have designated enforcement areas, violation rates are typically higher. Video-based technology has been shown to successfully identify users without valid transponders with fully automated tolling systems, so they should be considered for enforcement.

4-5.1.1: Use of Toll Violation Enforcement System Cameras

Violation enforcement cameras are required if the system is to use video tolling or automated toll violation enforcement. This will require exempt vehicles to separately register in the back office or to have transponders. If video tolling is allowed, then vehicles are allowed in the lanes without transponders. A vehicle without a transponder will be required to be either a vehicle to be video tolled or a preregistered exempt vehicle. Preregistration of exempt vehicles will be required via license plate (or transponder) account.

The pros and cons of video-based enforcement technologies are shown in Table 4-10.

The FDOT Executive Committee decision: All tolls will be collected by SunPass transponders. Video tolling / toll-by-plate is not intended as an allowable payment means; however, the enforcement camera systems will be used to collect from non-SunPass traffic.
4-5.1.2: Identification of Exempt Vehicles

For the Southeast Florida RCTO, the Executive Committee has decided that all vehicles, including exempt vehicles, will use a SunPass transponder and will be required to preregister their vehicle to qualify for a reduced or exempt toll. Exempt vehicles may be required to display an annual decal that will assist roadside enforcement vehicles to determine if proper occupancy requirements are met. The following sections describe options used around the country to distinguish exempt vehicles and make sure that they are appropriately charged and enforced.

The pros and cons of the different exempt vehicle identification methods are shown in Table 4-11.

4-5.1.2.1: Use of Separate Transponder for Exempt Vehicles

The driver has a separate exempt-vehicle transponder that is shielded or put away when traveling as a single-occupant vehicle (SOV)/nonexempt vehicle. The issue with this implementation is that it requires the user to take action. Any business rule that requires extra effort while driving has the potential to cause operational inefficiencies; however, this type of implementation could be accomplished using existing Florida transponders, including the SunPass Portable transponder.

Another disadvantage is that this implementation requires the customer to mount the proper transponder and remove or shield when traveling as an SOV. This would also require back-end coding to recognize different tag types and may cause transponder read accuracy or performance issues in the lane.

As with most options, this method requires visual verification of occupancy.

4-5.1.2.2: Use of Switchable Transponder

The switchable transponder allows for separate declaration switches for different exempt statuses (SOV; HOV with two or more people occupying the vehicle [HOV2+]; HOV with three or more people occupying the vehicle [HOV3+]).

4-5.1.2.3: Single Transponder for All Users (and Possible Use of License Plate Toll) and Preregistration with Back Office

TABLE 4-10: COMPARISON OF VIDEO-BASED ENFORCEMENT TECHNOLOGIES

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<tr>
<td>USE OF VIOLATION ENFORCEMENT CAMERAS</td>
<td>• Use of cameras helps to protect revenue and prevent toll evasion. • Additionally, the RCTO Executive Committee has decided that all vehicles will be required to have a valid SunPass for travel in the EL, including exempt vehicles. • Having a valid transponder, which is properly registered as exempt (for varying qualifications) makes the real-time enforcement of all vehicles much easier as focus can be targeted on the toll violators.</td>
<td>• Requires exempt vehicles to take action either by using a special transponder or registering with the back office or both.</td>
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<tr>
<td>ALLOW VIDEO TOLLING</td>
<td>• Video tolling allows for customer process consistent with other AET roadways.</td>
<td>• Video tolling dramatically increases costs of revenue collection due to additional back office processing versus AVI. • Video tolling requires exempt vehicles customer to register in advance and still requires visual verification of occupancy for enforcement purposes.</td>
</tr>
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TABLE 4-11: COMPARISON OF EXEMPT VEHICLE IDENTIFICATION METHODS

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<th>ITEM</th>
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<th>CONS</th>
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| USE OF SEPARATE TRANSPONDER FOR EXEMPT VEHICLES | • Having a valid transponder, which is properly registered as exempt (for varying qualifications) makes the real-time enforcement of all vehicles much easier as focus can be targeted on the toll violators. | • Requires the user to take action. Any business rule that requires extra effort while driving has the potential to cause serious operational inefficiencies; however, this type of implementation could be accomplished using existing Florida transponders, including the SunPass Portable transponder (but not the SunPass Mini.)
• Another disadvantage with this implementation is that it requires the customer to remember to mount the proper transponder and remove or shield when traveling as an SOV.
• This would also require back-end coding to recognize different tag types and may cause transponder read accuracy or performance issues in the lane.
• This method requires visual verification of occupancy. |
| USE OF A SWITCHABLE TRANSPONDER | • A single, all-in-one unit that doesn’t require any shielding or removal if traveling as an SOV. | • If within the State of Florida, the transponder must be in accordance with SunPass requirements/specifications, which currently do not include a switchable transponder option and thus is not compatible. As with most options, this method requires visual verification of occupancy. This switchable tag is more costly than sticker type tags and would require customer to remember to switch the tag according to current exempt status. |
| SINGLE TRANSPONDER FOR ALL USERS (AND POSSIBLE USE OF LICENSE PLATE TOLL) AND PREREGISTRATION WITH BACK OFFICE | • This is similar to the current 95 Express lanes model already implemented. If the customer meets exemption criteria, then the toll is waived or reduced accordingly.
• Accommodates any tolling structure (use of video toll and/or AVI-only) | • Requires exempt vehicle customer to register in advance.
• This method requires visual verification of occupancy. |

This is similar to the current 95 Express lanes model already implemented. If the customer meets exemption criteria, then the toll is waived or reduced accordingly.

4-5.1.3: Enforcement Systems Options

The pros and cons of the enforcement system options discussed below are shown in Table 4-12.

4-5.1.3.1: Overhead Status Indicator

If the toll system design includes a gantry mounted overhead status indicator (OSI), highway patrol vehicles can visually verify if vehicle has a valid transponder. The OSI could be set to flash different colors for different vehicle statuses.
### TABLE 4-12: COMPARISON OF TOLLING AND OCCUPANCY ENFORCEMENT SYSTEMS

<table>
<thead>
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| **OVERHEAD STATUS INDICATOR**  
*IF THE TOLL SYSTEM DESIGN INCLUDES A GANTRY MOUNTED OSI, HIGHWAY PATROL VEHICLES CAN VISUALLY VERIFY IF VEHICLE HAS A VALID TRANSPONDER. THE OSI COULD BE SET TO FLASH DIFFERENT COLORS FOR DIFFERENT VEHICLE STATUSES.* | • An OSI is an inexpensive tool for identification of violators in the case where all vehicles must have a transponder and violators would flash one color, and pre-registered exempt vehicles another color. Alternatively, the OSI would flash for exempt vehicles in the case where exempt vehicles are not required to have a transponder. | • Cannot be used to detect toll violator/occupancy status if video tolling is allowed. • Requires the vehicle to be pulled over to verify occupancy. |
| **ENFORCEMENT SHOULDER AREAS**  
*THESE AREAS ARE TYPICALLY JUST UPSTREAM OR DOWNSTREAM OF TOLLING POINT AND ARE USED IN CONJUNCTION WITH OSI.* | • If positioned properly, allows for a space to view OSI and number of occupants in vehicle for determination if further action is required. | • Enforcement shoulders are not as effective on multilane roadways where officers must look over additional lanes of traffic. |
| **OCCUPANCY CAMERA SYSTEMS**  
*THESE SYSTEMS, WHICH ARE NOT YET AVAILABLE IN PRODUCTION, CAN THEORETICALLY TAKE IMAGES OF OCCUPANTS WITHIN VEHICLE AND CAN PROVIDE IMAGES IN NEAR REAL TIME TO ENFORCEMENT VIA A PDA DEVICE AND CAN ALSO BE INTEGRATED WITH THE TOLL SYSTEM BACK-OFFICE FOR HOV ENFORCEMENT.* | • Potential to automate enforcement of occupancy detection and reduce or eliminate manual enforcement. (This option would ultimately be most effective if only front seat occupancy was considered for (a HOV2), but would also lead to other issues with taxis, limos, and other transportation service vehicles.) | • Systems are not yet in production. Issues remain with line of sight requirements and rear seat detection. • There are still accuracy and performance issues and lack of acceptance by legal system. |
| **SELF-DECLARATION SYSTEMS**  
*SMARTPHONE- AND WEB-BASED APPLICATIONS THAT ALLOW SELF-DECLARATION TO BACK OFFICE AND POSSIBLY SOME LEVEL OF ENFORCEMENT VERIFICATION (IF MULTIPLE OCCUPANTS VERIFY WITH SMART PHONE PER SOME EXISTING RIDE SHARING APPLICATIONS).* | • The smartphone application for self-declaration is convenient for those customers who have smartphone access and download the declaration application. • The self-declaration can occur before the trip, which reduced the distracted-driver issue. | • This requires advance actions on part of the customer to change status. • The verification portions of these applications are not proven in production or operation. |
| **MOBILE ENFORCEMENT READERS**  
*INCLUDE READERS IN THE HIGHWAY PATROL VEHICLE THAT CAN POLL THE STATUS OF A TRANSPONDER IN A NEARBY VEHICLE.* | • Allows an additional tool by highway patrol to verify if SOV is traveling without a transponder or if transponder is not good. | • Costly to use in a case where there are many highway patrol vehicles patrolling that must have specialized equipment installed in each vehicle. • Mobile enforcement readers may not be able to accurately detect all transponder types. • Enforcement with mobile readers would still require highway patrol to pull over vehicle to verify occupancy and write summons if necessary. |
| **USE OF PDAS OR SMARTPHONES**  
*USED BY HIGHWAY PATROL TO CHECK STATUS OF ACCOUNT AND SELF-DECLARATION EITHER BY LICENSE PLATE OR BY TRANSPONDER NUMBER.* | • Allows an additional tool by highway patrol to verify if vehicle is exempt or if transponder is valid for travel in the EL. | • Would still require highway patrol to pull over vehicle to verify occupancy and write summons if necessary. |
| **MANUAL ENFORCEMENT BY FLORIDA HIGHWAY PATROL** | • Having visible FHP patrol available is a very effective enforcement tool when used regularly. | • High recurring costs. • EL enforcement may take highway patrol away from more critical public safety tasks. • There may be potential safety and traffic issues with pulling vehicles over if there is limited ROW. |
4-5.1.3.2: Enforcement Shoulder Areas

These areas are typically just upstream or downstream of tolling point and are used in conjunction with OSI.

4-5.1.3.3: Occupancy Camera Systems

These systems, which are not yet available in production, can theoretically take images of occupants within vehicle and can provide images in near-real-time to enforcement via a PDA device and can also be integrated with the toll system back office for HOV enforcement.

4-5.1.3.4: Self-Declaration Systems

Smartphone- and Web-based applications can allow self-declaration for HOV status to the back office. For example, the I-85 Express Lanes in Georgia allow users to use the secure Peach Pass customer website or their Peach Pass GO! mobile application to “Change Toll Mode” to not charge for tolls for HOV3+-declared occupancy for a user-specified time period and duration (e.g., four hours, one days, weekdays or indefinite).

One drawback of this type of self-declaration application is that users may forget to update their account and attempt to modify their account while traveling in their vehicle. Georgia I-85 Express Lanes has addressed this issue by making the user declare that they are not operating a motor vehicle while using the application, since it is illegal to do so under Georgia law.

4-5.1.3.5: Mobile Enforcement Readers

Mobile enforcement readers included in the highway patrol can poll the status of a transponder in a nearby vehicle.

4-5.1.3.6: Use of Personal Digital Assistants or Smartphones

Use of personal digital assistant (PDA) devices or smartphones by highway patrol to check status of account and self-declaration either by license plate or by transponder number.

4-5.1.3.7: Manual Enforcement by Florida Highway Patrol

Utilization of the FHP in designated enforcement areas to ensure toll collection and proper usage of the ELs.

4-5.2: Best Practices and Current Deployment

Current implementations of ELs across the country basically fall into one of two categories:

1. All users (including exempt vehicles) are required to have a preregistered transponder which will be read at tolling points and processed accordingly (95 Express currently follows this business model, except for with motorcycles) or

2. All users (except for exempt vehicles) are required to have a preregistered transponder which will be read at tolling points and processed accordingly. Exempt vehicles such as first responders may not have a transponder at all and are required to register their license plate in a back office and potentially affix a decal to their windshield. HOV users may be required to present a valid transponder when traveling as an SOV, or use a switchable tag to make a real-time declaration.

An issue with real-time declaration in the vehicle is that this requires human interaction. The industry has learned that this creates many operational issues for enforcement. For example, it is very easy for the driver to just say they forgot to switch the tag “on” or the tag didn’t work properly. This is a common situation observed for SOVs trying to avoid paying the toll where switchable tags are implemented. Another issue is that the switchable feature may not work as well as advertised. The better decision is to use a smartphone- or Web-based application to make a predeclaration prior to the trip, as is used on 95 Express and in Georgia. These applications are currently in use and have proven effective.

4-5.3: Recommendations
All vehicles using ELs will be equipped with a SunPass transponder. Enforcement will vary by project location and physical project characteristics. The Executive Committee’s decision to use the standard SunPass transponder is the best option for simplicity and efficiency. This will allow the EL to be equipped with tolling VES cameras to take images of potential violators when a valid tag is not read in the EL.

Having the VES focus on the exception for violators, rather than implementing a video billing program will save costs for operations and will increase the revenue potential, by removing the risk of uncollectible video toll bills. Having the OSI indicator focused only on violators, rather than cluttered with potential video bill customers will help to simplify roadside enforcement.

Additionally, the use of a transponder in all vehicles will allow the assignment of special statuses to the SunPass account that can be interpreted in the lane and provide specialized feedback (via OSI) when properly read in the lane or by a mobile reader, which can be expensive for a widespread implementation. These statuses can indicate if it is a properly registered “exempt” vehicle or if the SunPass is currently registered as an HOV.

4-6: LANE MANAGEMENT

4-6.1: Implication

4-6.1.3.1: One Express Lane

A one-lane EL facility is easier to implement on existing expressways – thereby enabling faster project implementation schedule and reduced project construction costs. However, lane closures will be more frequent when compared to facilities with two lanes for incident management and lane closures may last longer, and may increase safety concerns due to lack of right of way (ROW) to maneuver response vehicles. The addition of even one lane can require that lane and shoulder widths be reduced compared to typical design specifications.

They also have less capacity than two-lane facilities and, hence, may not provide the anticipated congestion relief to the corridor and may create bottlenecks at the system-to-system interchange when connected to two-lane EL facilities. Due to no ability to pass vehicles, slower moving vehicles, such as buses, could cause delays for other motorists. Thus, one-lane facilities may not support the required operational performance measurements in the long term.

4-6.1.3.2: Multiple Express Lanes

A multiple-lane facility is better in terms of incident management. Multiple lanes offer higher capacity and will help alleviate region’s congestion.

Multiple-lane facilities will have much higher construction costs than a single-lane facility, and lane and shoulder widths may need to be compromised compared to typical design specifications to retrofit an existing roadway width.

4-6.1.3.3: Reversible Lanes

Having reversible lanes optimizes volume-to-capacity (V/C) ratio by putting lanes in the direction of greatest traffic flow. Reversible lanes require less roadway footprint and may not require additional ROW; hence, they can be less expensive than regular bidirectional EL facilities.

The disadvantages of a reversible lane facility are numerous from a standpoint of operations:

• Complex design as it requires additional signage, gates, monitoring and maintenance to prevent access to vehicles during off hours when compared to regular bidirectional EL facilities.

• May not be successful in areas where there is substantial traffic in both directions during the peak travel periods.

• May be confusing to drivers.

• May require complex operations and system development.

• System-to-system interchanges may require additional engineering due to variations in
peak travel hour directional flow.

• Requires more enforcement and supporting technology for safer operations.

• Requires extra development to ensure safety at system-to-system interchanges.

• Facility closures during direction switch-over will result in a loss of capacity during these times.

### 4-6.2: Best Practices and Current Deployment

Typical implementations for lane management are really driven by available ROW and the flow characteristics of the peak travel times. Optimally, at least one EL in each direction would be preferred over having to constantly maneuver the direction of a reversible lane environment. However, reversible lanes may not be an option for certain corridors due to constant congestion in both directions during peak travel times. If ROW and construction budget allows, then two or more lane EL facilities would be recommended over a single-lane configuration.

### 4-6.3: Recommendations

Lane configurations will be based on EL project characteristics.

### 4-7: VEHICLE ELIGIBILITY

#### 4-7.1: Implication

##### 4-7.1.3.1: Trucks

Trucks with two axles are typically allowed in the ELs as toll-paying vehicles. Trucks with three or more axles (3+) are not allowed on the 95 Express lanes unless they are designated as emergency vehicles responding to specific incidents.

Some of the disadvantages of allowing trucks in the EL are:

• Some people use ELs to avoid trucks.

• Increases the complexity of design and operations when providing connections to other EL facilities on which trucks are not allowed.

• Increases the complexity of incident management services required within the EL facility.

• May be more difficult to obtain design exceptions for full lane and shoulder widths in the EL facility due to freight operations.

• Definition of “truck” is not clear; for example, are service vehicles, school buses or private motor coaches considered trucks?

• Currently the I-595 implementation is the only corridor considering allowing 3+ axle trucks in the EL facility as a one year pilot.

##### 4-7.1.3.2: Transit

Many ELs across the country were originally built as dedicated HOV and transit lanes. Allowing transit vehicles in the EL has some proven benefits including:

• Promotion of a multimodal approach to congestion relief.

• Increased transit ridership on newer express bus service and the resulting increase in overall corridor capacity.

• Alleviation of regional traffic congestion by increased traffic capacity via more transit riders.

Some of the disadvantages of allowing transit vehicles in the EL include:

• Potential for new or expanded park-and-ride facilities to meet increased demand.

• Potential for traffic flow impacts because transit vehicles may operate at slower speeds than other motorists.

• Increased complexity of incident management services required within the EL facility.
**4-7.2: Best Practices and Current Deployment**

Keeping the vehicle eligibility rules consistent and simple throughout the region should be an explicit goal. Any exceptions should be clearly and consistently communicated to the users. Nationwide, it is typical and consistent to limit all truck access to two-axle vehicles, regardless of truck profile. The noted exception to this rule is to allow transit, coaches or emergency vehicles (on emergency calls), which may have more than two axles but are still allowed in most EL facilities.

Allowing certain vehicles, including some trucks and trailers (which also do not have an adverse impact on performance) to use the EL network should help to increase revenue generation and help service oriented vehicles get to their destinations in a more predictable time frame.

By incorporating transit into the project design, passengers benefit directly. For example, the lack of congestion on the ELs can help increase transit service speeds and make transit a more viable option for many people. Additionally, the inclusion of transit can help to garner support for an ELs project because it gives people the feeling that there is benefit for everyone.

For this reason, it is expected that transit will remain an important consideration for future ELN design in the future.

**4-7.3: Recommendations**

All future EL corridors will allow transit vehicles and prohibit 3+ axle trucks.
COMMUNICATIONS

The communications aspect of express lanes (ELs) is multifaceted. When infrastructure is managed dynamically, as in an EL, the clear and timely communication of information to the customer is paramount to success. Achieving the goals and objectives of the EL investments requires that the customer is aware of the benefits and costs of the EL before making a decision to utilize the facility. Communication – both in real time along the facility, and in advance through educational outreach – can improve safety and operations on the roadway, as well as gain support for EL projects.

Based on the policies that guide the development, deployment and management of the EL Network (ELN), multiple levels of communication using varying approaches can and must be employed. This chapter discusses the challenges involved in successfully reaching internal and external audiences and describes targeted communications approaches to best meet the needs of these stakeholders.
5-1: POLICY DECISION IMPACTS

5-1.1: Implication

Each ELN policy has key considerations that must be addressed by a focused communications strategy. Each policy will impact different users with different communications and travel needs. Table 5-1 describes the policies and the communication considerations and needs associated with these policies. The following subsections within Section 5-1.2 provide more detail on each of these topics.

### TABLE 5-1: COMPARISON OF KEY POLICIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONSIDERATION</th>
<th>COMMUNICATION NEEDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYNAMIC VS. STATIC PRICING</td>
<td>Dynamic pricing – the system will have dynamic pricing as a general policy</td>
<td>What are the general parameters of why the toll rate changes in real time and how the toll amount is assessed (e.g. density in the ELs)? What are the advantages or disadvantages of dynamic pricing versus static pricing?</td>
</tr>
<tr>
<td>OCCUPANCY REQUIREMENTS</td>
<td>The occupancy requirements could be different for each facility.</td>
<td>Early definition of occupancy requirements is essential. Educate customers on how each system works and where and why changes in occupancy occurs throughout the system.</td>
</tr>
<tr>
<td>VEHICLE ELIGIBILITY</td>
<td>Vehicle eligibility policies may restrict access to some potential customers.</td>
<td>How to communicate project level eligibility that could differ on a project by project basis.</td>
</tr>
<tr>
<td>REIMBURSEMENT POLICY</td>
<td>Work with FDOT to finalize general reimbursement policy</td>
<td>Educate both the customers and customer service teams about the refund policy.</td>
</tr>
<tr>
<td>COST VS. BENEFITS</td>
<td>Benefits of using ELN as a whole – is cost worth it? How is cost determined?</td>
<td>Explain benefits of ELN – reduced travel time, increased speed, reduced weaving, sustainability, trip reliability, less traffic in general purpose lanes for those who choose not to use EL.</td>
</tr>
<tr>
<td>TRANSIT SERVICE</td>
<td>Work with each transit system to educate riders</td>
<td>Express bus service and how it connects destinations. Where are the park and ride lots? How is each Express bus system different? Information on cost, schedule and travel times.</td>
</tr>
<tr>
<td>ENFORCEMENT</td>
<td>Work with regional law enforcement and respective PIOs to create general concept guideline for all EL projects in the Southeast Florida region</td>
<td>Hold regional meetings with law enforcement teams and respective PIOs to educate project team members on enforcement guidelines. Add related talking points to FAQs, fact sheets and media outreach.</td>
</tr>
<tr>
<td>INCIDENT MANAGEMENT/EMERGENCY RESPONSE</td>
<td>Show a seamless incident management response team and provide advance warning of incidents to motorists.</td>
<td>Collaborate with emergency responders for this messaging and for key information to relay to customers approaching these situations. Information can be shared via ELN telephone line; ITS signage; social media and the 511 system.</td>
</tr>
<tr>
<td>EMERGENCY RESPONSE</td>
<td>Explain additional emergency response measures taken in express lanes for concerned motorists</td>
<td>Collaborate with emergency responders for this messaging and for key information to relay to customers about coming upon these situations.</td>
</tr>
<tr>
<td>TOLL VIOLATION</td>
<td>Work with appropriate stakeholders to create toll violation rules and policy</td>
<td>Educate customer service representatives about ELN policies. Work with SunPass to facilitate customer inquiries regarding toll violations and any other questions about SunPass.</td>
</tr>
</tbody>
</table>
5.1.2: Alternatives, Considerations, and Pros and Cons

For each EL project, many policies and issues should be considered. These issues include vehicle occupancy and eligibility requirements, price setting, and enforcement policies. The RCTO Executive Committee has recommendations on policies that will drive the development of the ELN.

Once a policy decision is made, the communications team members will work together to develop standard messaging that explains the policy, as well as the benefit(s) of such a policy, so that it may be easily understood internally (transportation agencies) and externally (customers).

Table 5-1 illustrates key policies that will be determined, the considerations for each policy and what the communications message and/or talking points about each policy should address. These items are further discussed in the following sections.

5.1.2.1: Dynamic Versus Static Pricing

As implemented on 95 Express in Southeast Florida, the pricing policy for the ELN has been determined to be dynamic tolling. Dynamic tolling will provide a network in which toll amounts are determined by the level of congestion within an EL facility. As congestion increases, toll amounts will increase, and as congestion decreases, toll amounts will decrease. This method was the option chosen over static pricing, which would set a pre-determined toll amount on a facility regardless of the level of congestion. Toll collection will be SunPass only, meaning toll-by-plate is currently not an option.

- **Consideration:** Educating the public and stakeholders on dynamic tolling will instill an understanding of how the system is managed and how the pricing is determined. The public must also be educated on the EL’s required 24-hour operations; the tolls are not just “turned on” and then left on “autopilot.”

- **Strategy:** Messaging that explains dynamic pricing has already been developed for use on 95 Express, as well as for customer interaction purposes. It is imperative to develop messaging that easily explains the dynamic tolling concept, as it will assist in attaining public buy-in for the ELN, as well as help educate stakeholders, public officials and the general public on the basics of the ELN tolling concept. This messaging should appear on project websites as well as tolling-specific collateral. When an EL project launches in a new region, media availabilities should also be scheduled and advertising outlining the tolling method should be disseminated in the local newspapers of affected areas. Social media messaging should also be scheduled for dissemination on the Florida Department of Transportation’s (FDOT) and SunPass Twitter accounts.

5.1.2.2: Occupancy Requirements

Occupancy is one of the tools owners and operators employ to manage conditions in ELs.

- **Consideration:** Facilities within the Southeast Florida ELN could have different occupancy requirements. 95 Express will operate as a high-occupancy toll (HOT) facility; all future EL deployments will require all vehicles to pay for use of the facility. The communications team will need to develop messaging that educates customers on how each facility operates, as well as how to navigate between projects with differing policies.

- **Strategy:** Messaging will be displayed on project websites, the regional ELN website (discussed later in this chapter) and other related websites, including the South Florida Commuter Services website and other partner websites, in order to educate the general public as well as customers who utilize any carpooling/vanpooling/HOV program on what their occupancy requirements will be to use facilities in the network. Messaging should also be included on any project fact sheets or advertisements to introduce these programs to the public. Transit riders can be informed via educational videos on buses, where applicable.
5-1.2.3: Vehicle Eligibility

Like occupancy requirements, vehicle eligibility requirements must be determined at an early stage in order to manage expectations of customers. It has been determined that all vehicles are eligible with the exception of trucks (except as a pilot project on 595 Express).

• **Consideration:** It is important to educate customers at the project level about the EL requirements.

• **Strategy:** Messaging will be displayed on project websites, including the South Florida Commuter Services website in order to educate the general public on what their eligibility requirements will be to traverse facilities in the network. Messaging should also be included on any project fact sheets or advertisements to expose these exemptions (if any) to the general public.

5-1.2.4: Refund Policy

A refund policy will detail the procedures an operator will adhere to when a customer requests a refund for a trip on one or more EL facilities.

Customer service issues regarding the ELN will be handled through a consolidated customer service center. Requests received from various sources (SunPass, South Florida Commuter Services, 95express.com) will be directed to this central resource. If the issue can not be adequately addressed through this center, it will be passed along to the appropriate agency.

Customer service representatives, upon receiving a complaint and/or request for refund, must capture the customer’s name, contact information, SunPass transponder number, toll amount paid, facility traveled, the date and approximate time the facility was traveled and, finally, what the customer is complaining about. For example, John Doe, who can be contacted at 999-999-9999, traveled on 95 Express northbound on Thursday, Dec. 20 at 2:30 p.m. He paid $5.00 and is requesting a refund because he feels he did not receive a benefit for using the ELs.

• **Consideration:** Establishing a network-wide refund policy will generate consistency in customer service aspects of the project, which can help reduce customer frustration.

• **Strategy:** Messaging that outlines FDOT’s refund policy for EL trips must be created. This messaging must effectively educate not only a facility’s customers on the refund policies, but project representatives and customer service teams as well. This will help with project transparency and reduce customer frustration. Frequently asked questions (FAQs) about the refund policies should also be created for placement on project websites and/or project materials.

5-1.2.5: Cost Versus Benefits

Communicating the benefits and cost of the ELN is one way to educate the public on the ELN’s purpose and justification for operations. One important aspect of this is to clarify why tolls increase during certain times of the day and are lower during other times of the day. Another key is to communicate value. Specifically, what are the benefits customers will receive from the ELN?

Furthermore, benefits will extend beyond the paying customers in the EL in the form of improvements to the general purpose lanes and transit services and reliability. Understanding the cost of providing these services is also an important element in communicating the justification of the ELN.

• **Consideration:** Potential benefits to highlight include improvements in average travel speed in both ELs and the general purpose lanes, as well as more reliable travel times, improvements to transit services and operations, and potential improvements in vehicular emission. It is important to emphasize the fact that motorists who don’t pay still receive the benefit of reduced congestion in the general purpose lanes. Cost must also be explained. Important questions to answer include: how are the tolls determined, and is the cost worth a trip? It must also be pointed out that
building ELs is more cost effective than building new roadway facilities or widening existing facilities for two primary reasons: 1) an actively managed facility can operate more efficiently, and 2) EL projects produce revenue that can be used to offset operations, maintenance, and capital expenditures.

- **Strategy**: Much like the messaging that must be created to explain the facilities’ dynamic tolling method, an explanation of the facilities’ benefits should be included in project collateral, FAQs and social media messaging. These benefits exemplify how ELs are helping keep roads efficient and provide reliable trips that could not be sustained with non-tolled lanes and should be touted by as many media forms as possible to optimize public buy-in and education.

5-1.2.6: Transit

Each project could have a transit component that may offer express transit services.

- **Consideration**: The communications team must work in conjunction with the transit provider offering service on EL facilities to develop messaging that explains how each service connects commuters to their destinations (e.g. how express bus service works; where the park and ride lots are located; how each express bus system is different; costs).

- **Strategy**: These messages must be included on project websites and corresponding transit websites. Occasional messages about the benefits of using express transit should also be shared via Twitter to encourage the public to ride transit. Separate collateral should also be developed to thoroughly explain the transit services of each facility. The transit agencies’ communications teams must be engaged in the messaging and explore every option to educate the community and build ridership.

5-1.2.7: Enforcement

The ELN’s enforcement protocols will define what laws motorists must obey when entering, exiting, and traveling through or traveling parallel to an EL facility, as well as how those laws will be enforced.

- **Consideration**: The public, team members and law enforcement team members must be educated on these protocols. Also, there must be on-going coordination between each enforcement agency to ensure a cohesive plan and actions. Internal education is crucial to consistent operations and messaging on the external front. Messaging that explains enforcement must be clear, concise and void of any ambiguity to ensure the public thoroughly understands what driving behaviors are unlawful when on the network.

- **Strategy**: The communications team must work with regional law enforcement and their respective public information personnel to develop enforcement concept guidelines for all EL projects. These should include specific protocols for interagency communications. The communications team should meet with regional law enforcement teams and respective public information personnel to educate project team members on these protocols. The groups should also discuss the project’s general talking points and FAQs, and conduct media outreach to publicize enforcement messages. FAQs and fact sheets about enforcement should also be created and placed on project websites. FDOT’s incident management teams and their agencies’ respective PIOs should be engaged in this process and incorporate the messaging into their educational campaigns.
5-1.2.8: Incident Management

Current incident management efforts consist of several components seamlessly and efficiently working to respond to and clearing any type of obstruction from Southeast Florida’s roadways. Resources have been dedicated for response on EL facilities, and the public should be aware of what the resources are and what they do.

- **Consideration:** Educating the public about incident management procedures, resources and performance may decrease motorist panic when there is an obstruction on a roadway. It can also enhance the efficiency of clearance efforts.

- **Strategy:** The existing 511 traffic information line may be a source for the public to obtain information on the current status of the ELN (opened, closed, congested), and signage must always be accurate. Social media networks should also be considered to share incident information with local reporters as well as the public, and the project team should discuss including this information on the respective 511 accounts as well. Collateral should also be developed. These efforts will give the public an enhanced sense of reliability in the ELN.

5-1.2.9: Emergency Response

As mentioned in the previous section, ELs will continue to have additional emergency response measures, like Road Rangers, incident response vehicles (IRVs) and staged flatbed tow trucks at strategic locations. Additional procedures are also in place for incident management in EL facilities, and more will be developed as more facilities become a part of the ELN.

- **Consideration:** Motorists have shown concern for emergency situations in the ELs in the past and how to behave when affected by one.

- **Strategy:** The project team must partner with emergency responders and law enforcement officers to learn what key information must be relayed to customers when they approach these types of situations in the network and the response expected from them. (See strategy for Incident Management.)

5-1.2.10: Toll Violations

A toll violation occurs when a customer travels through an EL facility without a valid SunPass transponder. Violation rules and penalties must be clearly communicated to customers in order to avoid confusion and customer dissatisfaction.

- **Consideration:** This message must be clear on all project materials, as well as on signs throughout the facility, to reduce customer confusion and/or frustration.

- **Strategy:** The SunPass Customer Service Center and EL project management will work together to communicate toll violation rules and policies, to educate customers about violations. SunPass’ customer service website should be marketed to customers and the telephone number should be available on project websites as well as materials for customer service purposes. FAQs should be kept up to date and available on the website and should be adjusted based on calls and questions received.

5-2: IDENTIFICATION of PROJECT CHAMPIONS

5-2.1: Implication

It is important to define who will support the project and advocate for it outside of the implementing agency. Project champions should be identified early on in order to provide the most support for the projects. A speaker’s bureau can be developed and constantly updated with the most recent information so messaging can be ongoing from different groups simultaneously.

5-2.2: Alternatives, Considerations, and Pros and Cons

Table 5-2 identifies potential project champions. It also indicates potential strategies for engaging
# TABLE 5-2: POTENTIAL PROJECT CHAMPIONS AND STRATEGIES

<table>
<thead>
<tr>
<th>POTENTIAL CHAMPION</th>
<th>STRATEGY 1 (IDENTIFYING/EDUCATING)</th>
<th>STRATEGY 2 (MESSAGING/ACTION ITEM SUPPORTING)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elected Officials</td>
<td>Metropolitan Planning Organization boards (Miami-Dade, Broward and Palm Beach Counties); County Commissions – Miami-Dade, Broward and Palm Beach Counties; local municipalities; State and Federal officials</td>
<td>Elected officials can help foster public support due to their large audience and the public’s trust in their views. Elected officials can support the concept of the ELs via their role on transportation or commission boards. To gain support from this group, it is critical to show support of business community and other stakeholders; show proven results from 95 Express and other systems. It is also key to understand political motivation and outside influences.</td>
</tr>
<tr>
<td>Appointed Officials</td>
<td>County and municipal staff; agency employees</td>
<td>Staff level stakeholders should receive more technical information (this will assist in answering questions from the public). Benefits to these stakeholders include improvements that are made in conjunction with ELs (e.g. noise walls and interchange improvements).</td>
</tr>
<tr>
<td>Community Leaders</td>
<td>Chairman or Board Member of home owner associations</td>
<td>Community leaders can be grass roots advocates of ELs if appropriately educated. Messages to this group should include: how the system works (plain language); benefits to everyone, including customers, drivers who use general purpose lanes, and local communities that will be affected by improved infrastructure. Each group will have a slightly different viewpoint, therefore, messages must be crafted to answer their questions and identify which advantages most interest them.</td>
</tr>
<tr>
<td>Major Business Owners</td>
<td>Major business owners can provide information to their company’s HR Departments to distribute info about EL and the network</td>
<td>Business owners will be interested in how the ELs will impact their employees and customers. Key messages include improved travel times; reliable trip times; and the clear communication of any construction impacts. Show benefits to date through testimonials.</td>
</tr>
<tr>
<td>Business Community Leaders (i.e. Chamber Presidents, Economic Boards)</td>
<td>Present to the boards on benefits of the ELN</td>
<td>Messages should be focused on economic opportunities from increased speed and reduced travel time, which include increased productivity; ability to attract new businesses to the region and the expansion of the potential work force.</td>
</tr>
<tr>
<td>Media</td>
<td>One-on-one meetings with the editors; press release distribution; live interviews</td>
<td>Messages to this group should include: how the system works (plain language); benefits to everyone, including customers, other motorists and local communities. EL project teams should keep the media updated on schedule of the project as well as the vision for the system. Build relationship between EL PIOs (District PIOs assigned to EL projects) and media to ensure open line of communication.</td>
</tr>
<tr>
<td>Industry Personnel (Engineers, Planners, Etc.)</td>
<td>Use their existing advocacy groups/industry forums as opportunities to present.</td>
<td>Make sure they are up to speed on project status as well as operational benefits to region and customers.</td>
</tr>
</tbody>
</table>
these stakeholders and identifies messages that best resonate with these groups. Additional discussion on identifying project champions and encouraging their active support of the ELN is provided in the following sections.

5-2.2.1: Elected Officials

To facilitate support of the ELN through the implementation process, the metropolitan planning organizations’ (MPO) boards in Miami-Dade, Broward and Palm Beach counties; the Miami-Dade, Broward and Palm Beach counties’ commissions; local municipalities; and state and federal officials must be educated. These officials’ audiences view them as trusted sources, and their advocacy of the network can optimize public buy-in. Additionally, these officials’ support is critical because they have voting power on transportation and commission boards.

• **Strategy:** Group and individual meetings must be held with these representatives so team members can educate them on the project and ELN so they may ask questions in-person. Project materials should be provided in these meetings as well. Another option for obtaining buy-in from state and federal elected officials is to arrange tours of the existing projects to showcase their successes. Communication with elected officials is an ongoing, regular process that includes new members as they become stakeholders. It is important to show these leaders the proven results from 95 Express and other facilities.

5-2.2.2: Appointed Officials

County and municipal staff as well as agency employees, must be educated on the ELN. More detailed, technical information must be provided to these officials so they may answer questions from elected officials and the public.

• **Strategy:** If possible, group and/or individual meetings should be held with these representatives so team members can educate them on the ELN and they may ask questions in-person. ELN materials should be provided in these meetings as well, if possible. These officials and their communication resources must be engaged in the process and consider themselves part of the education process.

5-2.2.3: Community Leaders

Chairmen and board members of homeowner associations near affected areas, as well as church leaders and interest group advocates, should be reached out to and educated on the systems.

• **Strategy:** Meetings, whether in person or over the phone, with these community leaders should be held to educate them on how ELs benefit everyone: including customers and drivers who use the general purpose lanes. By providing an improved transportation infrastructure, local communities can be positively affected. These community leaders must also be shown how ELs can be a key tool in time savings, as well as a safe option for transportation. Advantages the systems provide to different groups should also be identified and presented to them. In any meetings, project materials should be provided, if possible. Any and all concerns must be addressed as quickly as possible to build the trust with the agency.

5-2.2.4: Major Business Owners

The business owners for major destinations on each EL corridor should be engaged in outreach activities. This group can serve as a resource to reach a larger audience of employees. Key
messages for this group include the benefit in travel time savings for employees and/or customers, the ability to reach a larger commute shed (and therefore be accessible to more potential employees and overall economic benefits).

**Strategy:** This group should be targeted early in the process. If properly informed from the beginning, these natural leaders can serve as key champions for the ELN. They should be engaged prior to construction and kept abreast of all project developments, serving as stakeholders in the project development process. They should be notified early of any construction impacts and associated mitigation. By identifying these owners, the team can coordinate with companies’ human resources departments to distribute information about the benefits of the EL network to employers. Benefits to showcase include improved travel times for using express lanes and express bus service (if applicable) giving employees access to work via Wi-Fi on the way to the office. Testimonials of ELs and express bus users should also be offered. Emphasize improved travel time resulting from the network and how this directly benefits local business, regional economy. Again, this group can also serve as ELN champions to the larger community and should be provided with appropriate information to outreach to the general public.

5-2.2.5: Business Community Leaders

Chamber presidents, members of the Latin Builders Association and economic board should be identified and reached out to.

**Strategy:** Presentations should be offered to boards on the benefits of the ELs network, as well as small business owners and business groups. Messages should be focused on economic opportunities from increased speed and reduced travel time, which include increased productivity, the ability to attract new businesses to the region and the potential expansion of the available workforce.

5-2.2.6: Media

Local newspapers, television stations, radio shows should be identified for all communities, especially minority or underserved communities.

**Strategy:** Editors should be reached out to for press release distribution as well as interview (including live interview or discussion) opportunities. How the system operates should be explained in plain language, and the fact that each facility benefits everyone and offers choice must be a point of emphasis in the message. The timeframe for expansion will likely be a talking point, so a message that clearly explains this must be developed, as well as contact information for each project. The difference between one network and individual projects must also be explained.

5-2.2.7: Industry Personnel

Engineers and planners in the Southeast Florida area must be reached engaged as they can serve as advocates of the ELN throughout the region. These include staff at MPOs, Regional Planning Councils, League of Cities, Clean Cities Coalitions, Chambers of Commerce and local jurisdictions. These individuals are seen as trusted sources of information on transportation related topics.

**Strategy:** These industry personnel must be educated to make sure they are up to speed on the operations and benefits to their corresponding region. Gaining these industry personnel’s support will be good for advocacy and project buy-in among customers. This can be done through technical presentations at agencies and offices throughout the region. Professional organizations associated with the transportation industry can also be a good outlet to update a broad group of professionals that may not be informed on the ELN initiative.

5-3: BRANDING/COLLATERAL

5-3.1: Implication

The ELN’s branding is important to establish a sense of consistency and reliability for customers who will use various facilities within the network.
### TABLE 5-3: KEY MARKETING TASKS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONSIDERATION</th>
<th>INDIVIDUAL EL</th>
<th>EXPRESS Lanes Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGOS</td>
<td>Flying &quot;e&quot;</td>
<td>Logo and color scheme has already been developed and will be used for each EL with state route name</td>
<td>Determine if network will have its own logo/look</td>
</tr>
<tr>
<td>MATERIALS</td>
<td>Presentations</td>
<td>Project-focused presentations will be developed that focus on the details of that project. These would incorporate discussion of how it ties into the network.</td>
<td>Create presentation about how regional network will operate and benefit community, schedule community presentation schedule</td>
</tr>
<tr>
<td></td>
<td>Fact Sheets/Newsletters</td>
<td>Create project branding material and distribute at key places throughout community</td>
<td>Have materials available and constantly updated explaining network and status of network development</td>
</tr>
<tr>
<td></td>
<td>Website/Social Media</td>
<td>Finalize policy on project websites and social media sites. Define whether they will be separate or consolidated.</td>
<td>Promote project website and social media to the community</td>
</tr>
<tr>
<td>EDUCATIONAL ITEMS</td>
<td>Talking points</td>
<td>Each project needs its own talking points on benefits, operations, enforcement, etc.</td>
<td>Network should have pre-approved talking points to be incorporated in all discussions on ELs</td>
</tr>
<tr>
<td>&quot;Before and After&quot; Videos</td>
<td>Creating this video proved successful on 95 Express, visually conveys benefits</td>
<td>Network video would show improvements to overall traffic grid as new legs of the project were added.</td>
<td></td>
</tr>
<tr>
<td>Educational Videos/Webinars</td>
<td>Post these videos on project websites, submit to media and project partners</td>
<td>Short impactful videos on benefits and long term goals of network</td>
<td></td>
</tr>
</tbody>
</table>

### 5-3.2: Alternatives and Considerations

Preliminary branding guidelines and exceptions should be developed early so materials can be developed early and updated frequently. The team should not wait until the ELN – or portions of it – is built to develop informational materials, as the public needs these materials as early as possible. **Table 5-3** identifies key marketing tasks that need to be established early in the implementation of the ELN. It also indicates what should be accomplished on a project level and a network level, which is described in more detail in the following sections.

#### 5-3.2.1: Logos

The ELN will use the “Flying e,” as seen on the 95 Express and 75 Express logos. Two options exist for the integration of this logo:

- **Individual projects:** The logo and color scheme have already been developed and will be used for each EL project in conjunction with the route name in front of the word “express.”
  - **ELN:** The team must decide if the ELN will have its own logo/identity so that the design process may begin. It is important for consistency to have an established look for the network before materials are created.

It should be noted that the “Flying e” logo does not meet MUTCD standards. Therefore, incorporation of this logo into guide signage must be carefully considered to ensure compliance with these standards.

#### 5-3.2.2: Materials

##### 5-3.2.2.1: Presentations
information for that project and surrounding community must be developed. It must present all components of that project (e.g. tolling setting, access points), as well as demonstrate overall network benefits.

- **ELN**: A presentation about how the ELN will operate and benefit the community must be developed, along with a schedule for showing this to the appropriate communities.

5-3.2.2.2: Fact Sheets/Newsletters

- **Individual projects**: Once branding materials have been finalized, fact sheets and/or newsletters must be developed and distributed in key places throughout affected communities.

- **ELN**: Materials must be readily available and constantly updated to explain the network and status of its development.

5-3.2.2.3: Website and Social Media

- **Individual projects**: Individual projects will use their respective project websites, similar to traditional project websites, throughout project production. Project information will be included on the network website once operational. Digital monitoring and proactive engagement is critical to the success of these projects. PIO staff should monitor public sentiment on the website, social media sites and other digital formats and use this information to continuously improve outreach strategy.

- **ELN**: The website must be promoted in the community by project PIOs and approved by FDOT Central Office.

5-3.2.3: Educational Items

5-3.2.3.1: Talking Points

- **Individual projects**: Though there will be many similarities, each project needs its own talking points on benefits, operations and enforcement (see Communications Impacts for more details on these talking points).

- **ELN**: The network should have pre-approved talking points to be incorporated in all discussions on ELs.

5-3.2.3.2: Before and After Videos

- **Individual projects**: Creating this video proved successful for the 95 Express project, as it visually conveyed the benefits of the project. Each project team must look into the cost and feasibility of creating such videos for each project.

- **ELN**: A video about the whole network must demonstrate improvements to the overall traffic grid as new “legs” of the system are added.

5-3.2.3.3: Educational Videos and Webinars

- **Individual projects**: These videos must be posted on all project websites, as well as submitted to project partners and the media. Webinars and technology based workshops can also lead to greater public engagement.

- **ELN**: A short, impactful video on the benefits and long term goals of the ELN should be created as well for publishing on the project website(s) and for distribution to partners and the media. Again, technology can be used to host virtual meetings regarding the network.

5-4: IDENTIFICATION of TARGET AUDIENCES for MESSAGING

5-4.1: Implication

Different individuals and groups have different understanding levels with respect to ELs and respond better to different types of messaging. Therefore, it is critical to develop messages targeted to the needs of the various stakeholders.

5-4.2: Alternatives and Considerations

Depending on the way in which a person or group intends to use the information, they will have different needs. For example, a transit user
TABLE 5-4: POTENTIAL AUDIENCES AND STRATEGIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONSIDERATION</th>
<th>STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON-CUSTOMERS</td>
<td>Non-customers of the system are stakeholders as well and should be educated about the system at a high level</td>
<td>Understand overall benefits, which can include enhance operations in the GP lanes, economic benefits and mode choice options.</td>
</tr>
<tr>
<td>BUSINESS OWNERS</td>
<td>Small business owner using lanes to get to next job</td>
<td>Could perceive ELN as too expensive, not conducive to helping small businesses (or large)</td>
</tr>
<tr>
<td></td>
<td>Large business owner using to get employees to and from and expand potential workforce</td>
<td>Make decisions for company based on making profit and improving service to customers, time savings</td>
</tr>
<tr>
<td>COMMUTERS</td>
<td>Transit</td>
<td>Express buses – amenities, benefits provided, where to catch and where to park</td>
</tr>
<tr>
<td></td>
<td>Carpoolers</td>
<td>Benefits to carpooling</td>
</tr>
<tr>
<td>TRANSIT AGENCIES</td>
<td>Various agencies with different customer bases</td>
<td>How to operate service within ELN; who is the point of contact for network; how will it work</td>
</tr>
<tr>
<td>LONG TRIP CUSTOMERS</td>
<td>Commuters</td>
<td>This is the intended user of the system. They will need to know the basics of how to use the system, how SunPass works, toll rates as well as the benefits of using it.</td>
</tr>
<tr>
<td>INFREQUENT CUSTOMERS</td>
<td>Use the sytem, but less than the typical commuter</td>
<td>Since this group is less familiar with the system, they will need to know (in addition to the basic operating rules for the long distance commuters) which projects can be used; how SunPass works; how to deal with merging traffic at end points; where are entry/exit points located; what to do if accidentally enter lanes.</td>
</tr>
<tr>
<td>TRUCKING COMMUNITY</td>
<td>Operating companies</td>
<td>Benefits of using/ not using network – less traffic in GP lanes; faster travel times</td>
</tr>
<tr>
<td></td>
<td>Distribution companies</td>
<td>Benefits of using it as well as general purpose lane improvements</td>
</tr>
<tr>
<td>Elected Officials</td>
<td>Local, state and federal</td>
<td>Use examples from successful 95 Express; overall benefits to congestion relief and getting other projects built sooner</td>
</tr>
<tr>
<td>MEDIA</td>
<td>All media must be targeted; large and small; English, Spanish, Creole; Print, radio and broadcast; local, national and international; general public and industry specific</td>
<td>How the system works (plain language); how SunPass works; benefits to everyone, including customers, drivers who use general purpose lanes, local communities that will be affected by improved infrastructure</td>
</tr>
<tr>
<td>PARTNER AGENCIES</td>
<td>MPOs, Regional Planning Councils, League of Cities, Clean Cities Coalitions and Chambers of Commerce, if properly educated, can help inform constituents</td>
<td>General information of how the system works as well as benefits targeted to their interest (e.g. air quality benefits to be provided to the Clean Cities Coalition)</td>
</tr>
<tr>
<td>TOURISTS</td>
<td>Those who will use system</td>
<td>How to pay; why to use; how tolling works in Southeast Florida; use Welcome Center and Visit Florida Convention Bureau to distribute info</td>
</tr>
<tr>
<td></td>
<td>Those who will not use system</td>
<td>Education to eliminate confusion about EL</td>
</tr>
<tr>
<td>EXISTING 95 EXPRESS USERS</td>
<td>Experienced users</td>
<td>Expanded network will operate differently. There will be new rules and requirements, and access points. It will be another educational campaign with additional benefits</td>
</tr>
</tbody>
</table>
or carpooler would be more concerned about the location of park and ride lots than how to determine the cost of a trip, which would greatly interest other users of the EL. To optimize outreach efforts, it is necessary to consider these individual needs of each group. Table 5-4 outlines the potential audiences and strategies for addressing their informational needs. The following sections provide additional detail.

5-4.2.1: Non-Customers

It is important to communicate with all members of the general public, including those who currently are not or do not intend to be customers. It has been noted that members of the general public who have only heard of the project through news media or friends, but do not ever use the lanes because they are not in close proximity to it or don’t have a need to, tend to form an opinion of the project based on their own belief system. These drivers could believe they do not need to understand the ELN because they do not use the facility. Non-customers can be separated into two categories: those who regularly travel in the local lanes on a facility that has an EL, and those who do not.

5-4.2.1.1: Local Lane Users

- **Strategy:** The communications team must identify and engage this audience to ensure they become aware of the benefits they are receiving. This will help the team gain their support for the network’s expansion. The team should create a communications plan that targets talking points for this audience. They should understand that even though they do directly use these projects, they receive a benefit because they also have less trip interruptions and more reliable speeds. They need to be aware that additional incident management services will clear incidents quicker along the facility, that the technology is helping manage traffic in real time and that there are less bottlenecks along the entrance ramps that are improving their trip (where applicable). Additionally, transit ridership (where applicable) is reducing congestion on the local lanes as well. The team should know these talking points.

5-4.2.1.2: Other Non-Customers

- **Strategy:** Non-customers of the project, who don’t travel along routes which have ELs need to be targeted on an ongoing basis. However, because they have not used the project, their messaging will be less technical or operational. The team should focus more on a philosophical and conceptual basis. Talking points, fact sheets, newsletters and email blasts should also be crafted and sent to this group via more mass messaging. This can be done by partnering with South Florida Commuters Services, SunPass, Miami-Dade Expressway Authority and other partners that have general driver databases. Messaging for this group may include:
  - **Misconceptions**
    - Revenue generation
    - Toll rates
    - More tolls for federally funded projects
  - **Benefits**
    - Improved operations in EL and GP lanes
    - Increased trip reliability
    - High benefit versus cost
    - Benefits to drivers and non-drivers
    - Transit
    - Economic benefits
    - Sustainability
  - **National projects**
    - Position the project as the transportation solution of the future
    - Used throughout the nation
5-4.2.2: Business Owners

Business owners are essential customers of this project (directly and indirectly). The purpose of ELs is to improve the regional transportation system and promote the economic livelihood of the community. By achieving this, tourists, large-scale event promoters, and other businesses will be attracted to the region and continue to come back.

This continued influx of visitors and promotion of the region is a vital stimulant to our local business and overall economy. It is important that businesses understand the connection between ELs and their bottom line. It is also important to take into account their concerns as business owners and clarify any misconceptions associated with the project.

- **Strategy:** The communications team needs to reach out to business owners on a variety of levels. This can be done through direct contact with businesses that are directly affected by a project, in close proximity to a project or that express direct concern. The communications team should engage these business owners, clarify any questions and reiterate the connection between a project's goal to improve regional transportation and their economic growth. The team should also continually address chambers of commerce offices and similar bodies to promote project benefits and the message of economic growth. Contact can be made by visiting chamber offices, making presentations, creating email groups and sending targeted messages. It is important this audience is continually addressed because it is among the main beneficiaries of these projects. It is up to the communications team to make sure it makes this connection.

5-4.2.3: Transit Users

Transit users are among EL project's customers. Well-functioning multimodal services aid EL operations. These transit users typically have different questions and concerns than toll-paying drivers. They are generally interested in transit operations such as bus routes, schedule, wi-fi connections, and park-and-ride safety and accessibility.

- **Strategy:** The communications team must be well aware what the ongoing concerns of these transit users are. This is especially important since these services are provided by the regional transit agencies. This means that interagency communication between all servicing parties is crucial to achieve customer satisfaction. Additionally, a project number and call center should also be available in case patrons need immediate contact. This call center may be run by both Miami-Dade and Broward County Transit. Patrons needing information from/for a specific agency may be routed accordingly through an electronic prompt. Currently, they each have a public customer service number for customers to contact. Service benefits, issues and misconceptions should also be addressed via the website, fact sheets, presentations and targeted e-mail blasts to maintain an ongoing dialogue with transit users.

5-4.2.4: Transit Agencies

The project team must understand transit's importance to the ELN's operations and be able to communicate its benefit to transit users and non-users. The team must work with Miami-Dade Transit (MDT), PalmTran and Broward County Transit (BCT) to ensure patrons' concerns and
issues are addressed at all times to maintain and potentially grow ridership.

- **Strategy:** The team must identify a transit champion to promote a unified approach to transit messaging. The public does not know the difference between each transit or transportation agency, so it’s important to provide a seamless means of communication and customer service. Additionally, the team must continually communicate transit benefits to its patrons and the general public at all times. The media, the public and elected officials typically see transit as a positive component of these project types and support its operations. Benefit messages can be sent through email blasts, website, fact sheets and presentations.

**5-4.2.5: Express Lane Commuters**

For the most part, customers, whether frequent or infrequent users, have an idea how the ELs work. They have chosen to enter the express lanes, they own transponders and have a general awareness of the project’s purpose. This segment of the general public has been exposed to the project in some direct way and will require ongoing, operational information and customer service.

Commuters receive a tremendous benefit from the EL. The lane’s limited access reduces trip interruptions for these commuters and increases their reliability and safety.

- **Strategy:** The communications team must identify these commuters and ensure they understand the reasoning behind the EL concept so that they support network expansion. Again, these commuters receive project benefits day in and day out, but they may not fully understand the reasoning behind the project concepts that are improving their trip. The team can identify this audience through SunPass and target them with messages via email alerts and other measures. Focus groups and surveys can also be conducted to gauge their opinion and address their concerns.

**5-4.2.6: Trucking Community**

This is another segment of the community that may feel like it is excluded from the benefits of the ELs. Like the local lane commuters, they are also beneficiaries of all the services resulting from these project types. The team needs to target this audience with customized talking points and address their concerns.

- **Strategy:** The team should target and engage the trucking community’s champions to address their concerns from the top down. They should also contact their advisory committees and other related groups. This group needs to be aware of the benefits as a result of these projects and that the network will work to expand on these benefits as they travel through our region.

**5-4.2.7: Elected Officials**

For the most part in Southeast Florida, elected officials stand behind the EL concept and should therefore support future expansion. However, they may not be fully aware of the network’s benefits nor all of its operational components. Continuing education is required because they are who their constituents go to with questions or complaints and therefore play a pivotal role with how the project is viewed in the community.

- **Strategy:** The communications team, in coordination with the FDOT legislative Affairs personnel, must see elected officials as partners in the process of education, implementations and operations and identify potential project champions in key geographic areas. They should not just be briefed at the beginning of the project. The team may want to create a group that will work to continually educate elected officials and brief them on the project’s on-going benefits and service results. Talking points for this group should also stress the additional resources and services that are benefitting all drivers, business owners and the community at large. Additionally, they must understand that these projects are cost-effective and promote sustainability in the long term.
CHAPTER 5: COMMUNICATIONS

5-4.2.8: Media

As a result of their coverage of 95 Express, the media has become more acclimated with the EL concept and its project goals. They have visited the regional TMC and spoken to District officials and spokespeople. For the most part, they have supported the project and helped the FDOT disseminate various message points. However, because the nature of their business is to gain ratings or online clicks, they may sometimes focus on the negative aspects of a project to sell the story. They will often air or publish the community’s concerns and bring them to FDOT for public response. The team must be aware of this and work with them to ensure they give the network balanced coverage.

• Strategy: FDOT Central Office (CO) will need to direct all PIO directors from all the agencies to be prepared and able to talk about the ELN. This means they must be well-versed on all EL projects, policies, business rules and schedules. The media must be well aware who these PIOs are so that they don’t get lost within all other project PIOs. As ELN spokespeople, these PIOs should create message uniformity and be readily accessible to the media when needed. These PIOs should maintain constant contact with the project’s engineers, construction teams and customer service managers. This will help them gauge project issues and be proactive with their messaging and how they approach the media before issues occur.

Additionally, they should have fact sheets for all service components as well as project videos and other items for quick and easy dissemination. PIOs should coordinate media visits to educate the editorial boards, news directors and producers about the ELN so that the correct information reaches the newsroom from the top down. Additionally, project engineers and leaders should also be identified since the media likes interviewing the technical team. Transparency is the key factor in gaining the media’s trust and having a successful relationship with them.

5-4.2.9: Partner Agencies

Business and special interest groups as well as planning agencies can serve as trusted information sources to the public. These entities, which include MPOs, Chambers of Commerce, Clean Cities Coalition and other planning and advocacy groups, should be educated early so they may be used as key resources for information distribution.

• Strategy: The communications team must engage and inform these groups early and often. Communications team must provide these groups with information on how the lanes work and their benefits, based on the interest of that particular group. Targeted messaging through fact sheets, educational videos, speakers bureau training, and online copy can help these entities serves as partners to the communications effort.

5-4.2.10: Tourists

Tourists’ unfamiliarity with EL projects and how they operate can impact the facilities and network as it relates to safety, operations and revenue.

• Strategy: The communications team must be aware about this group’s impact on facility operations. They should work with project engineers to ensure highway signage is clear and consistent (when possible). The team should contact tourism boards, rental car agencies, hotels and event coordinators to educate them about the project and ELN.
5-4.2.11: Existing 95 Express User

95 Express users have become accustomed to the current system. They are a great audience to engage because they have a solid idea as to how the system works and support its concept. However, they will have questions as the project expands and as other EL projects continue to launch. This is especially important as business rules change, an example being that other EL projects outside of 95 Express will not allow toll free travel for registered HOVs. The team should manage their user experience cautiously as they transition from the current project to the emerging ELN.

- **Strategy:** The team should identify current users through SunPass, South Florida Commuter Services, transit and other means to engage these users and address their specific questions. The team should also provide updates in SunPassages (the SunPass newsletter). The FDOT should be reassuring, informative and responsive in their approach with this group.

### 5-5: INTERNAL VERSUS EXTERNAL

#### 5-5.1: Implication

As with communicating to the public and stakeholders, communications within and between agencies should be tailored to the informational need. Processes should be defined to determine who will be in charge of various communications task and who will be assigned as contacts from the various agencies, including FDOT, MDX, FTE, and transit agencies.

#### TABLE 5-5: COMMUNICATIONS RESPONSIBILITIES

<table>
<thead>
<tr>
<th>STAKEHOLDER</th>
<th>INTERNAL</th>
<th>EXTERNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FDOT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Office</td>
<td>Confirm best internal communications alternative</td>
<td>Provide information for PIO to disseminate to their contacts</td>
</tr>
<tr>
<td>District 4</td>
<td>Confirm best internal communications alternative</td>
<td>Use of existing communications including website</td>
</tr>
<tr>
<td>District 6</td>
<td>Use of Management Council meetings, internal newsletter, training of key personnel and consultant PIOs</td>
<td>Already disseminating information through this source</td>
</tr>
<tr>
<td>Florida's Turnpike Enterprise</td>
<td>Use of internal staff communications</td>
<td>Use of several communication resources to reach Turnpike/SunPass customer, including SunPassages</td>
</tr>
<tr>
<td><strong>TOLLING AGENCIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miami Dade Expressway Authority</td>
<td>Use of internal staff communications Town Halls and newsletter</td>
<td>Use of existing communications outlets to reach MDX customer. This could include website, email distribution, media.</td>
</tr>
<tr>
<td><strong>TRANSIT AGENCIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various Agencies</td>
<td>Use of internal staff communications</td>
<td>Use of existing communication outlets to reach riders. This could include website, on-board information and email distribution.</td>
</tr>
<tr>
<td><strong>MPO'S</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miami-Dade</td>
<td>Use of internal staff communications</td>
<td>Website communication, inclusion of EL projects in Long Range Planning efforts</td>
</tr>
<tr>
<td>Broward</td>
<td>Use of internal staff communications</td>
<td>Website communication, inclusion of EL projects in Long Range Planning efforts</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>Use of internal staff communications</td>
<td>Website communication, inclusion of EL projects in Long Range Planning efforts</td>
</tr>
</tbody>
</table>
5-5.2: Alternatives and Considerations

To ensure efficient and appropriate communication within and between the agencies involved in implementing the ELN, communications protocols should be established which are consistent to the extent possible. Table 5-5 outlines the various stakeholders and their internal and external communications responsibilities. The following sections provide additional detail.

5-5.2.1: Florida Department of Transportation

5-5.2.1.1: Central Office

FDOT CO supervises the ELN’s expansion by providing policy directions that result in major decisions impacting individual EL projects. It is important that each EL project team coordinate on an ongoing basis with this office to keep CO informed about latest project developments, message points or other issues. Any communications with CO regarding the ELN should be coordinated through the district and the regional ELN authority.

• **Internal**: The communications staff for each project should identify a representative to coordinate with CO. This person should disseminate all information to CO to keep the office informed about latest developments and message points. On issues relating to the ELN, the representative should coordinate and CO communication with the district and ELN regional authority. In coordination with the District and ELN authority, the project team should conduct regular conference calls to brief CO about the ELN and its latest developments. When possible, the team should invite CO staff to visit the individual projects, host presentations (video conferences) and provide them with network/project materials. The project team should also ensure CO knows the talking points and project benefits. The goal is to make sure CO is kept aware of all information so that it can actively participate in the process and take ownership of all related activities.

• **External**: The project team should provide CO with approved fact sheets, social media material and other information so CO can share with its internal and external contacts. This will promote a uniform message throughout the agency and increase project understanding.

5-5.2.1.2: District 6

FDOT District 6 (D6) has been operating 95 Express since 2008 and has a keen understanding how ELs work. FDOT D6 engineers, PIOs and consultants have been managing project communications with the media, the public and industry professionals. However, no one has experience at managing the ELN. Therefore, communications contacts for each EL project will work with this office to ensure it is aware of all other ELN developments not associated with FDOT D6 to keep the messaging consistent for the ELN.

• **Internal**: The EL communications staff should identify FDOT D6 points of contact to inform them about latest network developments. The project team should educate the district about the network’s talking points and benefits, provide contact people with collateral materials and include them in all educational efforts. These contacts should also be held responsible for disseminating pertinent information to their staff and consultants. Additionally, they should host internal educational presentations, tours or workshops on a regular basis. The goal is to make sure FDOT D6 staff are part of ELN messaging.

• **External**: FDOT D6 has been disseminating 95 Express information to external contacts since 2008. The district has information on its websites, and sends email blasts to partner agencies, traffic incident management team members, 95 Express users and others. It has published various articles, operational reports and received national awards. Additionally, FDOT D6 hosts regular tours at the TMC during which it talks about 95 Express. These efforts should be continued for the ELN. The communications team should equip this office with the proper materials to use and share.
5-5.2.1.3: District 4

FDOT District 4 (D4) has experience in managing public relations for the 595 Express project and has established several educational resources to disseminate project information internally and externally. Additionally, FDOT D4 was part of the 95 Express Phase 1 launch efforts and is leading public information efforts for Phase 2.

- **Internal**: The EL communications staff should identify points of contact for FDOT D4 and equip them with ELN information for internal staff dissemination. FDOT D4 should also be encouraged to host internal education presentations, tours and workshops to increase staff understanding and raise awareness from the inside out. The communications team should include these contacts in all teleconferences and correspondence.

- **External**: FDOT D4 already has several resources that it uses to disseminate information. The district should continue to use these outlets to inform its external contacts about the ELN’s development. This information should be consistent with what is disseminated by CO and District 6.

5-5.2.2: Florida’s Turnpike Enterprise

Florida’s Turnpike Enterprise (FTE) has experience with managing education efforts for EL projects through its support of FDOT D6 on 95 Express Phase 1. It was a key player in the branding and marketing of 95 Express Phase 1. In addition, via its SunPass Operations, FTE already works with FDOT D6 in daily operations because FTE is the toll-collecting agency for the project. Also, it conducts product marketing for SunPass and has extensive experience in customer service.

FTE is an excellent resource for the ELN because it has marketing experience, an allocated budget and a wide geographical reach. It is important that these resources be identified and maximized for ELN expansion education. It is also important to note that FTE plans to eventually operate ELs within its existing tolled facilities. This is a new concept and will require focused messaging.

- **Internal**: FTE has to craft its messages according to how their EL projects will work. The communications team should ensure it promotes the similarities in these projects and that they highlight the same talking points and benefits (where applicable). FTE should also be included in all teleconferences and correspondence related to ELN communications. FTE should disseminate all information received to internal staff and host educational activities to increase awareness internally.

- **External**: FTE has more marketing resources available to use for external education purposes. These resources should be maximized (where appropriate) to educate its customers, contacts, partner agencies and vendors.

5-5.2.3: Tolling Agencies

5-5.2.3.1: Miami-Dade Expressway Authority

Miami-Dade Expressway Authority (MDX) has not yet operated ELs, but it’s planning to operate similar projects in the future and will have an important role at the regional level.

MDX’s projects, like FTE’s, may charge a variable toll within a tolled facility. Its projects will present the public with another dimension of ELs and this will result in increased interest and public questions. It is important that FDOT and FTE communicate the same messages throughout the next few years to ensure consistency. It will be important to maximize the marketing resources MDX has (as appropriate) to ensure unified messaging and branding.

- **Internal**: MDX will have to craft its messages according to how its projects will work and educate internal staff accordingly. MDX will need to ensure everyone knows about the projects and associated benefits to ensure internal acceptance.

- **External**: It is important MDX promotes the unified regional message of ELs when introducing its projects. They will have to
promote the same talking points to focus on the similarities of the ELN. MDX represents a key piece in the ELN, so its messaging and public education efforts must be as consistent as possible.

5-5.2.4: Transit Agencies

Transit is an important component in ELs. Transit service in ELs provides additional choice to the public. The public, the media and stakeholders have consistently seen this as a positive aspect in ELs.

5-5.2.4.1: Miami-Dade Transit Authority

Miami-Dade Transit Authority (MDT) has been operating bus rapid transit service with BCT or 95 Express since 2010. It has gained a great deal of experience in operating, marketing and supporting customer service efforts in the past few years and is poised to continue to provide value as the ELN expands. It is important MDT remains an active participant in all marketing meetings so that it can promote the regional talking points.

- **Internal**: MDT has become accustomed to operating 95 Express’s Express Bus service. It will be important to educate internal staff about new projects to ensure they know different business rules and operating guidelines. It will also be important to educate staff on how to plan for the future system, specifically incorporating needed projects into the work program.

- **External**: MDT must work with the respective project agencies to ensure proper branding and service information for each EL project (as applicable). Service patrons will depend on them for route information and customer support. It is imperative they maintain updated service information and open lines of communication with their patrons. Additionally, MDT must continually assess and share the benefits of express bus service so that the regional communications team can include them in presentations and project materials.

5-5.2.4.2: Broward County Transit

Like MDT, BCT has had extensive experience servicing BRT for 95 Express. It has led marketing, branding and customer service support efforts for its respective routes and is in continuous communication with FDOT. BCT should follow the same model as the ELN expands and use its marketing budget to educate patrons about new services as they are added.

- **Internal**: BCT must educate internal staff about all new services as they are added. Staff must be fully aware of business rules and service guidelines for each project so they can communicate it to the public.

- **External**: It is imperative BCT updates all project service information on to respective websites, fact sheets and public information materials. Its customer service representatives must be ready and able to respond to all project-related inquiries and communicate service benefits to partner agencies so they are included in presentation and project materials.

5-5.2.5: Metropolitan Planning Organizations

5-5.2.5.1: Miami-Dade Metropolitan Planning Organization

The Miami-Dade MPO has been supportive of ELs since 2008. The organization understood its concept since the beginning, and it is satisfied with the travel benefits 95 Express has delivered. As the ELN expands, the team must ensure this level of satisfaction and support is maintained. The public looks to this governing body for answers and it is held responsible for the transportations decisions that are made. Because of this, Miami-Dade MPO should be kept briefed on all major developments. The communications team should work with the Miami-Dade MPO’s PIO and share all project benefits information, materials and collateral.

5-5.2.5.2: Broward Metropolitan Planning Organization

The Broward MPO has not experienced an...
operational EL project in its district yet, but is supportive of the concept. The Broward MPO was actively involved in the development of 95 Express and is close to its expansion to Broward County. The regional team must manage the ELN’s expansion in a seamless way to deliver the same level of satisfaction it has experienced thus far. The communications team must share developments with Broward MPO and its PIO on an ongoing basis.

5-5.2.5.3: Palm Beach Metropolitan Planning Organization

The Palm Beach MPO is aware of the EL projects, but it has had less exposure to EL operations, impacts and benefits, as compared to the Broward MPO. The Palm Beach MPO’s PIO and other staff will need to continue to be more informed and engaged, especially as its constituents become more affected by these projects. There will be more questions from the public and the media as the ELN progresses, and the Palm Beach MPO must be educated and prepared to handle this.
The addition of toll collection, adds considerable financial decisions to infrastructure projects, such as express lanes (ELs). Typical funding considerations now include innovative financing approaches in addition to the traditional project funding options. Decisions must also be made regarding the allocation of toll revenues.

The development of a network of ELs will also bring about a host of additional considerations regarding the budgeting and allocation of project expenses across the network. Considerations will need to be made regarding what constitutes a project expense versus a network cost.

The evaluation of all of these financial considerations are presented in the following chapter. This includes the assessment of potential alternatives and recommendations on what requires resolution to ensure a coordinated EL network (ELN) in Southeast Florida.

6-1: DELIVERY APPROACH for NEW EXPRESS LANES

6-1.1: Implication

As noted in the Planning chapter, innovative project delivery approaches have recently become more prominent in infrastructure project. These concepts, which include public private partnerships (P3s), allow agencies to expedite design and construction and can enable the leveraging of limited transportation funds as well as innovation to deliver projects that would likely be impossible to deliver using traditional approaches. The following sections describe the various delivery options, pros/cons of each option and recommendations for delivery approaches for the ELN.

6-1.2: Background and Information

The primary drivers for the selection of the appropriate delivery approach are funding availability, costs to deliver, risk responsibility and time to market.

The costs to deliver is a function of whether the project consists of utilizing the existing corridor footprint with minimal alterations similar to the approach taken for the 95 Express
lanes versus a full-corridor design effort that will involve significant alterations within the existing corridor like 595 Express. While not always a well-known fact, ELs generally don't generate sufficient revenues to fully fund a corridor overhaul and in many cases not enough to develop the facility within an existing corridor. That being the case, the functional question becomes what level of start-up subsidy is available or can be made available to get the system under way and when these funds will be available.

Florida has extensive experience in the application of innovative structures to deliver projects. These tools include financing methods such as Design Build (DB), Design Build Finance (DBF), P3s and more. In projects like ELs that generate revenue and may require a subsidy as well, it is important to consider all of the delivery approaches based on specific project or system needs.

Time to market is a combination of the status of several activities, including the environmental review and clearance for the corridor, the traffic and revenue analysis and the extent of subsidy needed to move the project forward. Due to major congestion issues on I-95, the need to minimize time to market was critical. The ability to work within the existing footprint, which reduced required start-up subsidy, enabled the use of a DBF method, which helped accomplished the reduced time to market goal for 95 Express Phase 1.

The Florida Department of Transportation (FDOT) has established that the primary focus for the Southeast Florida ELN to be throughput, while prudently trying to optimize revenue. This approach may eliminate one option for P3s where the private entity assumes the risk of toll revenues and, as such, looks to maximize revenue for a given facility. This in itself does not rule out a P3 approach, but it does influence the need for the development of business rules and standardized operating procedures to meet FDOT's and any potential private sectors’ primary goals and objectives.

It is important to outline key financial elements of choosing a delivery approach that can have a heavy influence on the approach that is chosen.

Below are short descriptions of financing and delivery approaches that can be applied to ELs.

6-1.3: Project Financing and Delivery Tools

Project finance refers to specially designed techniques and tools that supplement traditional highway funding methods on a "pay-as-you-go" basis from available funds (EL tolls and grant funds such as from FDOT Work Program funded primarily by federal and state motor fuel taxes and state vehicle fees), improving government’s ability to deliver transportation projects. Project finance typically entails borrowing money either through bonds, loans or other financing mechanisms. Borrowing money for project implementation helps complete or accelerate implementation of needed infrastructure.

But just like borrowing money for a mortgage or college education, project finance tools require a repayment source. In many instances, project finance tools require the development and imposition of new revenue streams to pay back bonds or loans issued to support the investment.

Project finance is typically used for large capital projects in cases in which using pay-as-you-go does not make good planning and programming sense. These are situations where the project’s capital needs would consume most if not all available funding – and still often fall short of being fully funded. Further, given long-term benefits of transportation infrastructure, it can be economically sound to spread the project costs over the asset’s lifecycle.

However, project finance comes at a cost, because interest is paid over the long-term for the money that is borrowed today. But the additional cost of financing might be justified if it is less than the potential project cost increase due to inflation or it is outweighed by the benefits of having the project available in the near-term.

Most project finance tools take advantage of programs established by the U.S. Department of Transportation (USDOT) at the direction of Congress.
6-1.3.1: Project Leveraging through Bonding and Loan Programs

6-1.3.1.1: Bonding

**Municipal Debt**

Municipal debt, in the form of bonds, can play a role in funding transportation. When the debt is guaranteed by the government’s taxing ability, it is called General Obligation debt. However, when the repayments are guaranteed from a dedicated revenue source, other than taxes, it is called revenue-backed bonded debt. Toll roads generally issue revenue bonds. Federal tax law provides the key advantage that municipal debt has over most other types of debt. It is tax-free debt. The investor is not taxed on the interest he/she earns and is therefore willing to accept a lower interest rate. Municipal debt is therefore less expensive to issue than debt issued by a corporation. The primary limitation of municipal debt is the generally accepted maximum term of 30 years for the repayment of the debt and industry requirements for debt service coverage that restricts the amount to be financed.

**Revenue Bonds**

ELs comprise a tolled facility. The revenue stream from the tolls would be used to issue and repay debt service for project bonds. The final form of these revenue bonds depends on the final project ownership/operations structure. For example, will each corridor be considered for bonding individually or would an approach be considered that would merge multiple corridors into a “system approach” in which toll revenues from all corridors in the system are pledged to the repayment of the bonds?

**Private Activity Bonds**

Federal tax law has encouraged the private construction of infrastructure projects such as utilities and wastewater treatment plants by allowing municipalities to issue tax-free debt. The responsibility for repayment of the debt is that of the private contractor, not the government. This is sometimes called “conduit financing.”

6-1.3.1.2: Project Loan Programs

**Transportation Infrastructure Finance and Innovation Act**

The Transportation Infrastructure Finance and Innovation Act (TIFIA) Credit Program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. A TIFIA project must pledge repayment in whole or in part with dedicated revenue sources such as tolls, user fees, special assessments (taxes), or other non-federal sources. TIFIA was created because state and local governments that sought to finance large scale transportation projects with tolls and other forms of user-backed revenue had difficulty getting financing at reasonable rates. Tolls and other project-based revenues are difficult to predict, particularly for new facilities. Although tolls can become a predictable revenue source over the long-term, it is difficult to estimate how many road users will pay tolls, particularly in the initial “ramp-up” years after construction of a new facility.

Similarly, innovative revenue sources, such as proceeds from tax increment financing, which involves future redevelopment along a corridor or in zones such as around park and ride lots that generate a growth in property taxes with all or a portion of the “tax increment” being dedicated to repaying a loan, are difficult to predict. TIFIA credit assistance enables these projects to obtain financing in the private market. To allow time for facility construction and ramp-up, in some cases, initial TIFIA repayments may be delayed until 5 years after substantial completion of the project. The maximum loan repayment term is 35 years after construction completion. Each loan’s exact terms are negotiated between USDOT and the borrower, based on the project economics, the cost and revenue profile of the project, and any other relevant factors.

Florida has been very successful in being selected for TIFIA loans. The Miami Intermodal Center, the Port of Miami Tunnel and 595 Express all received TIFIA loans.
**State Infrastructure Banks**

State Infrastructure Banks (SIBs) are state-run revolving funds that make loans, provide credit enhancements, and other forms of non-grant assistance to surface transportation projects. There are two different SIB programs in Florida. The federal SIB Program was initially funded with Federal-Aid (Title 23) highway funds. The state SIB program was funded completely from state sources. Projects using the federal SIB program must be Title 23-eligible, while those using the state SIB program do not. SIB applicants must have a stable future revenue source from which the loan will be repaid.

**Commercial Debt**

Existing commercial debt borrowing rates are at historically low interest rates which make bank loans attractive for a portion of the financing component of P3 projects.

**6-1.3.2: Project Delivery Approaches**

With projects such as the ELs, due to their size and complexity, the procurement approach will have a significant impact on the final project financial structure and financing tool sets to be utilized to produce the project. This section will discuss various delivery approaches that should be considered as part of developing EL projects.

**Table 6-1** shows a comparison of project delivery approaches.

**6-1.3.2.1: Design Bid Build**

With Design Bid Build (DBB), the owner engages an engineer to prepare the design of the complete facility, including construction drawings, specifications and contract packages. The design package is then presented to general contractors who bid for the work and engage subcontractors to provide various aspects of the project. Usually the lowest bid is selected. The selected contractor is then responsible for building the facility according to the design. With this project delivery system, the owner retains more control over the project with the individual selection of the engineer and contractor.

This project delivery system has been the most widely used and is well understood because of clearly defined roles for the parties involved. Additionally this approach is typically used where the Department and project partners have set aside 100% of the project funding or will manage the leveraging of project revenue sources internally to fully finance the project.

**6-1.3.2.2: Design Build**

DB combines into a single contract the design and construction requirements of a project, all in accordance with standard FDOT criteria, specifications, and contract administration practices. These projects allow the Design-Build Firm to participate in the design in an effort to fix costs and expedite construction. FDOT is authorized to use the DB process on buildings, major bridges, and limited access facilities such as ELs.

The DB contracting process and contract administration will follow standard FDOT practices unless differences are otherwise identified. Districts are responsible for conducting the DB contracting process for projects within the managing district. Typically the use of the DB procurement approach is aligned with projects that are fully funded by FDOT and any project partners and where FDOT retains control over project revenues and any project leveraging based on those revenues.

**6-1.3.2.3: Design Build Finance**

Florida Statute 334.30 created within FDOT the ability for partnering in the financing of a project with the contracting entity. This approach has been designated as DBF in that it utilized the existing FDOT DB program procurement approaches and guidelines but also allowed for the interim financing of project funding gaps by the selected contractor. The primary benefit of this approach is the advancement of production while allowing FDOT to repay the project from funds programmed outside the five-year work program. FDOT District 6 (D6) has utilized this approach to implement a number of improvements including the SR-826/SR-836 Interchange and 95 Express Phase 1.
6-1.3.2.4: Design Build Finance Operate Maintain

Florida Statute 334.30 also allows FDOT to implement major projects utilizing the P3 procurement approach. Under this approach FDOT shares project risk with a private partner over a defined term for a given project. This approach has been utilized by FDOT for both the Miami Port Tunnel and the 595 Express projects.

The Design Build Finance Operate Maintain (DBFOM) approach offers several options for structuring the agreement based on the level of risk and/or control the public sector wants to transfer to the private sector:

- **Concession:** The use of a concession approach for the DBFOM is generally associated with the project sponsor turning over major project risk to the private party to include design and construction risk, financing risk, as well as operation risk for a defined period of time (term). This is the approach utilized for the Miami Port Tunnel project, for which the Department did not have the in-house project expertise or experience required for a major tunnel project. At the end of the defined term, the project operations revert to the project sponsor.

  - **Evaluation of risk:** Depending on the FDOT’s desired risk exposure the concession can be set up to allow for certain risk to be maintained by the public sector while others are born by the private sector partner. This approach requires a full risk analysis and a determination early in the project development cycle as to which risks will be assigned to each partner.

  595 Express is an example of this type of approach in that FDOT maintained the toll risk to ensure that toll rates are designed to maximize throughput versus revenues for this facility.

### TABLE 6-1: COMPARISON OF DELIVERY ALTERNATIVES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROS</th>
<th>CONS</th>
</tr>
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<tbody>
<tr>
<td>DESIGN BID BUILD</td>
<td>• Project sponsor retains maximum control of all stages of project</td>
<td>• More difficult to acquire TIFIA loans • Typically less efficient method to deliver project in terms of dollars and time</td>
</tr>
<tr>
<td>DESIGN BUILD</td>
<td>• Project sponsor retains operating/toll setting control • Efficiencies through combining design and build into one contract • Opportunity for cost savings through Alternative Technical Concepts (ATCs)</td>
<td>• Greater financial risk retained by project sponsor • Lifecycle costs not taken into account</td>
</tr>
<tr>
<td>DESIGN BUILD OPERATE MAINTAIN</td>
<td>• Lifecycle costing efficiencies • Opportunity for cost savings through Alternative Technical Concepts (ATCs) • Project sponsor retains operating/toll setting control</td>
<td>• Project sponsor retains operating revenue risk • Owner risk involved in developing specifications as they must cover all aspects of design, construction, operations and maintenance (which can extend periods up to 20 years)</td>
</tr>
<tr>
<td>DESIGN BUILD FINANCE OPERATE MAINTAIN</td>
<td>• Reduced revenue risk for project sponsor compared to DB or DBOM • Greater certainty of on-time construction • Lifecycle costing efficiencies</td>
<td>• Private sector may maintain toll setting control • Risk involved in developing specifications as they must cover all aspects of design, construction, operations and maintenance (which can extend periods &gt; 20 years)</td>
</tr>
<tr>
<td>CONCESSION AGREEMENTS</td>
<td>• Encourage design/lifecycle efficiencies • Allows for performance based premiums</td>
<td>• Toll setting responsibility could and should be given to private sector (within provisions set forth in P3 agreement)</td>
</tr>
</tbody>
</table>
• **Availability Payment**: An Availability Payment structure refers to the method of repayment for the P3 approach. This approach has been used in Florida to allow for the assignment of specific risk as well as to establish a predetermined payment amount for large projects funded from a combination of funding sources. For example, in the 595 Express project FDOT desired to transfer the design, construction and operation risk to the private party while retaining the toll risk for the ELs in the corridor. The Port of Miami is also being delivered using the availability payment structure.

6-1.4: Best Practices and Current Deployment

FDOT has extensive experience with all different types of financing and delivery approaches except a revenue-based P3. This includes EL projects such as 95 Express Phase 1 (DBF) and 595 Express (P3 Availability Payment approach). In addition, Florida Statutes in Section 334.30 requires analysis to compare a traditional approach to an innovative delivery approach like P3 before moving forward with the delivery approach. This helps ensure that FDOT evaluates all major options before moving forward with larger projects like ELs.

FDOT also has extensive experience with revenue bonds backed by toll revenues. This includes standalone facilities like Alligator Alley (I-75) and Sunshine Skyway (I-275) and also “system approaches” like Florida’s Turnpike Enterprise (FTE) where a number of toll facilities are combined together and pledged to repay the bonds. Projects delivered for these facilities have included a combination of traditional delivery approaches and also the DB approach.

6-1.5: Recommendations

It is recommended that FDOT continue to evaluate the various finance and delivery approaches for ELs to ensure the best approach is selected for each corridor. It is important to ensure this includes both capital improvements and operations to monitor the best approach to deliver the ELs.

6-2: BUDGETING/MANAGEMENT of EXPENSES

6-2.1: Implication

The 95 Express project was started as a pilot and has grown into a successful well established EL project. As the ELN builds out it will be critical to identify those areas that will be managed as a network and those managed by project and how the cost of these facilities are budgeted and managed.

6-2.2: Background and Information

This section discusses a potential process for the budgeting and management of the various expenses that could be applied against the toll revenues and also those that might be paid via other sources that are part of delivering the ELN. Currently FDOT Central Office (CO) is examining financial issues and standards related to budgeting and the management of expenses for EL projects and networks across the state. As those standards take shape and become defined, this document can be updated to recognize new Statewide standards for ELs.

Currently, on 95 Express, the budgeting of expenses for the cost of operations and maintenance is coordinated by the FDOT D6 Intelligent Transportation Systems (ITS) manager. In addition, the district’s ITS manager provides leadership for the ITS programs in FDOT D6 , and also as part of these duties, the leadership for 95 Express under the direction of the FDOT D6 Secretary and Director of Operations.

The budget for 95 Express is accumulated for major categories including:

- Toll collection (provided by FTE)
- Operations (provided by FDOT D6 direct or via contract services)
  - Transportation management center (TMC) (direct cost)
  - Incident Response Team (IRT)
  - Enhanced Florida Highway Patrol (FHP)
services
» Enhanced Road Ranger services
» SunGuide software development
» Utilities
» Toll and revenue analysis
» High occupancy vehicle (HOV) registration and SFES customer service (provided by SFES)

• Maintenance
» ITS equipment maintenance/repair/minor parts
» ITS equipment parts with lifecycle replacement
» Roadway delineators

• Transit service (provided by Broward County Transit [BCT] and Miami-Dade Transit [MDT])
» FDOT management and oversight allocated cost
» Repayments of advances from the FDOT State Transportation Trust Fund (STTF)
» 95 Express capital cost
» 95 Express operations and maintenance cost

The 95 Express project was developed as a pilot project and, as such, comprehensive budget development and accounting processes were not developed for the ELs program. 95 Express is now a widely accepted project in Southeast Florida that has achieved national acclaim and this has led to the expansion of 95 Express to Phase 2 and 595 Express that are under construction as of the date of publishing of this document.

This acceptance and expansion of the ELN leads to the need for a more comprehensive budget and accounting system and processes for ELs. This includes the development of budgets that reflect all direct costs associated with developing (capital cost) and operating (operations and maintenance costs, plus periodic replacement costs) ELs. In addition, it would also be important to develop indirect cost associated with the management and oversight of the ELs for a full picture of the total cost of ELs under accounting business practices.

Within FDOT, a number of processes could be combined to effectively development budgets and account for the cost of ELs. The key is to provide processes that provide timely and relevant information with the least time and expense to capture the information. Some examples of how FDOT tracks costs include:

• **Project numbers** may be established and assigned to the overall EL segment to track cost. This is the most common process utilized by FDOT.
  » Work Program items: Projects are established with estimated cost and the expected source of funds to pay for these cost in the FDOT Work Program system. This can be used for common Work Program elements such as contracted resources (e.g., support services for capital cost such as design and construction) and for operating cost like the Traffic Management Center, Road Ranger and Incident Response services.
  » Operating budget items: Operating budget includes items like FDOT in-house staff and expenses (e.g., travel, supplies, utilities, and similar items).
  » Project number charges: Project numbers are linked to the EL projects and when invoices are paid or employee time is reported the project numbers for the ELs are used to "charge" costs to the ELs that are directly associated with developing and operating the ELs.

• **Contract numbers** are assigned to contracts when executed and these contract numbers are routinely linked to project numbers when set up. When payments are made the costs are then captured by the contract number and project number that would be linked to the ELs.

• **Cost centers** are set up in FDOT to reflect location and also function. Specific cost centers could be set up that link to ELs and budgets.

• **Budget categories** may be established for special categories as well, however, these items are tightly controlled and have to be coordinated with the Governor’s Office and Legislature through the annual legislative budget process.

• **Trust funds** may be established to capture the revenues and costs associated with a corridor or network of ELs. The trust fund totally segregates the funds from other funds in FDOT and accounts for the funds through the FDOT and overall State of Florida accounting system.
• **Indirect cost plans** are established that link general cost of the organization, such as the cost of FDOT CO and district-level management and administrative functions, are then allocated over costs that are directly charged to specific projects in proportion to the overall direct cost. This captures the total cost when added to the direct cost captured through the means described above.

It is likely that a combination of the above processes will be “packaged together” to provide a comprehensive budgeting and accounting process for ELs as the ELN continues to build out in Southeast Florida.

Currently, the toll revenues are collected by FTE and transferred to a special account for 95 Express managed by the FDOT Office of the Comptroller in the CO. The representative units that support 95 Express submit request for payment of expenses to the FDOT Office of the Comptroller in the CO. The Office of Comptroller reviews and approves the request for payment to be paid from the 95 Express toll revenues. The budget provided by the FDOT D6 ITS manager serves as the guide for the expenses to be paid from the 95 Express toll revenues.

For FDOT, units such as FTE (for toll collections) and D6 (for toll operations, roadway maintenance, and related cost) are first paid for direct cost associated with the EL and then the refund amount may be requested to the Office of Comptroller and, if approved, the funds are transferred to reimburse the FTE Trust Fund or STTF as applicable. BCT and MDT operate in the same manner and requests refunds from the FDOT Office of Comptroller.

The process for accessing the services needed for 95 Express has evolved over time. In most cases existing FTE and FDOT D6 budgets and contracted services (consultants) were accessed to provide the various services for 95 Express, such as the TMC operations, IRT, FHP, SunGuide software, Road Ranger, ITS equipment, toll collection software and equipment, etc. For 95 Express, this process has served the project well. However, there is the potential for conflicts if the primary purpose of the contracted services conflicts with the needs of 95 Express. This could lead to conflicts that might impact the service delivery of 95 Express and future ELs in the ELN. As EL projects grow in number and complexity it may warrant the creation of certain contracted services and possibly internal resources that are dedicated to the ELN. This is critical, as the travelling public is paying a toll for a premium service. Under these conditions it is important that the ELs receive priority in service delivery for the travelling public. This has been accomplished already in certain areas on 95 Express by enhancing the services for FHP, road rangers and incident response teams with the enhanced services dedicated to use only on 95 Express. There may be other areas that as the system grows need to be broken out specifically for ELs to ensure prompt service delivery.

However, a number of key areas such as communications, software development, ITS and toll equipment maintenance are being run via contracts where 95 Express shares the resources with the primary use for these contracted services. In some cases 95 Express does not have dedicated resources in these contracts and has to “request” services from the manager responsible for these contracts.

**6-2.3: Best Practices and Current Deployment**

In our reviews of other ELs across the country there is not a situation that involves multiple agencies, districts, counties, and MPOs. As such, the process for the development and management of the budget and expenses for these entities is much simpler.

Florida is breaking new ground and the next steps will be critical to ensure FDOT’s goal of projects which are consistent, predictable, and repeatable for ELs. This should also lead to efficiencies in key areas such as software development, signage, toll collection methods, ITS and tolling equipment, operating methodologies, transit service, etc. This provides an opportunity to develop solid efficiencies that lead to lower annual operation and maintenance cost, thus stretching the toll revenues further.
Some key policy questions to consider include:

1. What EL program areas should be budgeted and managed at a network level?

2. “Who” should oversee the development of the budget and management of the ELN for any areas that will be managed at a network level?

3. Should an EL function be set up to provide oversight for select functions to be managed at a network level for ELs? If so, should this be:
   a. All contracted services;
   b. A combination of limited in-house resources and contracted resources; or
   c. All in-house resources.

4. If there is to be an ELN level finance function where should the function be located organizationally?

5. How to best set up a cost accounting system to ensure cost associated with ELs are appropriately charged to the EL?

6-2.4: Recommendations

At the present time, 95 Express is the only active EL project in Southeast Florida. The process for development and management of the budget is currently managed in FDOT D6. With Phase 2 of 95 Express and 595 Express under construction it is critical that process be developed and standardized for the budget and accounting for ELs.

It is recommended that the RCTO Executive Committee, in coordination with FDOT, review the budget and accounting processes in more detail and develop a comprehensive and standardized process for budget development and cost accounting for ELs. It is important that the budget process include all elements of EL development, implementation and operations. Certain efficiencies could be realized over time as the ELN grows by the establishment of cost accounting processes to appropriately capture and assign costs associated with ELs.

6-3: APPLICATION of TOLL REVENUES

6-3.1: Implication

Policies must be defined to guide the use of toll revenues in the regional network. This includes establishing whether these will be system-wide policies, will be determined on a corridor basis, or some combination thereof.

The application of toll revenues to selected costs has been a major topic of discussion during the development of 95 Express and 595 Express and other possible EL projects in Southeast Florida. There has also been discussion of the potential of “remaining revenues” and how they should be used on EL projects.

6-3.2: Background and Information

The toll revenues are collected by the toll operator and allocated to the EL segment to cover capital and operational costs of implementing and operating an EL. Major budget components for an EL are defined below in two major categories: direct cost required to develop and operate the EL

- **Cost of operations and maintenance**: The cost of operations includes all costs necessary to operate the roadway segment as an EL. In some cases FDOT may advance funds from the STTF for ELs to pay for part or all of these costs. Key components of this are outlined below and illustrated in Figure 6-1, which describes the flow of funds:
  » Cost of toll collection: The cost of toll collection is the amount charged by the toll operator to collect the tolls, which includes the allocated cost of processing the toll via the electronic toll collection system, the allocated cost of toll violation enforcement, the allocated cost of processing of payments and other related costs necessary to collect the toll revenues. Currently, on 95 Express, this includes fielding initial customer calls. On 95 Express the toll operator is FTE via the SunPass toll collection system.
Basic operations in ELs: This includes the staff, systems and equipment to manage and monitor the tolls to ensure the EL segment operates effectively. On 95 Express, this includes portion of the FDOT D6 SunGuide Traffic Management Center staff costs as well as software and equipment used to set and update the toll rates and to monitor the traffic flow during the day. There may also be other items added over time such as additional staffing and/or insurance (typically required should the toll revenues be bonded in the future) to provide for the operation of a tolled EL.

Enhanced operations in ELs: On many currently operating ELs including 95 Express, several services have been enhanced including additional funding for added enforcement services, added incident management services, and emergency roadway clearing services.

Cost of highway operations and maintenance: The cost of highway operations is the amount charged by the operator of the roadway segment that is necessary to operate the segment as an EL which includes items like replacement of roadway separators between the ELs and the general use lanes that are damaged, upkeep of variable message boards, incident management services, incident removal services and other cost that are related to and allocated to the EL.

Capital cost for building or renovating for ELs: The capital cost are those items needed to build new ELs (like on I-595) or to retrofit ELs on the existing roadway segments (like on I-95). The funds for capital cost may come in a number of ways, including advancement from the FDOT STTF, by bonding the future EL toll revenue stream, from the toll revenue...
stream as the work is delivered (pay-as-you-go), from non-FDOT grants, and in many cases a combination of one or more of these funding options. The payment of the cost may be reflected in either annual payments to the STTF, debt service (principal and interest) payments on revenue bonds, payments as the work is delivered and/or periodic repayment to other sources.

These costs would include these major items:

- **Studies, project development and environmental and preliminary engineering:** This includes the cost of early studies such as planning studies, traffic and revenue studies and feasibility analysis; detailed project development and environmental studies; and preliminary engineering to move the project into full project development. These project elements would need to be funded from advances from the STTF or other active EL segment toll revenues in the same corridor or system.

- **Design and construction of road/bridge improvements/renovations:** This includes the cost of the actual road/bridge improvements needed to provide the ELs. This does not include project improvements that are not part of the ELs. In this case of a project like I-595, where the ELs are a part of a larger project the cost of the ELs would be broken out of the larger project. Generally these project elements are funded from a combination of advances from the State Transportation Trust Fund, advances of future toll revenues on the EL corridor being constructed; and/or advances from other active express lane segment toll revenues in the same corridor or system.

- **Toll collection, monitoring, and messaging technology and systems:** This includes all of the equipment, technology, overhead signs, message boards, monitoring systems, software and related equipment and systems necessary to operate the segment as an EL. Generally, these project elements are funded from advances from a combination of advances from the State Transportation Trust Fund, advances of future toll revenues on the EL corridor being constructed; and/or advances from other active express lane segment toll revenues in the same corridor or system.

- **Renewal and replacement cost:** This includes the cost for periodic inspections and to replace and update equipment, technology, signs, roadway resurfacing and striping, and related systems over time that are necessary to operate the EL.

- **Costs that may be part of ELs based on policy considerations:**

  - **Allocated share of FDOT district or CO costs:** FDOT may allocate “overhead” cost of the districts or CO that are part of the management and support services for developing and managing the EL projects. This generally includes items such as administrative services areas including legal, comptroller plus quality assurance services for engineering and operational areas.

  - **Expanded transit services**

    - **Operating cost:** This includes the net cost for operating new and/or expanded transit service that would operate in an EL segment. These costs may include items such as a portion of salaries for bus drivers, fuel, fare collection and related areas necessary to operate the expanded transit service in the EL segment.

    - **Purchase and replacement of dedicated buses:** This includes the purchase of new buses to expand transit service in the EL corridor and replacement costs.

    - **Fixed capital facilities:** This includes park and ride lots, dedicated exit ramps, transfer stations and the similar items along the EL corridor.

    - **Allocated cost from transit entity:** This includes the “overhead” from the transit entity for administrative services.

**6-3.2.1: Express Lane Calculation Methodology and Considerations**

Outlined below are some key terms for calculating...
remaining revenues that might come forward on ELs. Figure 6-1 shows an example flow of funds.

- **Gross revenues**: The Gross revenues are the total of toll revenues generated by the EL.

- **Net revenues**: This is a calculation that takes toll revenues and subtracts the cost of operations and maintenance to generate net revenues.

### 6-3.3: Best Practices and Current Deployment

As of February 2013, the deployment of ELs is still fairly new in the United States. Most ELs are working to cover basic cost of operations and maintenance for the EL. Some are providing some funding for transit services in the EL. There is general agreement among existing EL operators that toll revenues will be applied to pay for the cost of operation and maintenance necessary to operate the facility as an EL.

Further, it is the goal of most EL operators to pay for the renewal and replacement cost necessary to operate the facility as an EL to the extent revenues are available. The use of toll revenues beyond this is as diverse as the number of EL facilities in the United States.

For example, several EL facilities such as I-15 in San Diego and 95 Express are using toll revenues to fund or partially fund expanded express transit service in the EL corridor. In other instances such as SH-130 in Texas and I-495 in Virginia the ELs are being developed by a P3 and the toll revenues beyond cost of operations and maintenance will primarily be used to pay for part or all of the capital cost to build the ELs plus a rate of return for the private entity, should revenues be available to do so in the future.

Regarding remaining revenues, almost all ELs are working to cover basic cost of operations and maintenance, and some are providing some funding for transit services in the corridor. The most mature EL is SR-91 in Southern California and this facility has generated some level of remaining revenues. SR-91 opened in 1995 and was privately developed under agreement with the State of California. While the facility was privately owned, revenues were used to pay for operation and maintenance; the cost of the facility (debt financed), renewal and replacement costs; and a rate of return to the private entity.

In 2003, SR-91 was purchased by the local government, the Orange County Transportation Authority (OCTA) and since that point in time remaining revenues have been directed primarily to capital improvements in the SR-91 corridor such as extending the SR-91 ELs 10 additional miles. No other EL project has generated remaining revenues at this date.

### 6-3.4: Recommendations

FDOT has been developing statewide policy regarding the flow of toll funds and potential uses of remaining revenues. These policies build on recent changes that became law during 2012. The legal changes directed that any remaining revenues will be used in the county or counties of the EL facility.

The recent discussions within FDOT have focused on the application of toll revenues and what any remaining revenues will be spent on in the county or counties of the toll facility. As of the date this document was published, policies were in draft form and being reviewed before being finalized related to the application of EL toll revenues. Current state policy reads:

> “After discharge of any bond indebtedness, a revenue producing project will apply all tolls collected first to annual cost of operation, maintenance, and improvement of the toll project. Any remaining toll revenue shall then be used to pay back non-toll funding used for the project. The repayments will be deposited into the STTF and will be allocated in accordance with the original source of funding. Once the non-toll funding has been repaid, any remaining toll revenue shall be used for the construction, maintenance, or improvement of any road on the state highway system within the county or counties in which the revenue producing project is located.”
6-4: TOLL REVENUES DEFINED

6-4.1: Implication

In order to define how toll revenues can be spent, it is first necessary to define what constitutes toll revenues. Though the definition of toll revenues may seem to be a simple issue, there can be a number of variations based on the collection of the toll revenues and the processes involved in the collection.

6-4.2: Background and Information

Examples of the definition of toll revenues include:

- The actual amount collected by the SunPass system. This would exclude any non-payment of toll revenues due to violations of the system and only counts when payments are made.

- The amount that should have been collected based on transactions recorded in the SunPass system. Any amounts unpaid or violators would show as a reduction to the toll revenues to provide a net amount as actual cash collected. Once toll amounts are collected through the violation enforcement system or other collection methods this would lessen the reduction amount. This approach reflects the “leakage” factor in terms of tolls incurred from use of the facility, but unpaid by the user.

- The actual amount collected by SunPass plus the amounts collected by the violation enforcement system including fines and fees collected by SunPass associated with violators of the ELN. In some cases the fines and fees collected by the violation enforcement system (VES) may be used as an offset toward the cost of VES system as the costs are typically higher than the fines and fees collected so this simply reduces the cost being allocated to the ELN.

- If video tolling is added in the future the same three options shown above would apply, but additionally the definition would include the post payments made through the Toll by Plate system including the toll incurred plus administrative fees charged for collecting the toll.

6-4.3: Alternatives, and Pros and Cons

There are benefits and drawbacks to using each of any of the above definitions for toll revenues. Table 6-2 describes these pros and cons.

6-4.4: Best Practices and Current Deployment

All toll entities track both actual collections and also independent information such as traffic counts/transactions that can be compared and monitored to determine the effectiveness of the toll collection and violation enforcement systems. Most toll entities define toll revenues as the amounts actually collected and a few define revenues as what “should have been collected” and report the “leakage” as the amounts for tolls due but not collected. The key item is to have processes in place that track “what should have been collected” compared to “what was collected” in the tolling system.

On 95 Express, the reported toll revenues are based on the actual cash collected. The processes are more complex for the ELs in that one entity on 95 Express sets the toll rates (FDOT D6) that vary by time of day and the level of congestion while another entity records the “toll transaction” and collects the revenue (FTE SunPass system) based on a match for the transaction against the time/date/rate provided by the FDOT D6 SunGuide system. The audit trail of this process is much more complex than a “static” toll system that charges the same toll all day based on the vehicle type/axle count on each vehicle.

Based on discussions with FDOT D6, there are periodic comparisons of the traffic counts recorded by the SunGuide system compared to the transactions recorded by the SunPass system at gross total levels for reasonableness. It might be useful to provide periodic analytical comparisons of traffic counts to transactions for a set time period of day/toll rate for that time period compared to the actual collections reported in SunPass for the same time period to monitor reasonableness of the ELs toll collection system. This will help ensure that “what should have been collected” was either collected or
processes were moving forward for pursuit of any amounts unpaid that should have been paid for that time period.

6-4.5: Recommendations

As discussed in the Budgeting/Management of Expenses section, cost accounting for EL projects is complicated and could benefit from the development of a standardized process for budget development and cost accounting.

As part of this process, toll revenues should be clearly defined and used across the network.

Currently, for the 95 Express project, revenues are reported as the dollar amount actually transferred to the District from SunPass. As such, this does not account for any potential “leakage” occurring in toll collection. Alternative methods of reporting, as described in Table 6-2, should be considered as possible definitions, as the RCTO Executive Committee revisits this definition.

6-5: BENEFIT-COST ANALYSIS

6-5.1: Implication

It is important to comparatively evaluate the benefits and costs of ELs as part of the ELN. This section discusses approaches and models used in other places. The project team recognizes that this issue is also being studied by FDOT CO and will be updated to reflect state policy once resolved.

6-5.2: Background and Information

The benefits of major transportation improvements are often compared to the cost to ensure the improvements provide appropriate value for the investment. This is becoming even more important in a limited funding environment. Benefit-cost (B/C) analysis is typically performed at the time of
the Project Development and Environment (PD&E) study for the project. Further analysis may also be made as the project is further developed and costs are more known such as during partial or full design of the improvements.

It is important to evaluate the cost of the transportation improvement over an extended lifecycle that includes the capital improvements, the ongoing operations and maintenance and periodic renewal and replacement items required to operate the ELs over an extended period such as 30 years.

The cost of the improvements would normally include all elements of the project include:

• **Planning:**
  » Conceptual studies: Exploration of the project at a conceptual level.
  » Project development and environment phase: Detailed review of key elements such as environmental issues, basic engineering and alignment that determines whether the project concept is “feasible” to be developed.

• **Capital improvement:**
  » Engineering phase: Engineering analysis and design necessary to fully identify the improvement including any land required, structures, and roadway needed to deliver the improvement.
  » Right of way (ROW) Phase: The land or ROW required to implement the improvement. This would include all cost associated with purchasing the land.
  » Utility phase: This includes all cost associated with relocating any utilities that are the responsibility of the public owner.
  » Construction phase: This includes all cost of constructing the improvement.
  » Permanent equipment and signs: This includes all overhead sign structure and signs, toll equipment, cameras, and equipment in the roadway segment necessary for the improvement.
  » Construction engineering and inspection: This includes the cost of the public owner to inspect the construction work provided by the construction contractor.

• **Lifecycle operations and maintenance:**
  » Annual operations: For ELs this includes all cost associated with operating the facility as an EL, such as toll collection, roadway operations, incident management and related costs.
  » Annual maintenance: This includes cost necessary to maintain the EL including replacement of delineators, striping, maintenance of signs and equipment, etc.
  » Renewal and replacement: This includes periodic replacement of toll collection equipment and signs, resurfacing of the roadway, and other items not required on a routine annual basis.

The benefits occur in both a direct manner such as toll revenues collected on the ELs and also indirect benefits such as reduced congestion in the corridor for both the ELs and general purpose lanes that leads to less consumption of motor fuels, less carbon emissions, increased employee productivity and an overall higher quality of life. The indirect benefits can be harder to identify and calculate, however, many tools have been developed over the years to assist in outlining and quantifying the indirect benefits. A sample of benefits is discussed in more detail below.

• **Direct benefits:**
  » Toll revenues: This includes the toll revenues collected for use of the EL corridor.
  » Other revenues/fees: There may be other fees collected in the corridor such as bus rapid transit fees that may contribute to the direct revenues of the corridor. This could also include any joint development projects such as at park and ride lots along the corridor.
  » Efficiency gains: This includes the reduction in congestion and travel time reliability that can be quantified in savings for motor fuel used, increased in economic productivity, and related areas. This could be for both the ELs and general purpose lanes.

• **Indirect benefits:** The identification and quantification of indirect benefits can be a challenge as these are not as straightforward as direct benefits. However, there are clearly
indirect benefits that occur and many studies have been undertaken to develop criteria for the major indirect benefit factors such as:

» Safety improvements: The inclusion of safety improvements such as a dedicated EL corridor that allows only cars or public transit buses may reduce accidents in the corridor. The key improvements that enhance safety can be quantified and the reduction in accidents quantified as well.

» Reduction in carbon emissions: This is also related to reduction in congestion and travel time reliability where auto emissions are reduced as less cars are sitting in slow moving traffic on a daily basis. In addition, the ELs often serve as a bus rapid transit corridor that likely will increase public transit use in the corridor, which will take autos off the road.

» Land use impacts: A very efficient roadway segment like ELs can motivate the movement of people to locate in areas near the ELs and interchanges along the corridor. This can increase land values, promote economic activity such as new businesses, housing, etc., along the corridor. This has been noted along fixed public transit corridors across the United States. It is hard to know at the early stage of EL implementation in the United States if a similar effect will occur, but it stands to reason that people will locate along efficient transportation corridors.

It is important to analyze the cost and benefits in consistent terms by using methods such as those identified below as shown on the Hofstra University Web Site at http://people.hofstra.edu/geotrans/eng/methods/ch9m1en.html

• **Net present value (NPV):** Obtained by subtracting the discounted costs and negative effects from the discounted benefits. A negative NPV suggests that the project should be rejected because society would be worse off.

• **B/C ratio:** Derived by dividing the discounted costs by the discounted benefits. A value greater than 1 would indicate a useful project.

• **Internal rate of return (IRR):** The average rate of return on investment costs over the life of the project. This is driven by FDOT.

6-5.2.1.1: Benefit-Cost Models

A number of models have been developed to evaluate costs and benefits for transportation improvements. Below is an excerpt on B/C models included on the Federal Highway Administration (FHWA) website located at: www.fhwa.dot.gov/planning/processes/tools/toolbox/methodologies/costbenefit_overview.cfm

6-5.2.1: Forecasting Methods

Each of these models has strengths and weaknesses. ELs are still fairly new in the United States and may require some adjustments to reflect the unique characteristics of ELs. It will be important to choose a consistent approach for the analysis of each EL corridor under consideration.

6-5.2.1.1: Method 1. Benefit-Cost Analysis Models

B/C models calculate user benefits and external costs for alternative transportation networks or projects and compare them with capital, operating, and maintenance costs. User benefits, including time, operating costs, and safety costs, are based on differences in travel patterns and transportation network characteristics. Some models also include valuations for externalities such as emissions, energy, and noise.

• **The Surface Transportation Efficiency Analysis Model (STEAM)** is a model developed by FHWA to estimate user benefits, costs, and externalities of transportation projects, based on trip tables and networks from four-step travel demand models. STEAM calculates user benefits based on changes in consumer surplus for travelers at the link level. STEAM also estimates and monetizes externalities including emissions, energy consumption, and noise based either on default or user-input values. This model has been deployed in Portland, Oregon and the New York City metro area.
• **The ITS Deployment and Analysis System (IDAS)** is a sketch-planning network model to analyze the travel impacts, user benefits, infrastructure costs, and other social benefits and costs of over 60 intelligent transportation system (ITS) strategies. IDAS utilizes local travel model network and trip table data and allows the user to apply ITS strategies at the network, link, or zone level. IDAS has been applied in a number of metropolitan areas including Cincinnati, Detroit, Miami, and Tucson.

• **Net_BC** is a B/C model that computes B/C measures based on travel demand model assignments. Benefits include time savings, operating cost savings, and accident reductions. Net_BC has been applied in Indiana and other areas.

• **StratBENCOST** is a B/C model that computes B/C measures based on user-input traffic characteristics, project costs, and growth factors. Impacts considered include time, operating, and safety cost savings; construction, operation, and maintenance costs; and emissions and social/neighborhood benefits. StratBENCOST was developed for the National Cooperative Highway Research Program (NCHRP).

• **BCA.NET** is the FHWA’s Web-based B/C analysis tool to support the highway project decision-making process. For a project evaluation, BCA.Net takes as inputs the capital costs, physical and performance characteristics, and forecast travel demand of the highway project in question. The user specifies strategies for improvements and maintenance and builds a Base Case and an Alternate Case for evaluation. BCA.Net calculates the traffic impacts and the present values of agency and user costs and benefits for each case and compares them to arrive at measures including the net present value, B/C ratio, and internal rate of return for the Alternate Case relative to the Base Case.

6-5.2.1.2: Method 2. Lifecycle Investment Models

These models are designed to compare alternative highway investment strategies by comparing user benefits with lifecycle capital, operating, and maintenance costs under different strategies. The models are commonly used to assess trade-offs between system expansion and system preservation, as well as to evaluate the benefits of different overall levels of investment.

• **The Highway Economic Requirements System (HERS)** is a B/C analysis system developed by the FHWA. It is used to compare improvements to highway segments including resurfacing, reconstruction, widening, etc. While it has primarily been applied at a national level, the states of Oregon and Indiana have adopted it to analyze statewide investment strategies. These features have been adopted into a new state-level version of the software known as HERS/ST.

• **The Highway Development and Management Tools (HDM-4)** model was developed by the World Bank. It estimates road user benefits, infrastructure costs, and externalities including accidents, energy, and emissions for alternative investment strategies. It can be applied at either the project or program level. Previous versions of the model have commonly been used internationally to evaluate trade-offs between highway expansion and preservation.

6-5.2.1.3: Method 3. Other Cost-Benefit Analysis Methods

Other methods have been applied based in principles similar to those underlying the models in Method 1. However, these rely on some level of user programming of functions rather than coming as prepackaged software.

• A study was conducted in Seattle using a combination of the Puget Sound Regional Council’s travel model and the STEP model to compare the social benefits and costs of highways, transit, and pricing at the regional level. The study included a sensitivity analysis of different assumptions, including assumptions regarding commercial vehicle travel (ECONorthwest, 1996).
Contingent valuation (CV) is an economic method to estimate changes in total user benefits from shifts in travel demand and network characteristics. CV is a way of measuring consumer surplus, as is done in the STEAM model.

### 6-5.3: Best Practices and Current Deployment

Cost-benefit analysis methods and models have been under development for some time in the United States. The extent of the methods and models are fairly unique for each state and local entity primarily based on what benefits the entity wants to focus on for that area.

FDOT has used B/C analysis for many years on various projects. Under Governor Scott there has been a renewed focus on B/C analysis focused heavily on the “rate of return” for the investment of state funds. Based on discussions among members of the FDOT Executive Committee for this study, it has been reported that existing toll facilities will focus primarily on direct benefits in calculating the rate of return and that the internal rate of return (IRR) should be at least 6 percent overall.

In the same discussions it was reported that non-tolled transportation projects would focus on both direct and indirect benefits in calculating the IRR. At that time no set IRR had been established and it was reported that FDOT CO is developing a consistent methodology to perform B/C analysis.

In this discussion, it was noted by members of the FDOT Executive Committee that ELs are somewhat of a hybrid project in that toll revenues are collected for use of the ELs, however, the primary focus is on throughput of traffic while prudently considering toll revenues. As such, state policy is still being drafted as to whether indirect benefits would be considered in providing B/C analysis for ELs.

### 6-5.4: Recommendations

A consistent methodology should be developed and implemented for B/C analysis of ELs to provide a consistent result for evaluating which ELs should move forward.

In addition, the B/C analysis could assist FDOT CO in prioritizing EL projects that require subsidies for the project to move forward.
Current state and federal laws define many aspects concerning existing express lanes (ELs), such as vehicle eligibility and must be considered as the Southeast Florida region moves towards a network of ELs. The following chapter provides insight on the implications of the organizational structure and decisions to be made in the process of implementing an EL network (ELN) in Southeast Florida as they relate to current laws and rules.

7-1: APPROACH to LEGAL ISSUES for EXPRESS LANES

7-1.1: Implication

It is likely from time to time there will be issues that come forward that need to be addressed through changes in law. As the ELN expands in the Southeast Florida region, the issues that might need changes in laws or rules will cover multiple Florida Department of Transportation (FDOT) districts, counties, metropolitan planning organizations (MPOs), transit entities, Florida’s Turnpike Enterprise (FTE – part of FDOT) and the Miami-Dade Expressway Authority (MDX).

7-1.2: Background and Information

The laws and rules that govern ELs have evolved over time in federal and state laws and regulations. The most recent changes included:

- Federal law covering federal roads such as the Interstate were included in Section 1512 (tolling) and 1514 (HOV) of the Moving Ahead for Progress in the 21st Century – Public Law 112-141 (MAP-21).

- State laws covering the Florida State Highway System were included in Sections 22, 23, and 26 of 2012 Senate Bill 1998 (Chapter 2012-128, Laws of Florida).

The changes in state law were also part of the House Transportation Bill 559 in 2012.
7-1.3: Best Practices and Current Deployment

The existence of ELs is still new enough and the various owners of these facilities are diverse enough that no set process exists at this time for the development and advocacy of updates to rules, policies and procedures related to ELs. In addition, there is currently not in existence a comprehensive ELN that has interconnected facilities with multiple owners.

At this time, it is a policy-level discussion among the possible owners of the ELN to develop an approach to monitoring for the development and advocacy of updates to rules, policies and procedures that govern ELs, and updates to the development and advocacy of these items over time.

7-1.4: Recommendations

At the present time, FDOT owns and operates the only ELs in operation: 95 Express Phase I. FDOT also owns the facilities that have ELs under construction, 595 Express and 95 Express Phase II. In addition, FDOT owns the facilities that are planning additional ELs in the near term including I-75, SR-826 and I-95 north of I-595 (with the exception of the Homestead Extension of the Florida Turnpike [HEFT], which is owned by FDOT and FTE).

As such, it seems that the best approach would be for continued coordination of the RCTO Executive Committee for this study to develop and suggest ideas for possible changes to rules, policies and procedures to the Secretary of Transportation. The secretary would then make final decisions on pursuing any possible updates to rules, policies and procedures related to ELs over the next three-to-five year period. During this time, FDOT should coordinate with MDX on possible updates.

7-2: IMPACTS to TOLL REVENUE

7-2.1: Implication

A number of items impact toll revenues. Vehicle eligibility can be managed by type (i.e., high occupancy vehicle [HOV]; single occupant vehicle [SOV]; trucks; transit vehicles; motorcycles; hybrids) or minimum occupancy (e.g., high occupancy toll [HOT] vehicles with two or more occupants [HOT2] or HOT vehicles with three or more occupants [HOT3]), thus restricting vehicles not defined as eligible. Other factors can impact toll revenues such as toll caps, enforcement, toll refunds and related items.

7-2.2: Alternatives and Considerations

The key aspects that impact toll revenues on ELs are described below. Vehicle eligibility and occupancy requirements are addressed in rules, policies and procedures for ELs at the federal and State of Florida levels. This includes the following items:

- Federal rules, policies and procedures address the conversion of HOV lanes to HOT lanes such that the HOT lanes must allow for a level of HOV use at no charge. This is included in Section 166 of Title 23, U.S. Code. These provisions did not change with the passage of the MAP-21 federal transportation legislation in 2012. This would address ELs on I-95 in locations where HOV lanes have been converted, as in Miami-Dade County and future expansion north into Broward County. Section 166 addresses that HOV lanes include occupancy requirements for two or more passengers in cars. The actual number beyond the minimum of two for HOV eligibility is up to the operating entity. On 95 Express, occupancy requirements were adjusted from two or more persons to three or more persons (in a pre-registered vehicle) required to use the lanes without paying a toll.

- MAP-21 (Federal Public-Law 112-141), Section 1512, streamlined many provisions related to tolling and allows the use of tolls on any new lanes added to federal highways without limitation. Under guidance from the Federal Highway Administration (FHWA), there will not be a need for future tolling agreements on the application of tolls on the new lanes added to federal highways.

- Florida laws have expanded the non-tolled
use of HOV lanes to include hybrid vehicles, buses and motorcycles. This also applies to the conversion of HOV to HOT lanes and ELs. This provision is included in Section 316.0741, Florida Statutes. On 95 Express, hybrid vehicles must be registered annually and will receive a sticker to reflect the hybrid vehicle may use 95 Express without paying a toll.

The issue of a “toll refund policy” is not addressed in current laws.

There is currently a cap for toll rates on ELs that is limited to $1 per mile as outlined in Rule 14.100.003, Florida Administrative Code. In addition, there is a minimum toll rate for the corridor.

Florida laws are very thorough in regard to the levy and enforcement of tolls. With toll roads and bridges in existence for many years in Florida, these regulations have been developed and refined. These include a number of Florida laws such as Sections 316.1001; 316.640 (1)(b); 338.155; 338.166; 338.231, and related sections of the Florida Statutes.

FDOT has adopted applicable rules of the Florida Administrative Code related to the levy and enforcement of tolls, such as Section 14-100, Florida Administrative Code.

7-2.3: Best Practices and Current Deployment

There are a couple of items for consideration related to the impacts to tolls for ELs including:

- **Vehicle eligibility:** Under Florida law, for HOV conversion projects, hybrid vehicles may use the ELs at no charge provided the vehicles are registered in advance. The use of hybrid vehicles is becoming more prevalent and over time this could create congestion in the ELs, with no ability to address the congestion without charging a toll to the hybrid vehicles. Any change in the eligibility of hybrid vehicles would have to be addressed by adjusting Section 316.0741, Florida Statutes.

- **Toll caps:** The current toll cap of $1.00 per mile for toll facilities in Florida is becoming a challenge for 95 Express in some circumstances. Over time, this can become a major operational issue if the toll cap limits the ability to effectively manage the level of congestion.

- **Minimum toll rates:** There was a minimum toll rate of $0.25 for the Phase 1 segment of 95 Express at the date this document was published.

7-2.4: Recommendations

As noted previously, it is recommended that the RCTO Executive Committee should continue to meet to work through issues beyond completion of the RCTO. This group should monitor the ELs relative to items such as minimum toll rates, toll caps, vehicle eligibility, toll refunds and related items that could impact toll revenues and use of the facility. The primary focus of the RCTO Executive Committee should be on the goals of the ELN to ensure free flow traffic in the ELs and the generation of toll revenues for use of the ELs.

Based on recent reports, FDOT plans to update State of Florida rules that govern toll rates on ELs to provide for market-based pricing of ELs. This would eliminate the current cap of $1 per mile. It is expected the rule will be updated in 2013. Current law allows the use of hybrid vehicles on ELs. The hybrid vehicles must be preregistered to use the ELs at no charge.

As such, it is recommended the RCTO Executive Committee monitor the extent of hybrid vehicles using the ELs, and suggest changes to rules, policies and procedures should the registered hybrid vehicles begin to have a major impact on the operations of the ELs, in which case the hybrid vehicles should be tolled like other vehicles in the same class (cars with two or fewer passengers).

The current practice for toll refund works adequately. Currently, no tolls are charged when the toll collection equipment or signs notifying travelers of toll rates in advance of using the ELs are not showing accurate rates. This can be monitored by the RCTO Executive Committee.
for this study and updated as needed based on operational needs.

7-3: REMAINING REVENUE

7-3.1: Implication

Tolls are charged for EL usage. The toll revenue is collected primarily to ensure the movement of traffic in the ELs. The toll revenues must first be used to pay for the cost necessary to operate and maintain the lanes as ELs. The use of any toll revenues above this amount, or remaining revenues, becomes a policy question.

7-3.2: Background and Information

The discussion of remaining revenues has begun in earnest with 95 Express and the future expansion of the ELN in Southeast Florida. The discussion of remaining revenues related to ELs has occurred among various groups including local metropolitan planning organizations, transit agencies and others. While it is early to begin this discussion, as remaining revenues are not typically realized until far past implementation, if at all, this reflects the interest on this topic in the Southeast Florida region.

There is a discussion of the potentially revising the definition of remaining revenue from how it is currently defined in law. Several options for this definition were discussed in more detail in the Finances chapter. At the time of this report, the definition was in discussion and not fully refined. The definition of the use of remaining revenues, if applicable, is focused on two main issues:

- The geographic area where the remaining revenues may be utilized.
- The possible uses of the remaining revenues such as on road/bridge projects, transit uses, or related areas.

The geographical area and the possible uses for possible remaining revenues were defined during the 2012 Florida Legislative Session in Senate Bill 1998 amended Section 338.166, Florida Statutes, to include in Subsection (3):

“Any remaining toll revenue from the high-occupancy toll lanes or ELs shall be used by the department for the construction, maintenance, or improvement of any road on the State Highway System within the county or counties in which the toll revenues were collected or to support express bus service on the facility where the toll revenues were collected.”

The possible use of remaining toll revenues are also defined in federal law that applies to ELs on federal roads, such as the Interstate. Section 129 of Title 23 of the U.S. Code as amended by the MAP-21 Public Law 112-141 includes the following language:

“... if the public authority certifies annually that the tolled facility is being adequately maintained, any other purpose for which Federal funds may be obligated by a State under this title.”

The use of toll revenues on 95 Express Phase I and Phase II is also regulated by the Urban Partnership Agreement between the FDOT and the USDOT. This limits the use of the toll revenues to the corridor for ELs and transit use in the corridor and then for other valid uses under Title 23 and Title 49, U.S. Code.

7-3.3: Recommendations

The use of remaining revenues for ELs has been defined in law as outlined above. As the ELN expands and matures, there may be enhanced opportunity to achieve remaining revenues. At this point, it may be prudent to reassess the flow of funds as they pertain to remaining revenues and consider any recommendations the region may have to adjusting this definition.
It is evident that the emerging network of express lanes (ELs) in Southeast Florida will result in the region leading the nation in providing its residents with this bold mobility option. Other regions in Florida have begun to plan and design for ELs and, in the near future, they will also be a reality in Orlando, Tampa and Jacksonville. Similarly, the Bay Area in California and Seattle have bold plans for EL networks (ELNs) over the next 25 years. However, Southeast Florida will forever be known as the region that pioneered and implemented a network of ELs.

Throughout this document, the issues associated with deploying an ELN have been documented. Additionally, the alternatives and options to resolve these issues have been outlined and recommendations for resolution have been made. The development process for producing the RCTO has shed light on many factors not previously considered when deploying a single EL project. First, existing RCTO policy decisions have been made based on the current state of the ELN, and as the ELN matures over time, the basis for those decisions will need to be revisited and potentially revised. Secondly, to that end, it is necessary to establish an ELN Executive Oversight Committee to monitor and update RCTO decisions over time. Lastly, while corridor specific performance measures have been established, they may be revised or augmented over time, specifically in the areas of revenue generation, system financing and surplus revenues.

This chapter summarizes the major principles of understanding from each EL area, defines how the ELN Executive Oversight Committee will function into the future, and defines what ELN-level performance measures will be reported out to the committee.

8-1: PRINCIPLES OF UNDERSTANDING

While the RCTO covered more than 30 issues related to implementing an ELN in Southeast Florida, all issues are not the same and do not require the same level of scrutiny. The major principles of understanding for each area are reviewed here.
8-2: PLANNING and POLICY

The major principles of understanding relative to planning and policy are:

• Physical and operational decision for EL corridors will be made by the implementing entity at the corridor level.

• All vehicles are allowed to access EL corridors with the exception of heavy trucks (except for a one-year pilot on 595 Express), which are defined as trucks with more than two axles.

• All delivery options will be considered for EL corridors and funding will be considered on a corridor-by-corridor basis.

• As EL corridors are being developed, external communications will be led by the project public information officer (PIO); after projects are operational, communications will be handled by agency PIOs and back-office customer service representatives (CSRs).

• Toll rates will be set and adjusted dynamically in real time based on the levels of congestion in the ELs.

• Toll rates will be set to maximize mobility in the peak travel hours, and minimum toll rates will be set in the off-peak travel hours.

• The majority of decisions will be made at the corridor level due to immaturity of the ELN. As the network matures and EL corridors begin to physically and operationally impact one another, then system efficiencies will be sought and network operational activities will be revisited.

• Systemwide decisions on toll rate setting, operations and contracting will be required when upstream or downstream corridors impact adjacent EL corridors.

8-2.1: Short-Term Actions

• Study the impact of truck usage in 595 Express;
• Evaluate the performance of 95 Express after Phase 2 opens; and
• Pilot and test using hybrid off-peak travel times toll rates.

8-2.2: Long-Term Actions

• Consider when it makes sense to merge some EL contracts and operations across entities to improve efficiencies;
• Evaluate potential for updated pricing algorithm as the ELN evolves and segments touch one another; and
• Reconsider truck usage following 595 Express truck pilot program.

8-3: DESIGN

By understanding and addressing some fundamental design criteria early in the project development process, individual projects can avoid future incompatibility issues such as inconsistent signage and physical design of the lane, thus promoting a consistent look and feel for the system. Further, these established design criteria can benefit agencies as they continue employing innovative project delivery techniques.

Generating preliminary design concepts during the planning phases reduces the unknowns and exposes risk early in the project development process, thus helping public agencies better understand the potential advantages to using an innovative delivery method and which method to employ, as well as a preliminary understanding of project costs to help aid in project negotiations with contractors. Like drivers on the Interstate Highway System, customers of the ELN should have the same experience regardless of what entity implements a particular corridor. The major principles of understanding relative to design are:
• The state now has an adopted standard for EL signing, and all signing will be consistent throughout Southeast Florida and across the state.

• Signing and marking plans will be reviewed by the Florida Department of Transportation Central Office (FDOT CO) for compliance with the Manual of Uniform Traffic Control Devices (MUTCD).

• Toll gantries are to be designed to accommodate future changes (such as ensuring room for additional toll collection equipment or roadway improvements) and pricing signs will be designed to handle up to three locations.

• When possible and if the physical constraints of the corridor allow for them, dedicated access locations are preferred.

• Physical separation from the general purpose lanes is preferred. The separation technique employed will likely be a physical design feature that is customized by corridor.

8-3.1: Short-Term Actions

• Research alternative delineator designs that are safe and cheaper than existing design;

• Develop roadway design standards specific to ELs;

• Identify Intelligent Transportation Systems (ITS) and toll technology needs for the ELN; and

• Identify additional park-and-ride facility needs in conjunction with local transit agencies.

8-3.2: Long-Term Actions

• Assess and identify right of way (ROW) needs, and track opportunities for ELN gap segments; and

• Develop a unified and coordinated master signing plan for all segments of the ELN.

8-4: OPERATIONS

The deployment of ELs requires coordination of numerous operational components. Incorporating ELs into an integrated system, with multiple entities, requires even more planning and coordination. The major principles of understanding relative to operations are:

• Daily operations will occur at the corridor level with the implementing entity handling in-lane and back-office transportation management center (TMC) operations.

• All operations relative to toll collection will be based on the existing SunPass technology and handled by Florida’s Turnpike Enterprise (FTE).

• A SunPass transponder will be necessary to use the ELs.

• All ELs will be equipped with camera technology to enforce the ELs.

• Some ELs will provide for police staging to aid enforcement efforts where physically possible and logical.

• As multiple corridors become operational and lessons are learned it will make sense to revisit existing operational decisions.

8-4.1: Short-Term Actions

• Examine how corridor-level operational policies are impacting other adjacent corridors;

• Design an EL safety evaluation and response program;

• Perform assessment of additional TMC needs based on EL operations, to include determining if the SunGuide TMC EL software will be scalable and suitable for the expanded ELN build-out, or if additional enhancements or procurements are required;

• Verify that the FDOT centralized back office will include maintenance online management
system (MOMS) components to monitor and escalate ELN-specific operational issues; and

- Verify that the FDOT centralized back office will include operational and financial reporting capabilities suitable for ELN management and reconciliation.

8-4.2: Long-Term Actions

- Develop performance measures and standards of operation (SOPs) to determine when it makes sense to merge TMC operation;
- Implement interlocal agreements, SOPs, and incident management plans among various operating organizations;
- Implement a CSR Training Program to facilitate widespread implementation of the ELN; and
- Determine if a “universal transportation” account needs to be supported that combines toll, parking and transit in the back office.

8-5: COMMUNICATIONS

Communications is a broad term and generally covers how to communicate with EL customers in real time while they’re using an EL facility, as well as communicating with non-customers and project partners as projects are developed. The clear and timely communication of information is paramount to successfully communicating with EL customers driving on dynamically managed infrastructure.

Achieving the goals and objectives of the EL investments requires that customers are aware of the benefits and costs of the EL before making a decision to utilize the facility. Communication, both in real time along the facility and in advance, through educational outreach, can improve safety and operations on the roadway as well as generate support for EL projects.

Based on the policies that guide the development, deployment and management of the ELN, multiple levels of communication using varying approaches can and must be employed. The major principles of understanding relative to communications are:

- Decisions about pricing policy, occupancy requirements, vehicle eligibility, enforcement and reimbursement policies will be made early so that they may be conveyed to the public via a multitude of outlets.
- Communication during project development will fall to project PIOs.
- After opening, agency PIOs, TMC staff and SunPass Customer Service Center (CSC) representatives will work together to communicate with customers.
- Regarding the marketing of corridors and the network, all corridors will be defined as ELs with the “flying e” logo, and the network will be known as the Southeast Florida Express Lanes Network.

8-5.1: Short-Term Actions

- Educate FDOT and Miami-Dade Expressway Authority (MDX) staff about decisions reached;
- Train project PIOs on ELN policies, goals, etc.; and
- Develop communication materials and plan to support media outreach.

8-5.2: Long-Term Actions

- Hire dedicated communications staff to handle ELN inquiries; and
- Develop and maintain a master website for the ELN.

8-6: FINANCE /LAWS and RULES

Financial implications and those related to the laws and rules of the deployment of an ELN are
the most difficult to define and resolve. This is mainly because the rules are different for FDOT – Districts 4 and 6 – versus MDX and FTE. These entities have different enabling rules, policies and procedures that impacts what they can and cannot do. Additionally, the state has legislation that outlines its public-private partnership (P3) process. The major principles of understanding relative to finance/laws and rules are:

- It has been determined that each entity will implement ELs in concert with what its respective legislation allows for, and all innovative delivery methods can be considered.

- In that same vein, P3 delivery approaches will be evaluate per state law.

- As the network develops, there may need to be considerations to updating state law to allow for new approaches.

This area, more than any others, will be the source of continuing dialogue amongst the ELN Executive Oversight Committee. Questions that need to be considered over time are:

- How are EL costs and benefits defined?

- How should EL expenses be budgeted and tracked?

- When does a network-level organization make sense?

- Should systemwide financing and cross-subsidies be considered?

Emerging issues such as “remaining revenues,” benefit-cost (B/C) analysis and the need to update state law as the ELN develops will be ongoing, and this document will need to be updated to ensure it reflects the current state of the practice in Florida.

8-7: EXPRESS LANES NETWORK EXECUTIVE OVERSIGHT COMMITTEE

An executive committee was formed to guide the development process of the ELN in Southeast Florida (referred to in this document as the RCTO Executive Committee). The ELN and accompanying RCTO document will evolve over time and require further guidance by an advisory group. It is recommended that the existing RCTO Executive Committee not be adjourned but rather continue to meet quarterly as the ELN Executive Oversight Committee. In addition, a larger statewide EL Executive Committee is currently being formed by the FDOT CO. The Southeast Florida ELN Executive Oversight Committee could convene at similar times as a subset of the larger statewide committee.

To date, the Southeast Florida ELN has developed in an order and manner due to capital funds already being programmed for specific corridors. Moving into the future EL corridors may want to be programmed to fill certain EL gaps or based on a districtwide or regional set of priorities. The Executive Committee could work to develop such a prioritization tool and/or methodology for prioritizing EL corridors for funding.

8-7.1: Short-Term Actions for the ELN Executive Oversight Committee

- Define and develop performance metrics for ELs;

- Work to define prioritization process and modeling methodology; and

- Address and resolve financial policy questions.

8-8: MANAGEMENT & PROTOCOL

The intent of this section is to provide the Project Executive Committee with guidance on maintaining the RCTO document as well establishing a process that can be used to make informed decisions concerning any updates to the procedures and recommendations presented in this document.
### 8-8.1: Maximizing the Utility of the RCTO Document:

The South Florida RCTO is a useful tool that empowers the ELN Executive Oversight Committee to act on its current and expected needs as related to the Express Lane Network (ELN). In order to maximize the effectiveness of the RCTO document and its related processes and recommendations, the Executive Committee will need to ensure it is kept up to date and its recommendations are promoted in the decision making process.

The RCTO is a living document that should be revised as the ELN evolves and development decisions occur. The current version of the RCTO was based on the most recent data at the time, current operating procedures and responds to managing today’s travel patterns and congestion levels. However, it is expected that the ELN policies and procedures will need to change over time in response to changing realities throughout the ELN. Some of the factors that are likely to change over time include technology, user and market trends, network operations, and project costs. For this reason, the RCTO should be updated at least every six (6) months. Any necessary addendums should be included as they become available.

The following key components of the RCTO should be reviewed and updated as necessary:

- Planning & Policy;
- Physical Design Features;
- Operations;
- Communications;
- Finance; and
- Laws, Rules and Regulations.

The update of the RCTO document are expected to be conducted and approved by the ELN Executive Oversight Committee. FDOT Central Office may review and approve for consistency.

### 8-8.2: Responsibilities of the ELN Executive Oversight Committee:

In order to maintain the RCTO’s effectiveness, the ELN Executive Oversight Committee will need to meet quarterly. In order to establish these meetings, it is recommended that the meetings be held on the third Thursday of February, May, August, and November of each calendar year.

ELN Executive Oversight Committee Membership:

- FDOT District 6 Secretary
- FDOT District 4 Secretary
- MDX Executive Director
- FTE Executive Director
- FDOT Central Office – Systems Planning Office Manager – System Management
- FDOT Central Office Transit Manager
- FHWA Florida Division Administrator

The Executive Committee will assign a staff member(s) or subcommittee who will serve as the “keeper of the document” and ensure updates are made and that appropriate reviews are conducted. Additional responsibilities include:

- Provide relevant information and updates to a statewide Express Lanes website
- Coordinating, conducting and documenting quarterly ELN Executive Oversight Committee meetings
- Work with FDOT District and Agency staff on challenges and opportunities
- Bringing national best practices to the ELN Executive Oversight Committee
- Keep the RCTO documentation current and relevant
- Communicate key messages, themes,
recommendations and decision to all EL projects

- Develop and maintain ELN collateral materials
- Meet with FDOT District leadership regarding the development of a ELN
- Support FDOT Central Office with the development of Statewide EL policies and procedures

It is recommended that District 6 serve in this function until the ELN Executive Oversight Committee make official assignments. It is recommended that all decisions made by the Executive Committee are decided through consensus rather than a formal voting process.

8-8.3: Disclosure Statement

This document is reflective of the thought and policy at the time of development. As such, some elements discussed in this document may have been addressed or changed at a regional or statewide level since this document was developed. Updates and revisions to this document are expected over time as Florida’s Express Lane program matures. Additionally, many elements are dependent upon the review and approval of Federal, State and local partner agencies and may be subject to change based on their feedback.