



# FLORIDA EXPRESS LANES

Less Stress When You Drive Express

## EXPRESS LANES IN FLORIDA: PLANNING AND IMPLEMENTATION

**Andrew Velasquez, P. E., P.T.O.E.**  
Program Manager, AECOM /FTE

**Genoveva Fruet, PhD, AICP**  
Senior Project Manager, AECOM FTE



Florida Department of  
TRANSPORTATION



October 29-31, 2018 | Florida Section ITE Annual Meeting

# AGENDA

---



Introduction



Express  
Lanes  
Manual



Planning and  
Development  
of Express  
Lanes



Questions

# EXPRESS LANES IN FLORIDA



**In Operation | 59 miles**



**Under Construction | 107 miles**



**In Planning/Design | 326 miles**

## Jacksonville



## Orlando



## Tampa



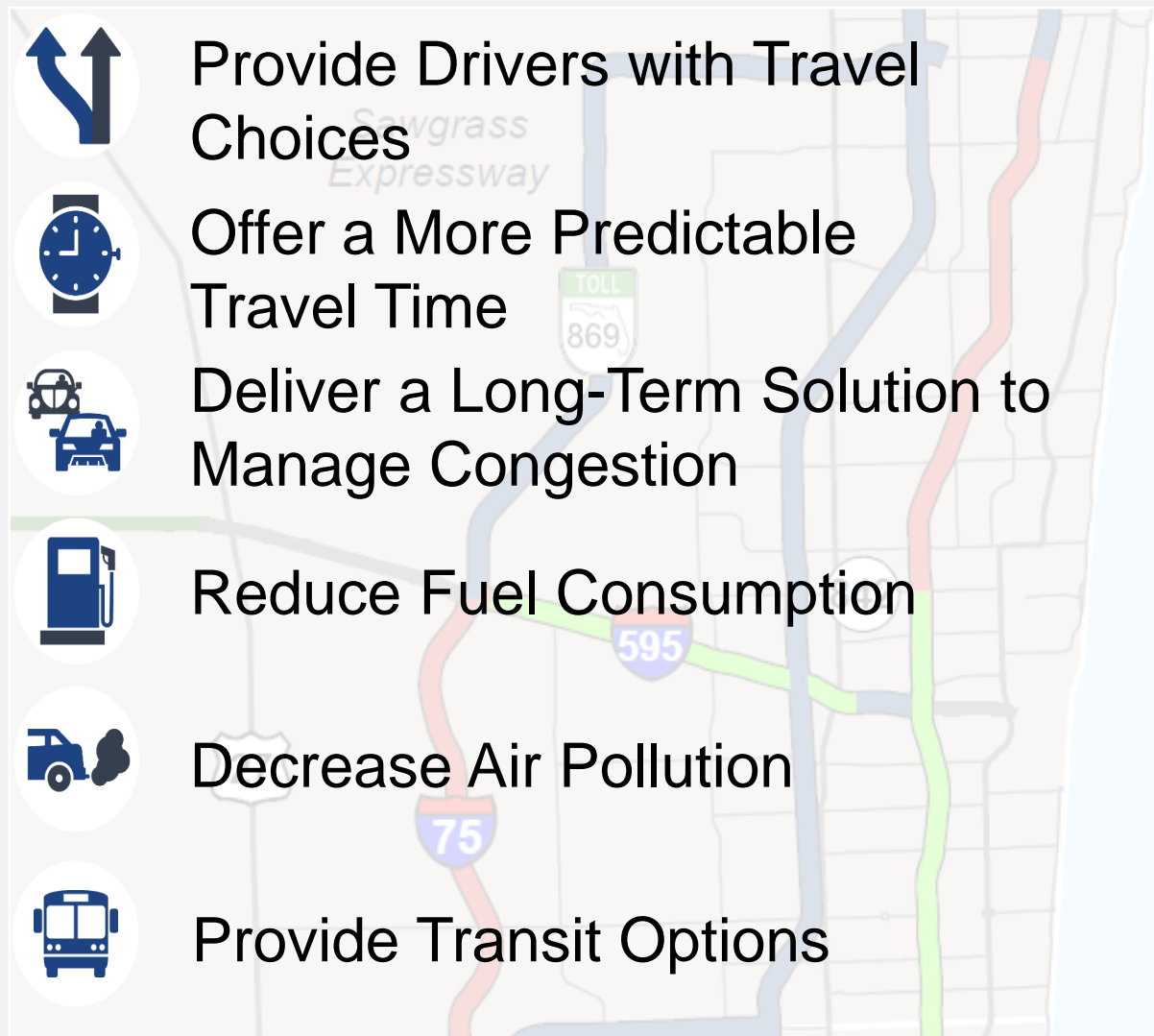
## Southeast Florida



# EXPRESS LANES IN FLORIDA

## Strategy

- Long Term Congestion Management Thru Dynamic Tolling
- Efficient Use of Remaining New Capacity









*Sawgrass Expressway*

TOLL 869

595

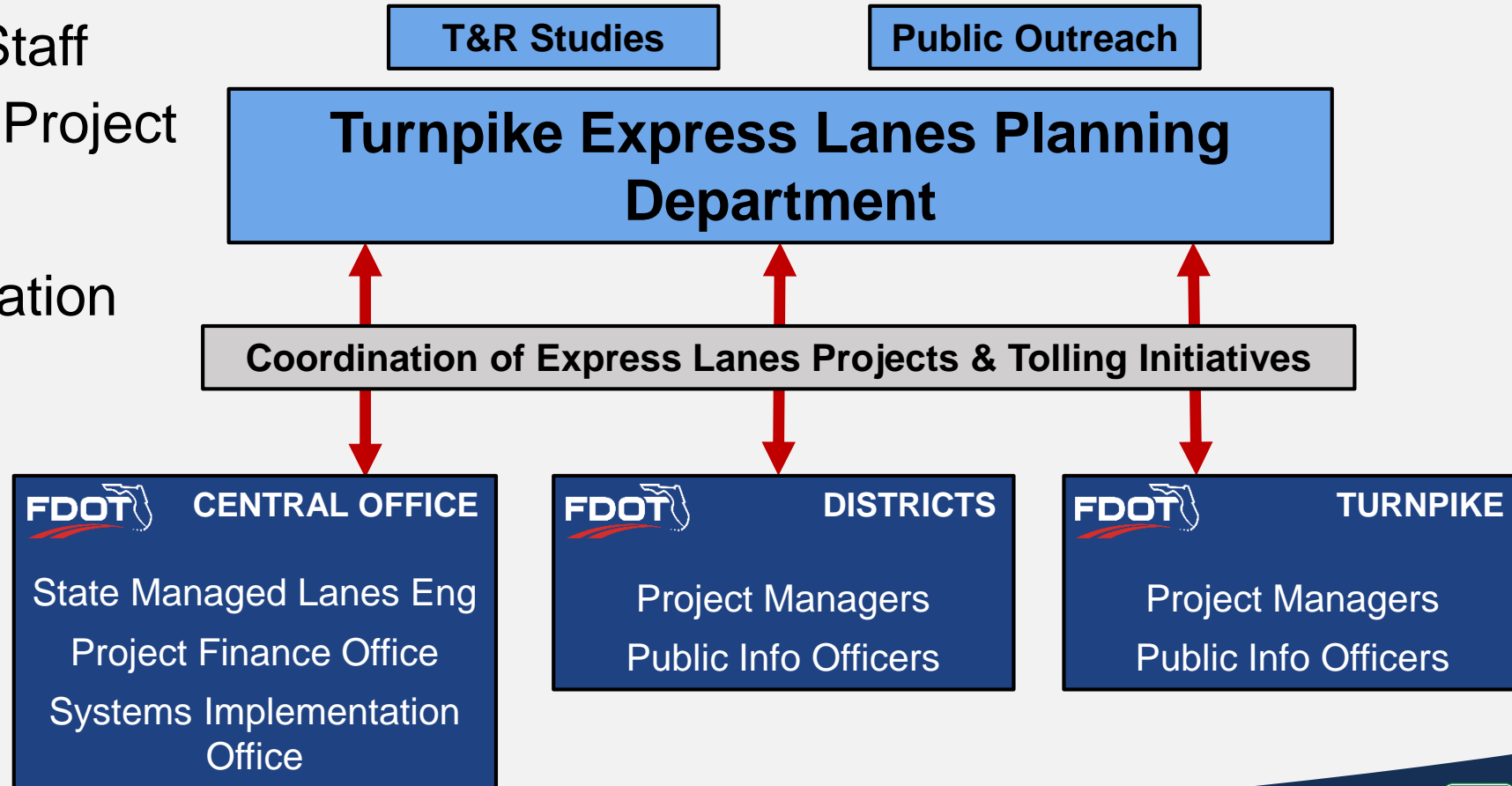
75

	Provide Drivers with Travel Choices
	Offer a More Predictable Travel Time
	Deliver a Long-Term Solution to Manage Congestion
	Reduce Fuel Consumption
	Decrease Air Pollution
	Provide Transit Options

# EXPRESS LANES PLANNING

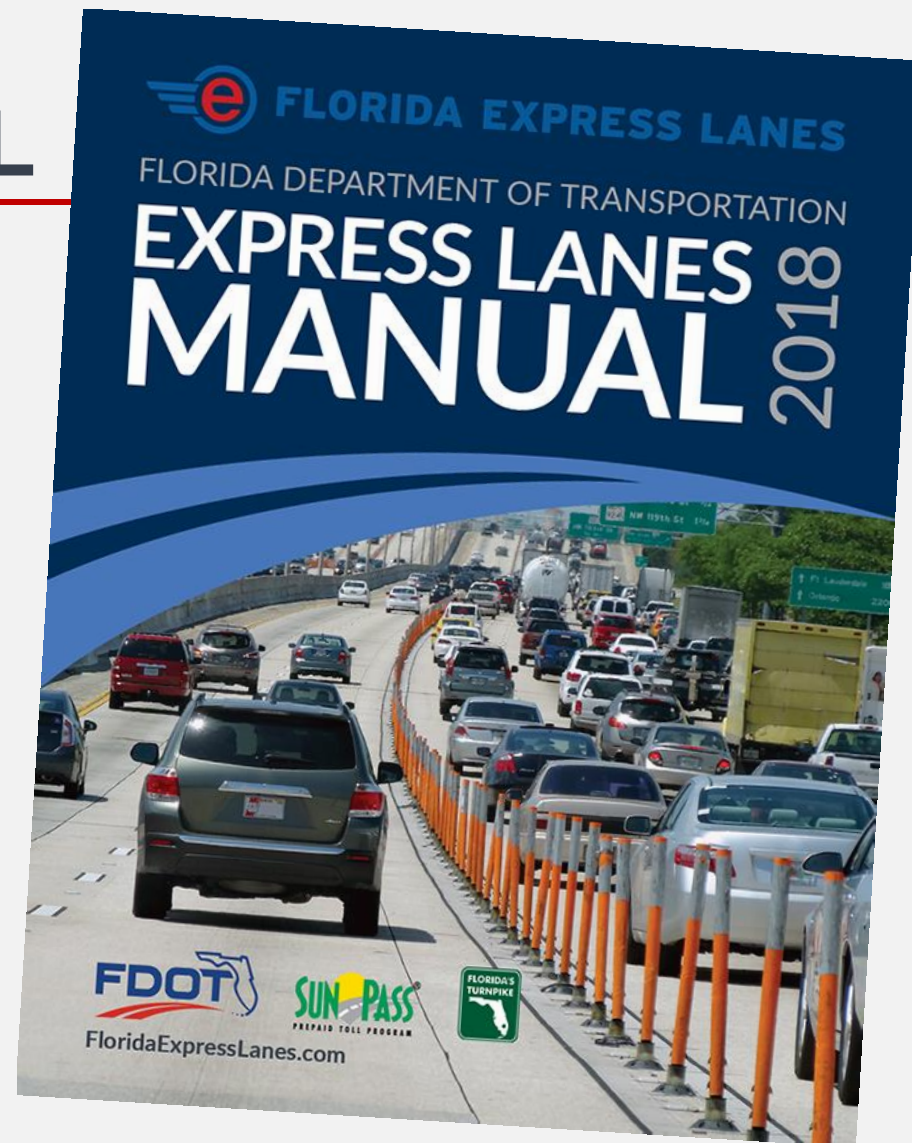
- Restructure of Turnpike Staff
- Supports Express Lanes Project Development Statewide
- Provides Project Coordination
- Efficient Project Delivery
- Statewide Consistency

## Who We Are / What We Do



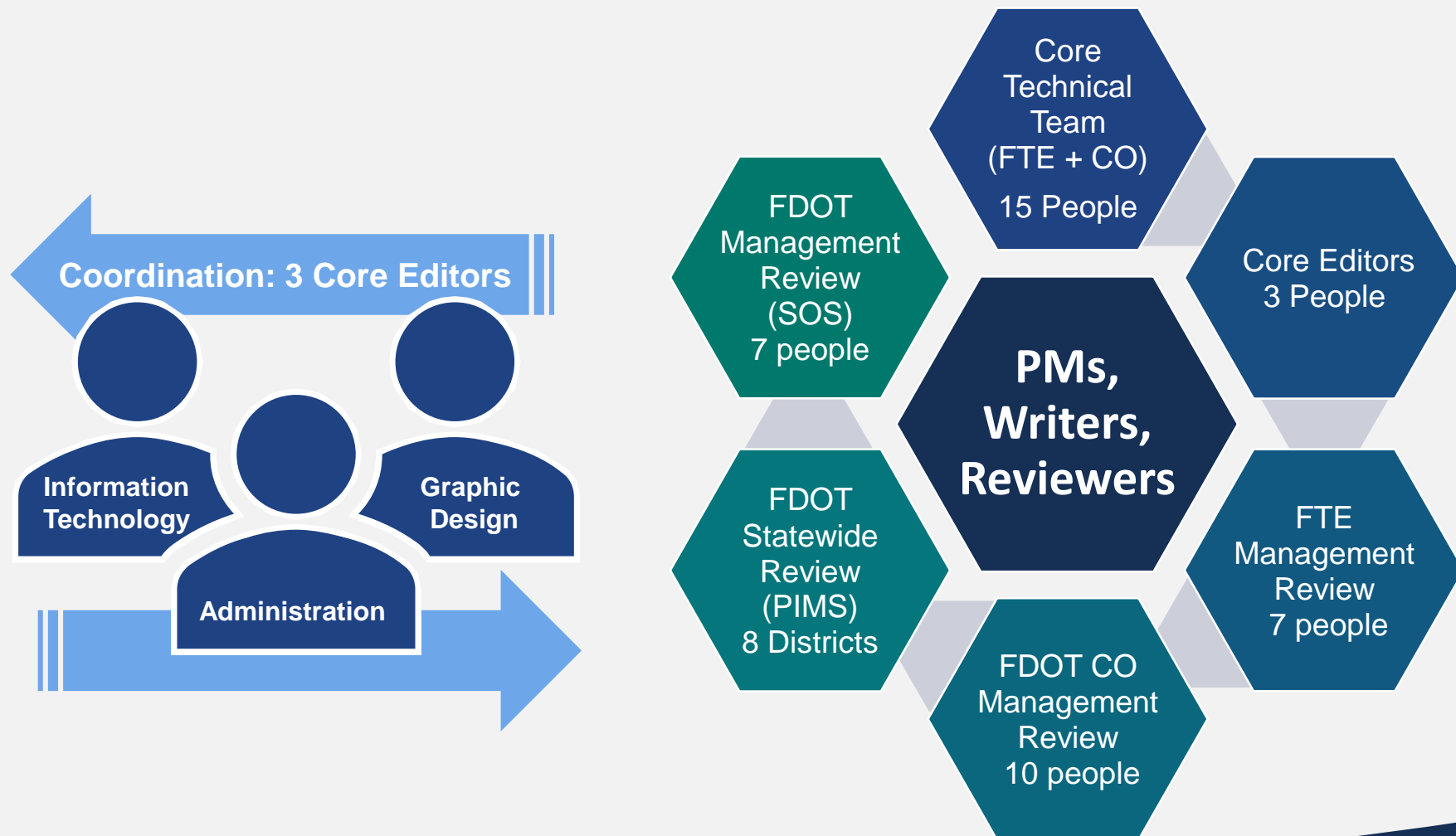
# FDOT EXPRESS LANES MANUAL

- **FELM** Replaces Express Lanes Handbook
- Similar Look to FDM
- **Project Experience = Policies, Procedures, Processes**
- **Statewide Approach**



# TECHNICAL DISCIPLINES & STAFF

- Planning
- Design
- Traffic Engineering & Operations
- Finance
- Traffic & Revenue
- Tolling
- Operations
- Maintenance
- Public Outreach



# CROSS REFERENCES & ADDITIONS

---

## Additions to Manuals

- FDOT Design Manual (FDM) 2018
- Traffic Engineering Manual (TEM) 2018
- Turnpike Design Handbook (TDH)

## Future Additions

- FDOT Project Traffic Forecasting Handbook (*on going revisions*)
- General Tolling Requirements (GTR) (*on going revisions*)
- FDOT Traffic Analysis Handbook (*future update*)

# FELM CONTENTS

---

## INTRO, GLOSSARY, ACRONYMS

**CHAPTER 1** Express Lanes Policy

**CHAPTER 2** Project Planning

**CHAPTER 3** Traffic and Revenue Studies

**CHAPTER 4** Design Considerations

**CHAPTER 5** Toll Collection

**CHAPTER 6** Express Lanes Operations

**CHAPTER 7** Express Lanes Maintenance

**CHAPTER 8** Public Outreach

**CHAPTER 9** Project Finance for Non-Turnpike Express Lanes

**CHAPTER 10** Quality Assurance and Quality Control

**CHAPTER 11** Express Lanes Deviations

**APPENDICES**

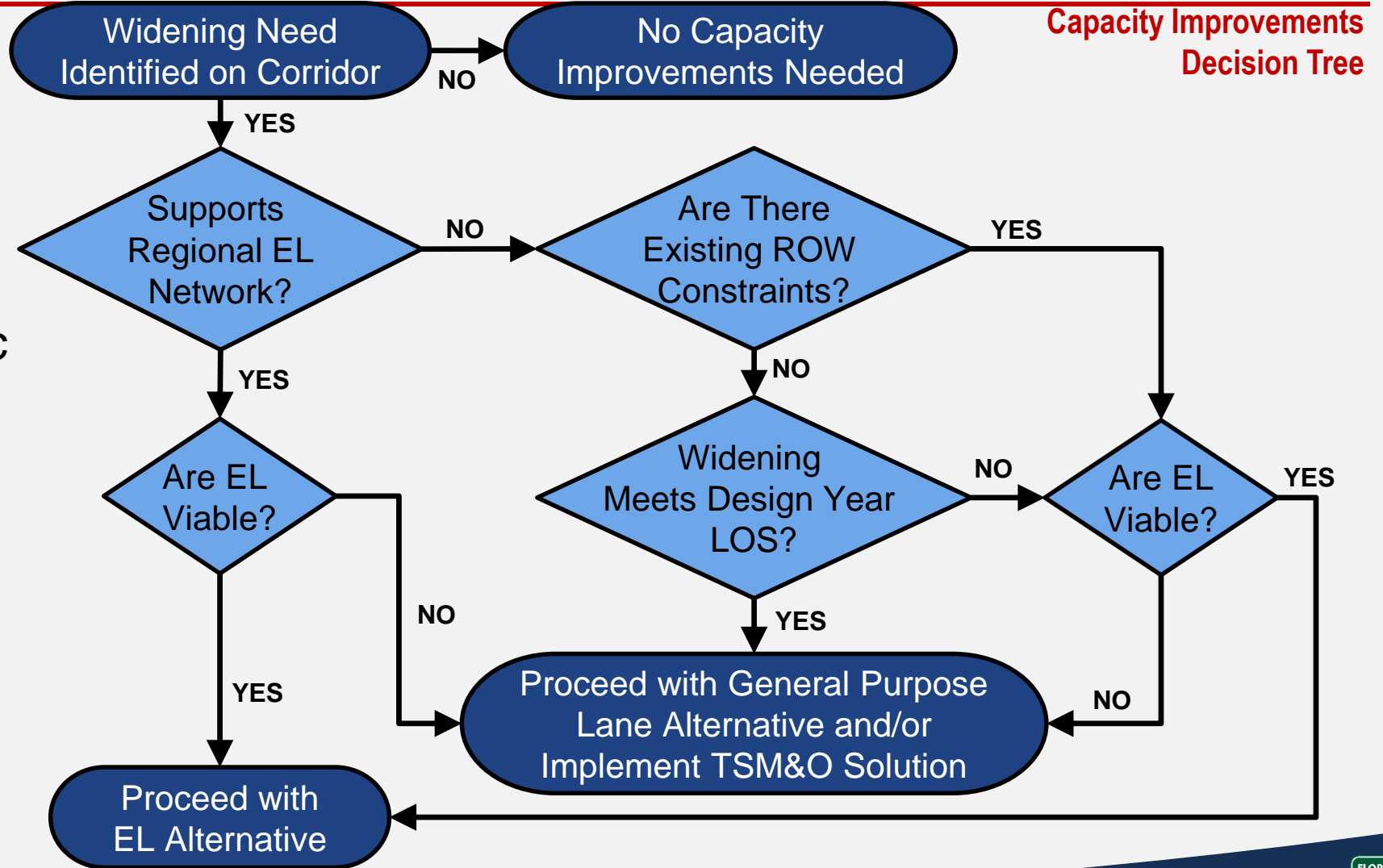
## Chapter 2

# PROJECT PLANNING

# PROJECT IDENTIFICATION

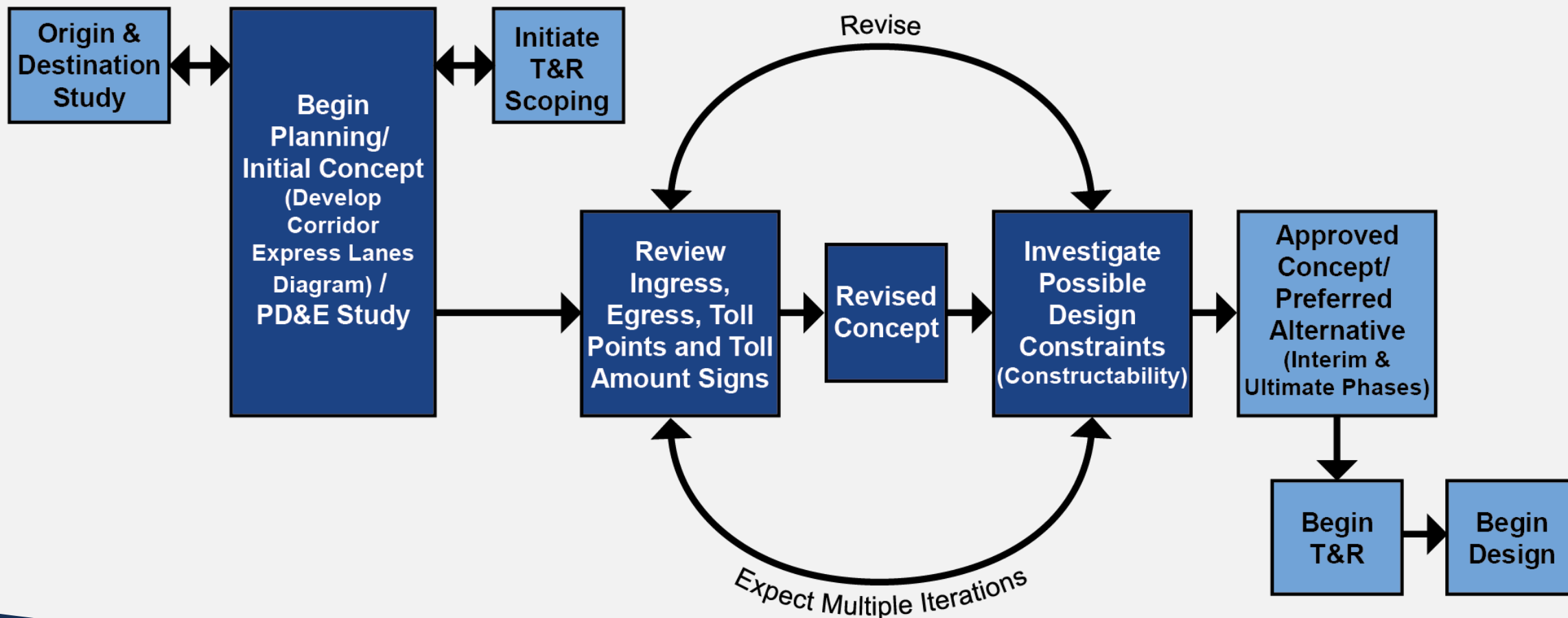
## Decision Tree & Checklist Example

- Planning Considerations
- Operational/Geometric Considerations
- Funding
- Public Support
- Other Project-Specific Considerations
- Recommendation



# PROJECT DEVELOPMENT & COORDINATION

## EL Project Development Process



# CORRIDOR DEVELOPMENT

---

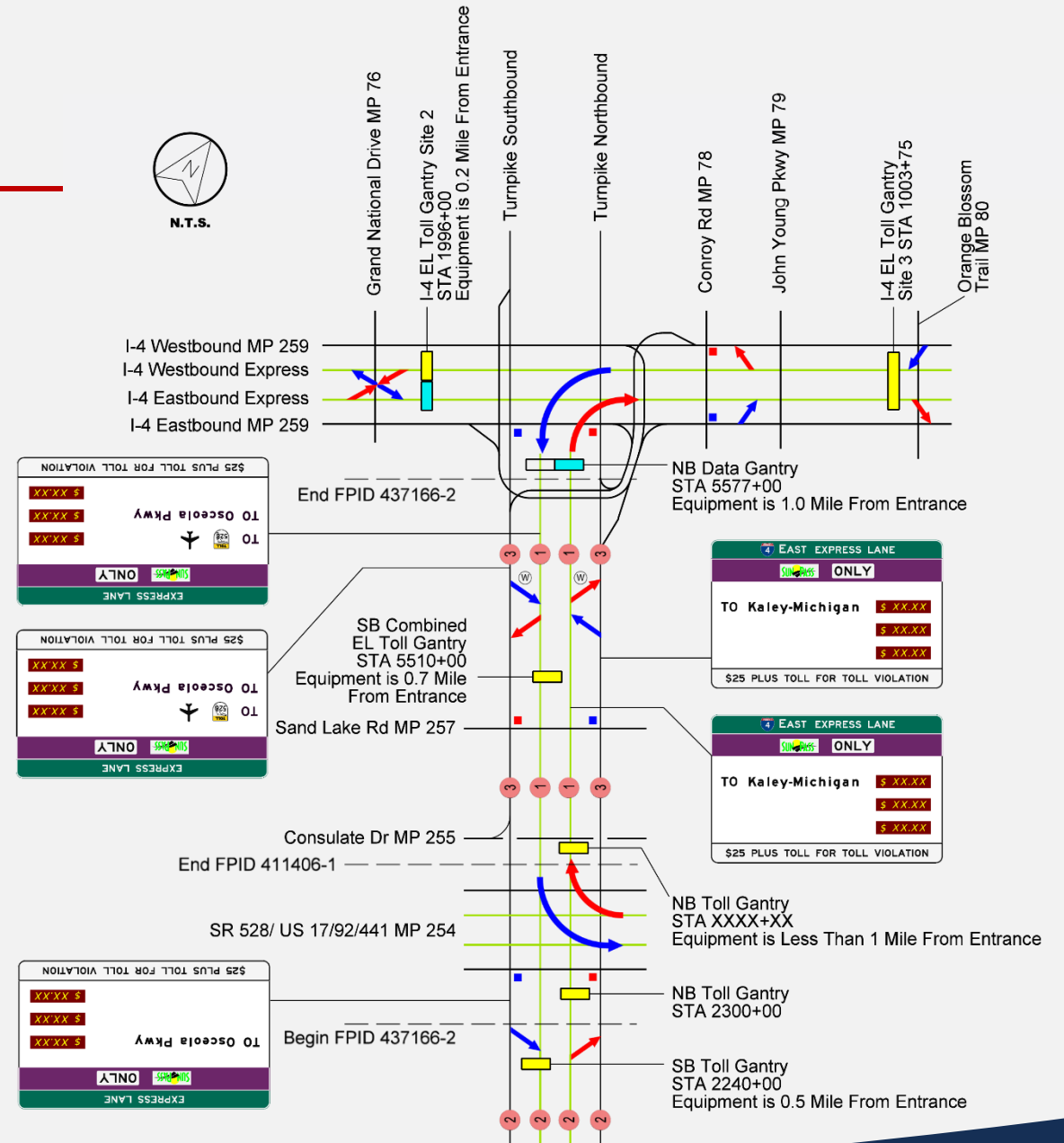
## Data Collection

- Traffic Volume
  - Vehicle Classification Counts
  - Peak Period and Daily
  - Sub-Area including Arterials & Highways
- Travel Speeds
  - Peak Periods
- O-D Data
  - Early Project Stage
  - Identify Major Travel Movements
  - Movements between Interchanges in a Corridor
  - Consideration of EL Ingress/Egress &/or Direct Connections to other Arterials/Highways

# CORRIDOR DEVELOPMENT

## Express Lanes Diagram

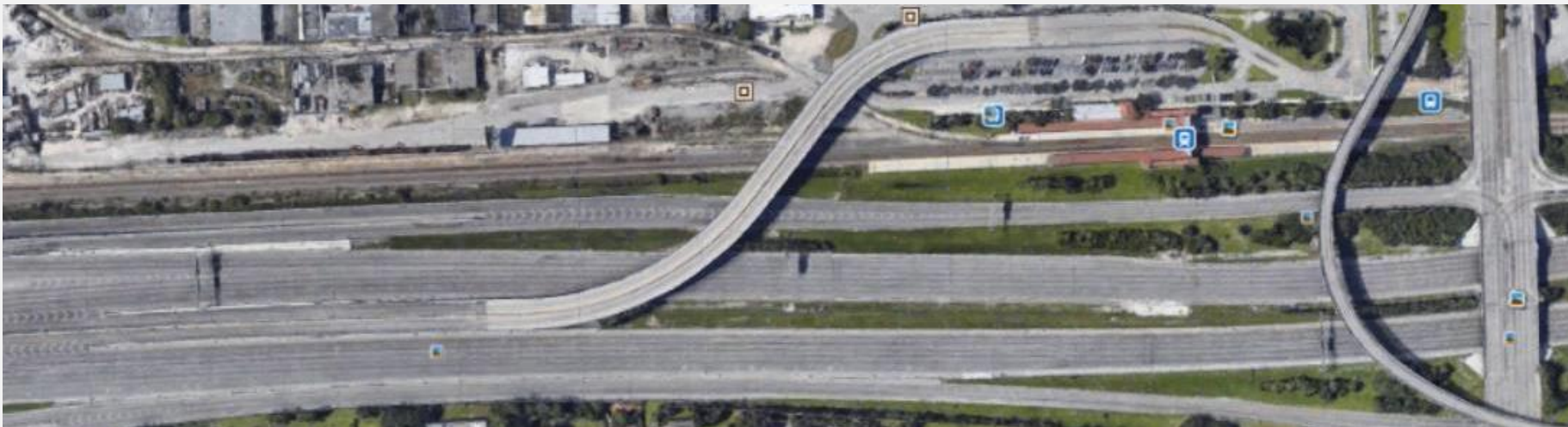
- Access Locations and Types
- Number of Lanes
- Ingress / Egress
- Destination Signs
- Project Limits
- Toll & Data Gantry Locations



# CORRIDOR DEVELOPMENT

## Factors for Determining Access Location (Entry, Intermediate, Termination)

1. Analysis of O-D Data
2. Spacing & Geometry of Interchanges
3. Length of Segment(s)
4. Geometric Characteristics
5. Operational Characteristics
6. ITS/Signage
7. Tolling Infrastructure
8. Park-and-Ride Lot Locations
9. Transit Service
10. Availability of ROW
11. Environmental Impacts
12. Cost



# CORRIDOR DEVELOPMENT

---

## Access Plan Key Characteristics

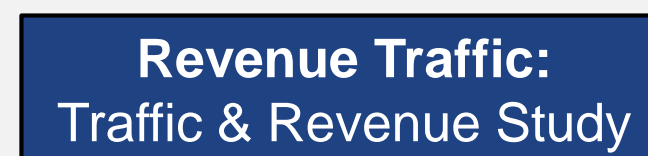
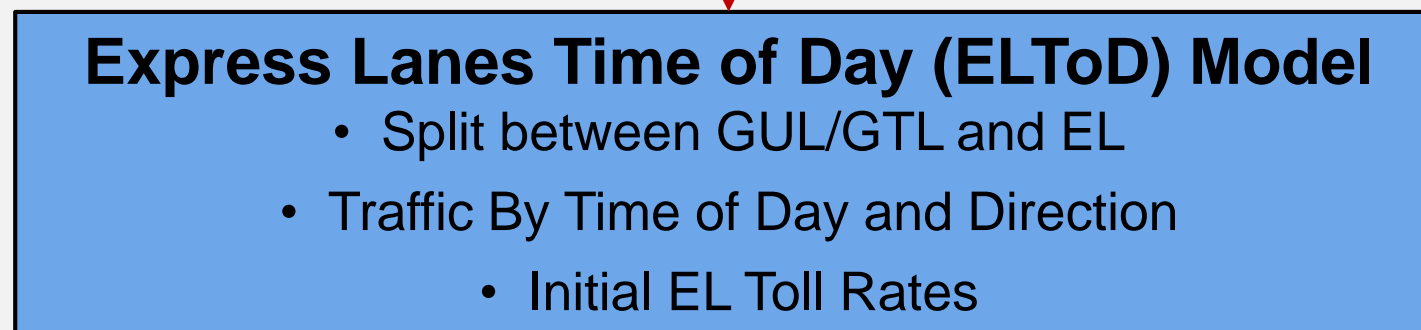
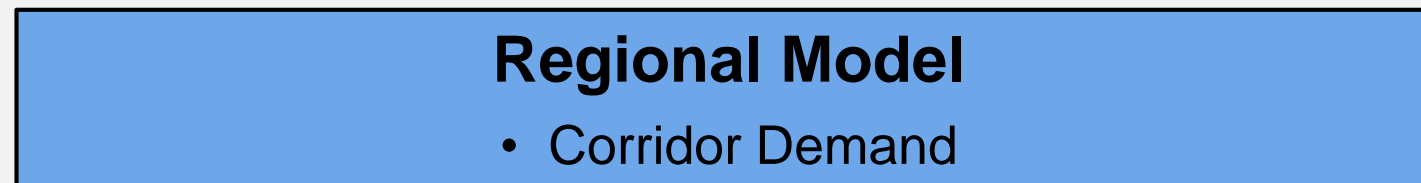
- Number of Lanes
  - 2 EL per direction (where feasible)
- Segment Lengths
  - 1 EL per Direction (3 to 7 Miles)
  - 2 EL per Direction (4 to 10 Miles)
  - Bypasses at Least 2 Interchanges
- Lane Change Distance
  - Minimum 1,000 Feet per Lane Change for Ingress / Egress Locations
- Eligible Trips
  - > 40% of Total Corridor Trips for Each Segment

# CORRIDOR DEVELOPMENT

## Express Lanes Demand

*Analysis from a Systemwide Perspective*

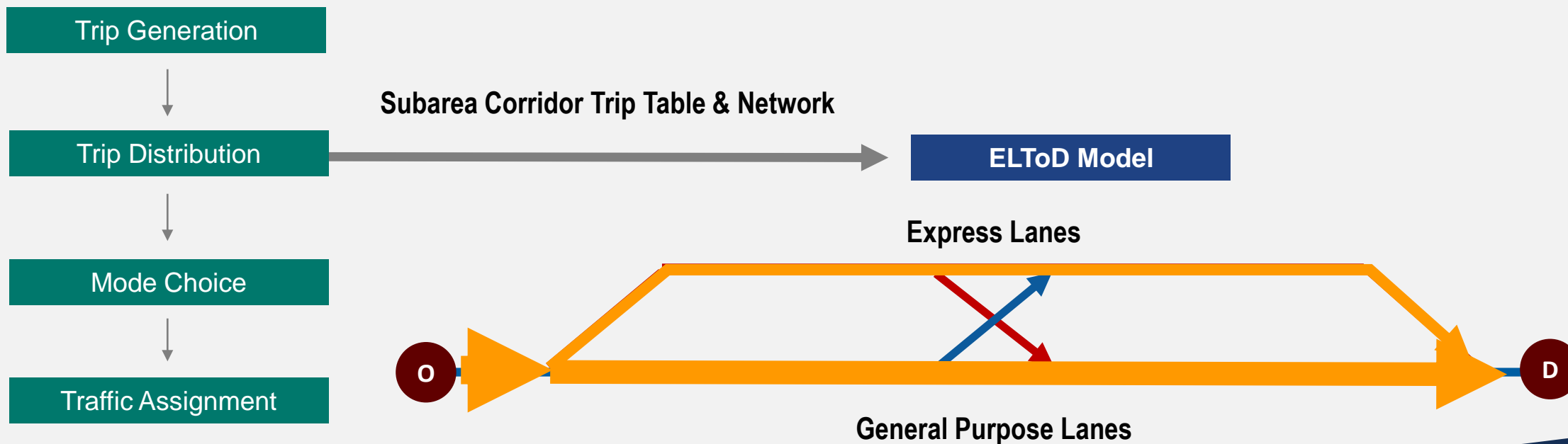
- Express Lanes Corridor Traffic Forecasts
- Type of Forecast is Dependent on Study Purpose



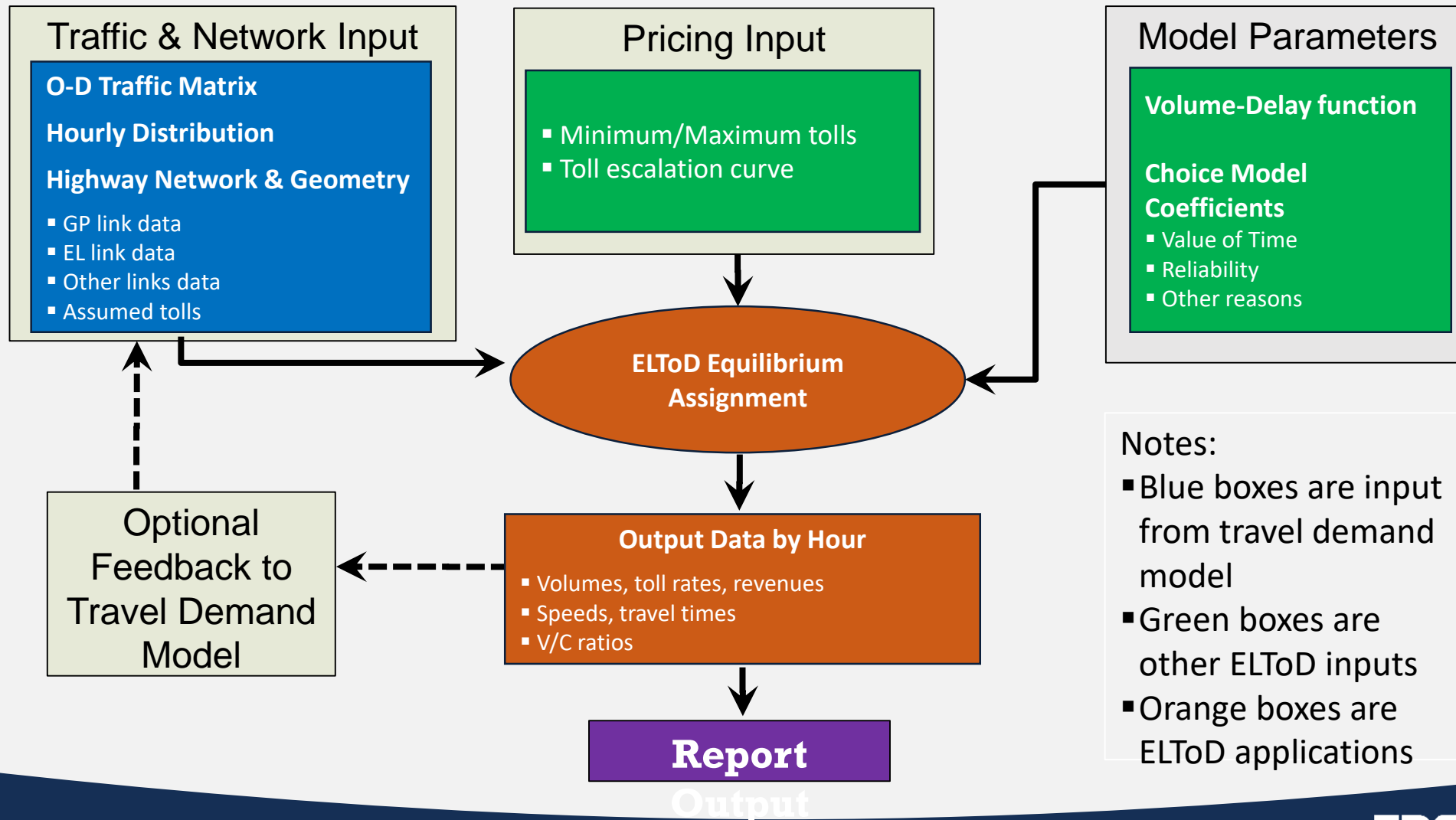
# WHAT IS ELTOD?

*ELToD (Express Lanes Time of Day) Model is a traffic assignment model built to forecast traffic volume and toll amounts for Express Lanes.*

## Four-Step Model / Activity-Based Model



# WHAT IS ELTOD?



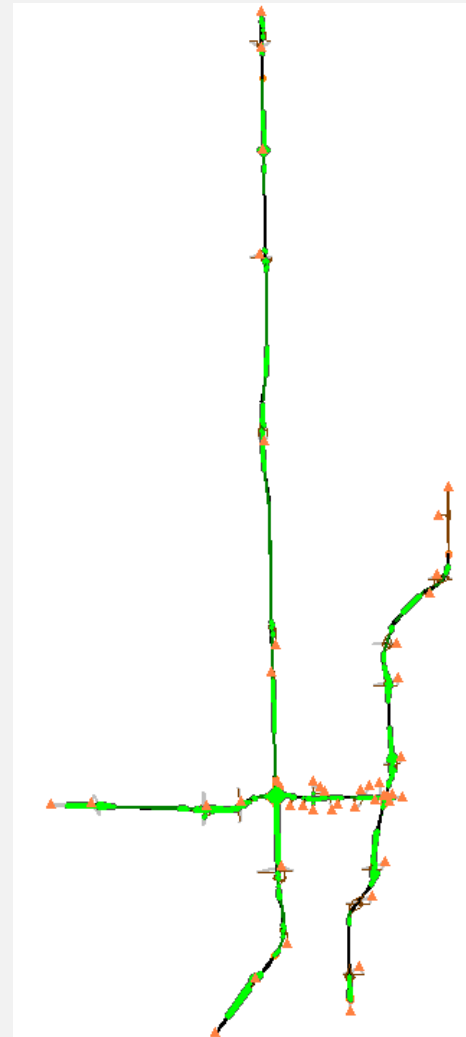
## ELTOD VS OTHER MODELS

---

- Other Models May Consider Only Time and Toll
- ELToD Considers Reliability
- Other preferences are considered - left lane bias, no trucks, perceived safety

*Express Lane Share =*

$$\frac{1}{1 + e^{(-1 * (\beta_{Constant} + \beta_{Time} * Time + \beta_{Toll} * Toll + \beta_{Reliability} * Reliability))}}$$





# EL-TO-EL DIRECT CONNECTIONS

---

*The direct connection provides a seamless network to improve regional mobility by more effectively serving high-volume traffic movements.*

- Ramps Evaluation
- Toll Plan Considerations  
EL-to-EL Connections

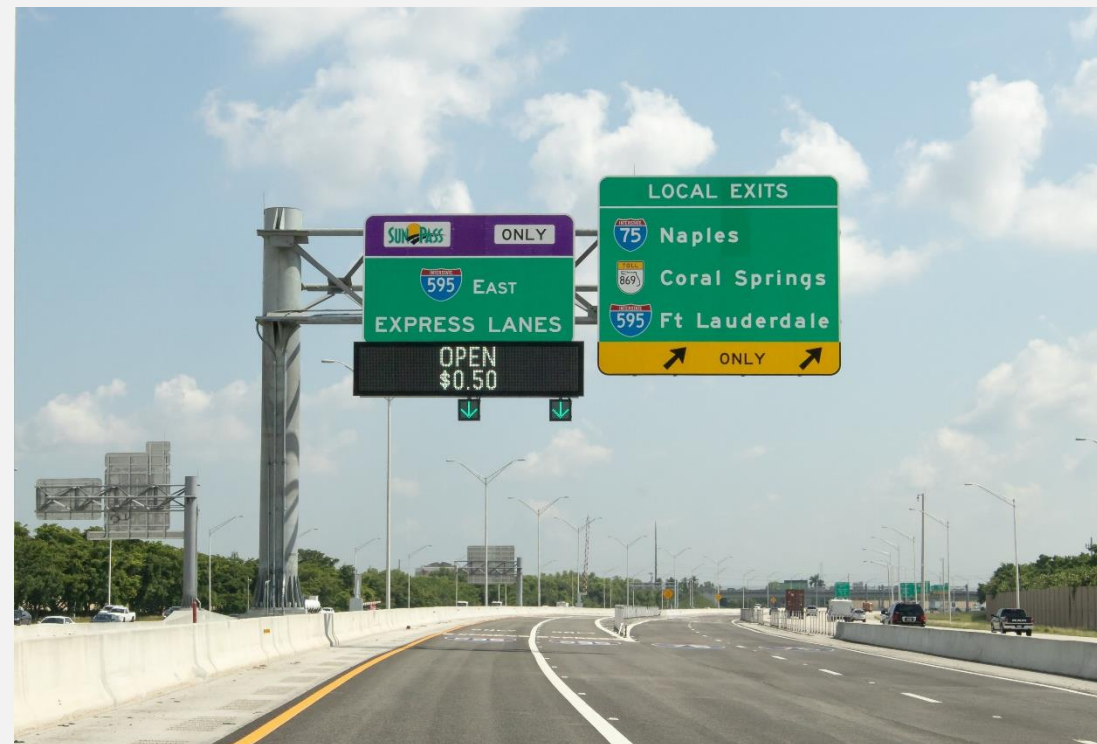


# EL-TO-EL DIRECT CONNECTIONS

## Ramp Evaluation

*Regional Travel Demand Models and ELToD Model are used to determine hourly demand for the EL-to-EL ramps*

- EL-to-EL Ramps are Feasible
  - Ramp DDHV Exceeds 400 Vehicles/Hour
- Dual Lane Ramps
  - Warranted if DDHV is Greater than 1,700 Vehicles/Hour



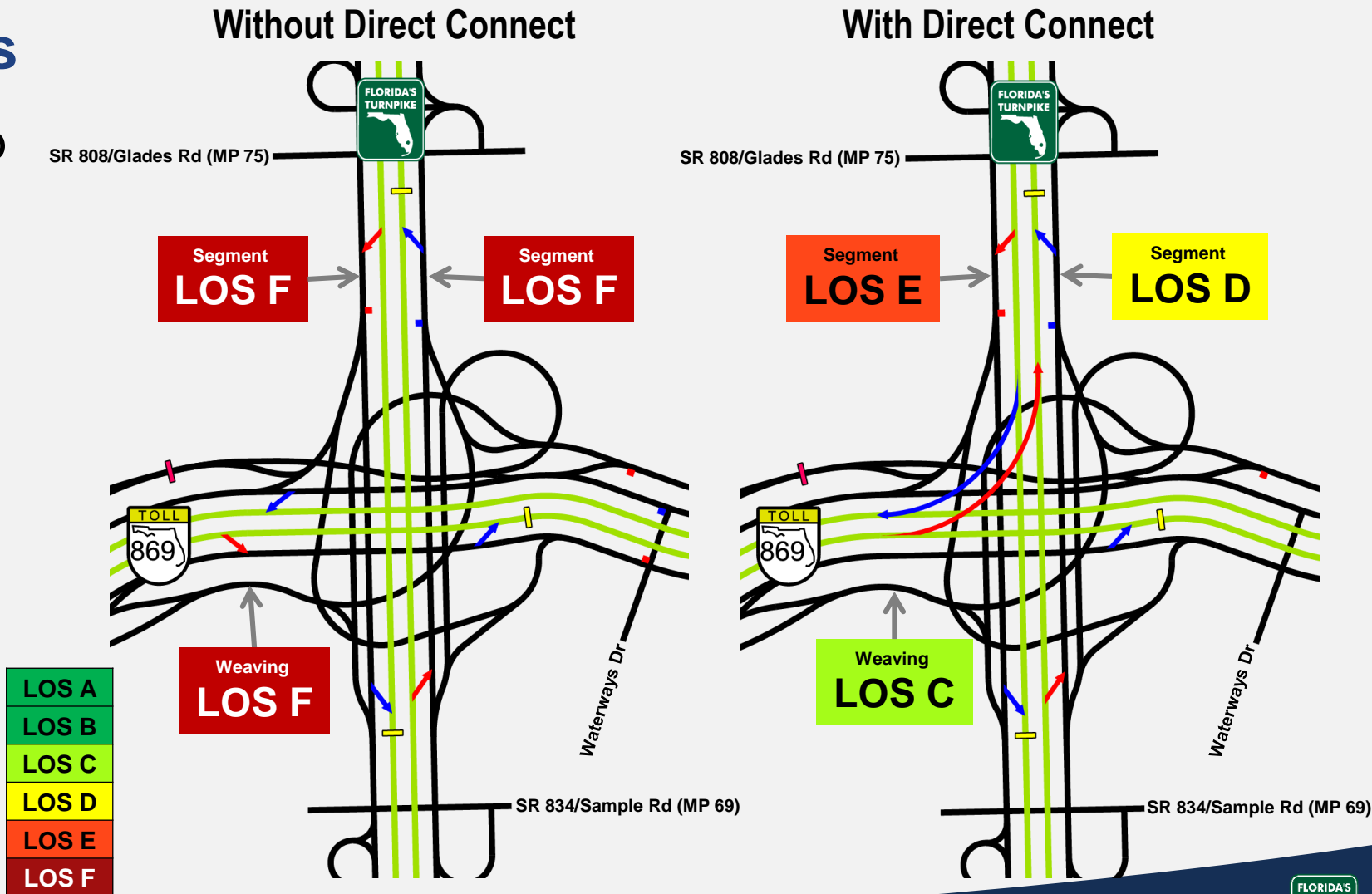
- Benefits

- Cost

# EL-TO-EL DIRECT CONNECTIONS

## Determination of Benefits

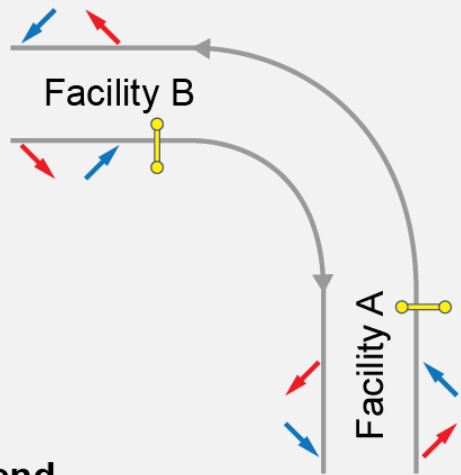
- Comparison to a Slip Ramp Connection
- Demand Projections for Each Scenario
- Operation Analysis
  - Reduced Weaving Volumes
  - Improved Speeds
  - Improved Level of Service



# EL-TO-EL DIRECT CONNECTIONS – PREFERRED TOLL PLAN

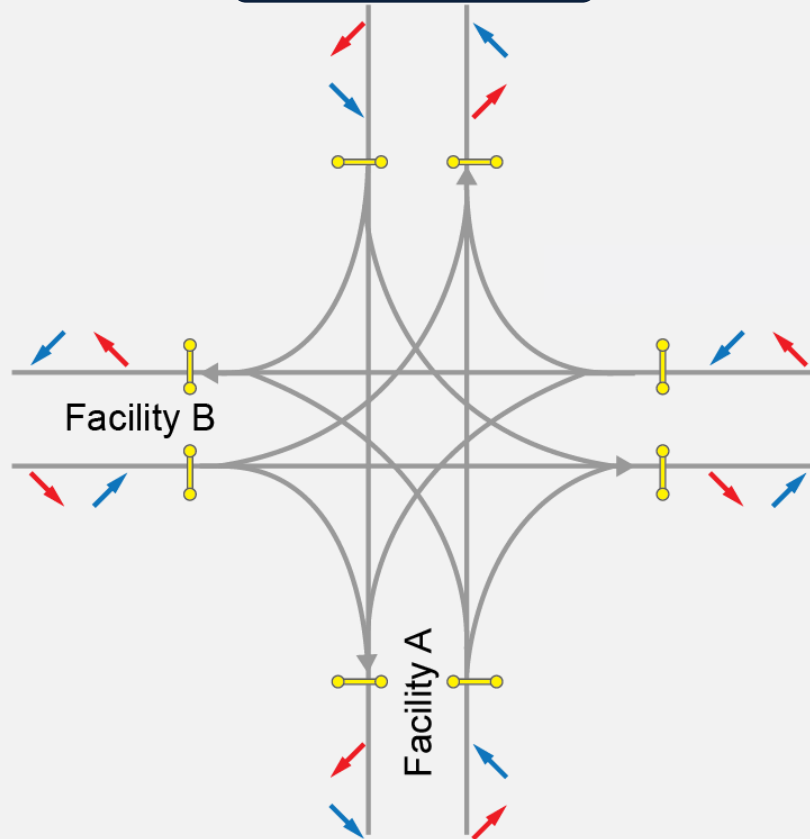
- **Ingress** to EL Provided before EL-to-EL Ramp

**L-Shaped**



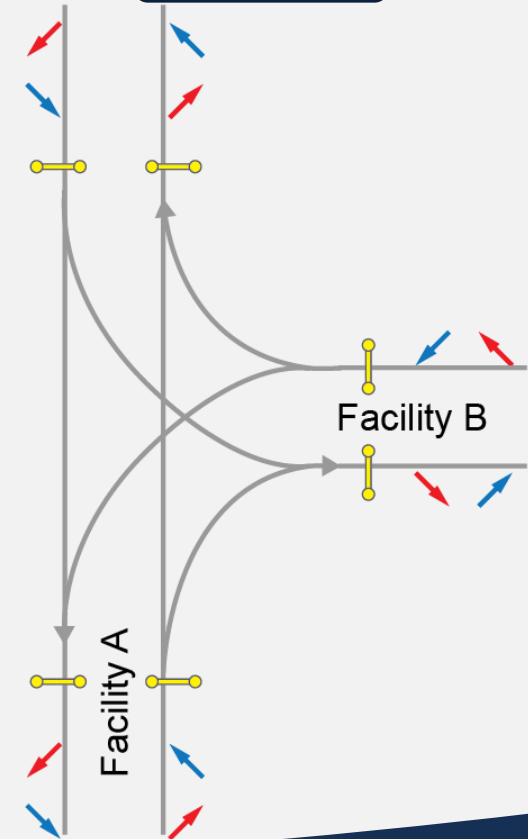
- **Egress** from EL Provided on Both Sides of EL-to-EL Ramp

**Full Connection**



- **Toll Gantry** on Both Sides of EL-to-EL Ramp & per **GTR**

**T-Shaped**



**Legend**

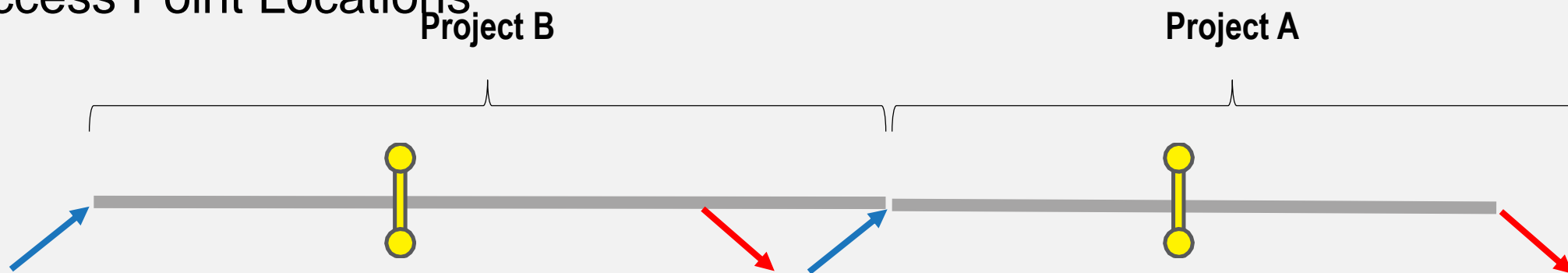
-  Ingress
-  Egress
-  Toll Gantry
-  Express Lanes

# PROJECT PHASING

- Interim & Ultimate Configuration Diagrams
  - Part of a Larger Corridor
  - Part of Regional Network Connection
- Separate Diagrams for each Interim Phase
- Complete Segments (Ingress followed by Egress) for Each Interim Phase
  - Project can be Opened as a Stand Alone EL Facility
- Same Access Point Locations

## Legend

-  Ingress
-  Egress
-  Toll Gantry
-  Express Lanes



# QUESTIONS

---

**Andrew Velasquez, P. E., P.T.O.E.**  
**Program Manager**

**AECOM – FTE Traffic & Revenue Consultants**

**Office: (954) 934 – 1161**

**[andrew.velasquez@dot.state.fl.us](mailto:andrew.velasquez@dot.state.fl.us)**

**Genoveva Fruet, Ph.D., AICP**  
**Senior Project Manager**

**AECOM - FTE Traffic & Revenue Consultants**

**Office: (407) 264 - 3996**

**[genoveva.fruet@dot.state.fl.us](mailto:genoveva.fruet@dot.state.fl.us)**

**[www.floridaexpresslanes.com](http://www.floridaexpresslanes.com)**