



2018  
Transportation  
**SITE IMPACT**  
**HANDBOOK**

Estimating the Transportation Impacts of Growth



STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

Systems Implementation Office  
605 Suwannee Street, MS 19  
Tallahassee, FL 32399

[www.dot.state.fl.us/planning](http://www.dot.state.fl.us/planning)

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# 1



## Introduction

### 1.1 Purpose of Handbook

The Florida Department of Transportation (FDOT) has developed these guidelines to assist FDOT staff in their review of developments. While this handbook is primarily for FDOT staff, it is available to local governments and other transportation partners to communicate the FDOT’s guidance for reviewing various documents. The handbook is titled “Transportation Site Impact Handbook” to reflect the broader scope of work including local government comprehensive plans, community planning responsibilities, and multimodal transportation – rather than simply traffic analysis. This handbook is designed to reflect legislative and other changes that have taken place over time.

The inclusion of Site Impact in this title is to reflect the first version of this Handbook and to differentiate it from the Traffic Analysis Handbook also published by FDOT. For purposes of this document and in professional practice, the terms Transportation Impact Analysis and Site Impact Analysis both refer to the process of analyzing the multimodal impacts of development on the transportation system.

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Since the 2010 update to the handbook, there have been significant changes to state legislation which impacts the guidelines presented in this edition of the handbook. Throughout this handbook, we will be referencing these legislative changes that occurred since then. These legislative changes have affected several state agencies and programs that pertain to development and transportation systems. These changes have revised the focus of these agencies and programs including changes to their duties and guidance. This update also includes updates to the policies and procedures at the FDOT.

We have tried to make this handbook as current as possible; however, community planning may go through even more changes into the future. For this reason, please check with the Florida Department of Economic Opportunity (DEO), where the state land planning agency is located, for any updates. Information on future updates can be at DEO's website, [www.floridajobs.org/community-planning-and-development](http://www.floridajobs.org/community-planning-and-development).

## 1.2 Background

### Transportation Impact Analysis –

*An analysis that estimates and quantifies the specific transportation-related impacts of a development proposal*

A major part of FDOT’s role in community planning involves reviewing proposed developments, comprehensive plan amendments, land development code amendments, capital improvement budgets, provision of public facilities, proportionate share agreements, Evaluation and Appraisal Reviews (EAR) based amendments, and other local government actions that are identified for state review. Since these local government decisions provide the basis for development approvals, they often incorporate land use changes and impacts to the transportation network. As such, transportation impact analyses are conducted to evaluate how the transportation network would function once the proposed land use change or development takes place.

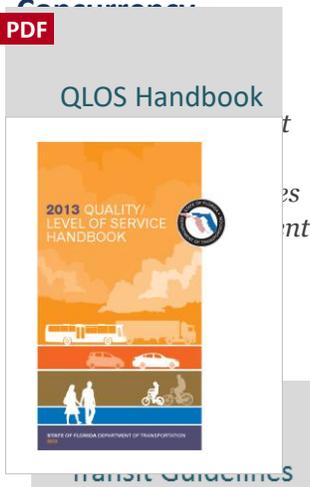
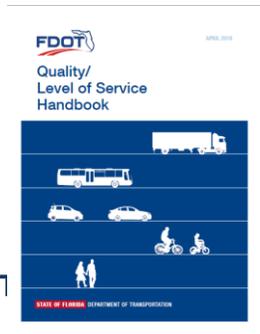
Depending upon the anticipated impacts, several state and regional agencies will have inputs on these approvals. Significant impacts on regional or statewide transportation facilities are reviewed by the FDOT’s District Community Planning staff to ensure that the target performance standards are achieved and maintained.

In accordance with Sections [163.3184](#) and [334.044](#) Florida Statutes (F.S.), the FDOT is responsible for reviewing and providing comments on local government comprehensive plan amendments and Development Orders as they relate to transportation impacts on state and regional multimodal facilities. The types of reviews and the associated statutory and regulatory basis for these reviews are summarized on Exhibit 1. The main categories of reviews is:

- **Local government plan comprehensive plan reviews**

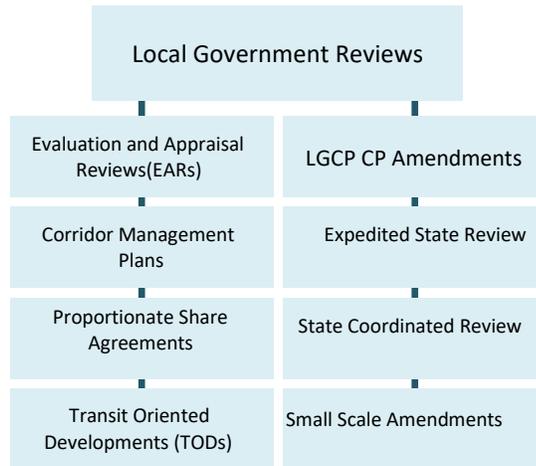
As indicated on Exhibit 1, various actions related to planning documents require coordination between the FDOT District Community Planning Coordinators and local governments or developers. Local government comprehensive plan (LGCP) amendment reviews are just one type of review. Regardless of the type of review, the FDOT reviewer should work with the local government staff and applicants to identify opportunities to integrate multimodal networks into the planning process and create strategies for making communities ready for transit in the future.

The FDOT’s latest [Quality/ Level of Service Handbook](#) ,the [Guidelines and Performance Measures to Incorporate Transit and Other Multimodal Considerations into the FDOT-DRI Review Process](#) both provide guidance for



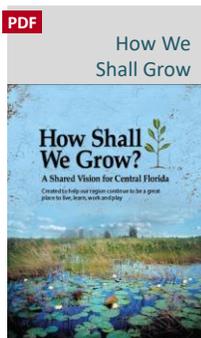
incorporating transit considerations into the planning process and quantifying multimodal transportation network in the analysis of impacts.

**Exhibit 1**  
**Examples of Review Types**



*Please direct your questions and concerns to your FDOT district office or the Systems Implementation Office in FDOT Central Office [siteimpact@dot.state.fl.us](mailto:siteimpact@dot.state.fl.us)*

The FDOT Office of Policy Planning (OPP) coordinates with the FDOT District Community Planning Coordinators and the State Land Planning Agency (SLPA) within the Department of Economic Opportunity (DEO) in developing policies, procedures, and guidelines to assist the Districts and other review agencies with the assessment of transportation impacts associated with growth and development. Increasing coordination between FDOT, SLPA, and local governments will be necessary as communities identify desirable growth patterns through strategic regional visioning efforts such as “[How Shall We Grow?](#)” appropriate mixtures of development, and complementary multimodal transportation networks. To effectively protect and maintain the transportation network, all professionals will need to work cooperatively to respond to community planning issues, protect quality of life, and maximize the use of limited funding.



When conducting an analysis, professionals will need to be familiar with the following:

- Local and adjacent comprehensive plans, particularly, the Future Land Use, Transportation, and Capital Improvement Elements
- Metropolitan planning organization long-range transportation plans
- Transit development plans
- Transportation disadvantaged service plans
- Transportation demand management resources
- Commuter assistance programs
- Bicycle and pedestrian plans
- Proposed comprehensive plan amendments
- The Community Planning Act, as it allows for flexibility in how local governments approach concurrency. Local governments can still use concurrency exception areas, multi-modal transportation districts, urban design, or a combination to address mobility and funding needs.
- Existing large scale developments, as well as the potential impacts to the statewide and regional multimodal transportation network.

These documents will familiarize reviewers with the vision for the future land use and transportation system of the local government, as well as what regulatory systems are in place today.

### 1.2.1 Why is a Transportation Impact Analysis Needed?

The FDOT's role is to protect the integrity of the transportation system for the public and to minimize degradation of both the regional and local transportation networks. There are a number of additional reasons for the FDOT to perform a transportation impact review:

- Provide public agencies with a mechanism for managing transportation impacts of land development within the context of metropolitan transportation planning, local government comprehensive planning, and concurrency
- Provide applicants with recommendations for effective site transportation planning
- Provide public agencies with a method for analyzing the effects of development on transportation
- Establish a framework for the negotiation of mitigation measures for the impacts created by development
- Coordinate with local governments when a state facility will be impacted by a proposed development

- Promote multimodal transportation systems where appropriate

The transportation impact review provided by the FDOT can be instrumental in ensuring the protection of the state's important transportation system.

### 1.2.2 The FDOT Reviewer's Role

This handbook is intended to guide the FDOT in reviewing LGCP elements, **DRIs** and other land use approvals that may impact the State Highway System (SHS), in particular facilities designated under the Strategic Intermodal System (SIS). In addition, this handbook is intended to offer guidance to transportation partners at all levels of government to enhance coordination in the existing review processes.

In order to sustain a professional and constructive review process, FDOT reviewer comments should be:

- Professional
- Concise
- Provide suggested action by the applicant to address specific comments
- Reference FDOT procedures, manuals and handbooks in the methodology agreement, where applicable, including any District procedures, Florida Statutes and Administrative Rules

The FDOT reviews of LGCPs are focused on the relationship between transportation, land use, intergovernmental coordination, and capital improvements elements of the LGCP, as identified in Chapter 163, Part II, F.S. The FDOT reviewer should focus on impacts to important state transportation resources and facilities.

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## 1.3 About this Handbook

This handbook was designed as an electronic desktop preference for the FDOT reviewer. Hyperlinks to other resources which address specific issues in greater detail are included throughout the handbook. In addition, a comprehensive [List of Resources](#) is provided to allow for further research. The handbook has been organized in this manner to facilitate practical use. It consists of five Chapters and Appendices as follows:

**[Chapter 1](#) – Introduction:** This Chapter provides an overview of the Transportation Site Impact Handbook and summarizes the legislative and the changes in state law that has occurred since the last edition of the handbook.

**[Chapter 2](#) – The Transportation Impact Process:** This Chapter discusses standard components for the completion of transportation impact analyses and reviews. Chapter 2 should be utilized in conjunction with other chapters that describe the various types of FDOT reviews.

**[Chapter 3](#) – Local Government Comprehensive Plan Reviews:** This Chapter describes how the FDOT assists local governments with development project reviews. It describes the different types of LGCP amendments and land development reviews as well as FDOT’s roles and responsibilities during these processes. Four (4) [Resource Guides](#) are included at the end of the chapter.

– **Mitigation:** This Chapter provides information on mitigation processes and options for mitigating transportation impacts to the SHS.

**[Appendices:](#)** The Appendices include:

[Appendix A\)](#) Glossary

[Appendix B\)](#) Document URLs

The Transportation Site Impact Handbook and many of the linked resources are available online. Given the changing nature of laws and professional practice, keeping the information within this handbook up to date has been an ambitious undertaking. The Transportation Site Impact Handbook will always be a work in progress with updates and clarifications being added as necessary.

## 1.4 Updates to this Handbook

### Legislative Updates

State law pertaining to transportation has changed significantly since the Transportation Impact Handbook was updated in 2010.

Some major transportation-related changes include:

- Statutory regulations governing transportation concurrency were made optional for local governments
- Repeal of Rules 14-94 and 9J-5, Florida Administrative Code (F.A.C.), which previously governed statewide minimum LOS standards for the SHS and community planning laws respectively, in coordination with laws established in the Florida Statutes. Portions of Rule 9J-5, F.A.C., as well as repealed Rule 9J-11.023, F.A.C., were incorporated in Chapter 163, Part II, F.S.
- New requirement that local governments with transportation concurrency regulations must consult with FDOT when a proposed development will affect SIS facilities
- The Community Planning Act allows for flexibility in how local governments approach concurrency. Local governments can still use concurrency exception areas, multi-modal transportation districts, urban design, or a combination to address mobility and funding needs
- Revisions to regulations governing the contribution of proportionate share mitigation for transportation projects and the encouragement of multimodal fees in lieu of concurrency
- Repeal of statutory provisions for proportionate fair-share mitigation for transportation projects
- Requirements for monitoring transportation and expressway authorities
- Establishment of transportation deficiency authorities and transportation sufficiency plans, a county or municipal system created to plan and finance identified transportation deficiencies
- Creation of the definition for “transportation deficiency”
- Creation of two comprehensive plan amendment review processes, Expedited State Review and State Coordinated Review
- Redefining the roles of “reviewing agencies” including DEO, serving as the SLPA. Legislation provides that review of local government comprehensive plan amendments and other identified actions must focus on “important state resources and facilities”
- Revisions to provisions governing the Sector Plan and Rural Land Stewardship Area Programs
- Changes to the Development of Regional Impact (DRI) program, new DRI’s are reviewed as State Coordinated Review comprehensive plan amendments and changes to previously approved DRIs are done solely at the local level.

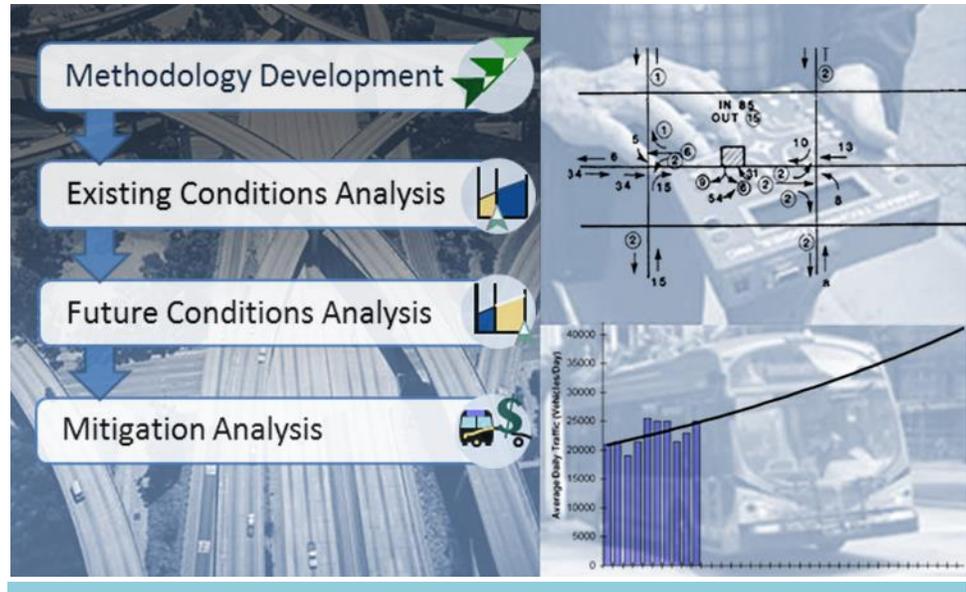
**WEB** Reorganization  
Chapter 163,  
Part II, F.S.

### 1.4.1 State Transportation Facilities and Concurrency

Legislative changes to state law including revisions to Chapters 163, Part II, (The Community Planning Act) and 380.06, (The Land and Water Act, Developments of Regional Impact) F.S., significantly transformed the landscape of community planning and transportation planning in Florida. As identified above, these changes have refocused the duties of the FDOT, SLPA, and other reviewing agencies and reduced or expanded several governing provisions which impact decision-making and planning at the local level. Of these governing provisions, the elimination of the state requirement for transportation concurrency at the local level as well as changes to the application of level of service standards by the FDOT and proportionate share mitigation has caused a reassessment of the identification, analysis, and mitigation of transportation impacts by proposed development.

As these and other changes are discussed in more detail throughout the Handbook, it is essential for the FDOT reviewer to understand the new role of the agency. As local governments now have more authority over planning decisions, FDOT and other reviewing agencies will take on a more collaborative role with local governments. In addition to providing technical assistance as requested, FDOT and reviewing agencies will focus on providing aid and guidance during identification and analysis, while focusing on mitigation measures for facilities of statewide significance.

# 2



## The Transportation Impact Process

### 2.1 Introduction

*Throughout this chapter and in national practice, “transportation impact study” may also be referred to as “transportation impact analysis” or “traffic study”*

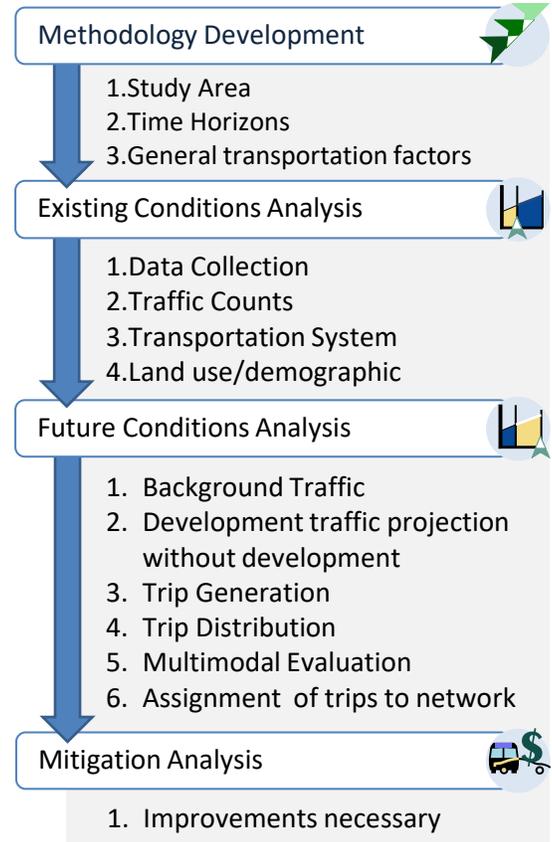
This chapter provides technical guidance for reviewing transportation impact studies. Emphasis is placed on providing guidance to allow for an understanding of regional variations rather than a one size fits all approach for the review of a transportation impact study. The objectives of a transportation impact study that a reviewer should be able to identify during their review should include the following:

- Assessment of the impacts of the proposed development on the transportation system
- Assessment of the need for improvements to achieve a safe and efficient transportation system to meet established target level of service
- Provision of a forum for stakeholder discussion
- Assessment of the needs of all reasonable users and modes impacted by the development

**Adapted from:** *Transportation Impact Analysis for Site Development, ITE 2005*

Exhibit 2 illustrates a typical framework for transportation impact analysis and its review. In general, transportation impact analyses and their reviews should follow this general set of basic procedures.

**Exhibit 2**  
**Basic Framework**  
**of a Transportation**  
**Impact Analysis**



Typical traffic studies reviewed by FDOT are associated with:

- Corridor planning studies where developments will impact the roadway design and/or operations (medians, signals, turn lane analysis)
- Local Government Comprehensive Plan Amendments
- Local Concurrency reviews if applicable
- Access permit studies
- Courtesy reviews at the request of local governments for impacts to state facilities

As FDOT reviewers evaluate studies including those identified above, presentation of the summary of findings including any associated recommendations for mitigation, should be presented in a clear and concise manner. The following example from “Mike on Traffic” provides an outline for organizing a transportation study review memo or report; indicating the three major components as well as additional tips for conducting the review itself.

Some wisdom on reviewing a traffic study from “Mike on Traffic” **Views From a Licensed Engineer**



This blog provides tips from a seasoned professional engineer. The text below has been adapted from the blog. The outline below provides a clear memo format for city staff who hired an independent consultant to perform the traffic study.

*Section 1 – Introduction/  
Purpose*

Give a brief description of the traffic study and the purpose of the memo. State who prepared the traffic study and their qualifications.

*Section 2 - Conclusions/  
Recommendations*

**State whether the traffic study is sufficient or if further study is needed.** If further study is needed, list what needs to be covered and purpose of covering those items. If the traffic analysis was done properly but you disagree with the conclusions/recommendations, clearly state why you disagree and what you recommend.

*Section 3 - Technical  
Review*

- **Visit the development site to make sure all of your comments will be credible.**
- Go through each component of the traffic study and state whether or not you agree with the study. If the city/county/state has written policies or standards related to traffic studies, they should be cited and inconsistencies should be identified.
- When flagging an issue or disagreement, clearly identify whether it is a minor issue that wouldn't affect the conclusions/recommendations of the traffic study or if they are a major issue that warrants further analysis.

**2.1.1 Considerations for the Components of a Transportation Impact Study**

The size, location, and type of development, as well as jurisdictional requirements, will influence the type and level of detail required for each component of the transportation impact study.

**Methodology  
Development**

Methodology Development is an essential component in any transportation impact analysis. During this phase, the local government policies for traffic analysis play a very important role. This process should define the data, techniques, practices, and assumptions that will be used while preparing a transportation impact analysis. The parties should reach agreement regarding the data to be considered and the basic factors to be used in the study. Analyses of existing and future conditions should be based on the standards adopted by the local government. This component can be helpful to set the stage for integrating the consideration of transit and multimodal services into the analysis. Once a methodology has been defined and accepted, the technical analyses can begin.

## Intersection Control Evaluation (ICE)

An ICE is required when:

- (a) New signalization is proposed;
- (b) Major reconstruction of an existing signalized intersection is proposed (e.g., adding a left-turn lane for any approach; adding an intersection leg);
- (c) Changing a directional or bi-directional median opening to a full median opening;
- (d) Driveway Connection permit applications for Category E, F, and G standard connection categories (defined by average daily trips thresholds in Rule 14-96.004, F.A.C.) add, remove, or modify a traffic signal; or
- (e) District Design Engineer (DDE) and District Traffic Operations Engineer (DTOE) consider an ICE a good fit for the project.

See Section 2.11 for more information on ICE.

## Existing Conditions

An Existing Conditions analysis is developed to assess current conditions and establish a basis for comparison to future conditions. In addition to the roadway network the study should analyze the following: the transit network (not just the routes but frequency and other measures of transit quality), bicycle, and pedestrian facilities.

## Future Conditions

Future Year Conditions for a future horizon year (that does not include the proposed development) are forecast to develop future background conditions. The background conditions assessment then serves as the basis for a comparison to future conditions with the proposed site development.

The future conditions analysis is where the future impacts of a proposed development or amendment are assessed. Once the trips (auto or other) are assigned to the network, measures of effectiveness, such as a Quality/Level of Service analysis are calculated. The anticipated multimodal services identified should be taken into consideration and reflected in the future condition analysis.

## Mitigation

When a transportation impact analysis indicates that the transportation system will operate at an undesirable level of service as compared to the local adopted level of service (LOS) standards, mitigation measures to reduce transportation impacts should be undertaken. Mitigation can be in the form of enhancing operational efficiency, reducing demand or increasing system capacity. Mitigation can also reduce level of development or phase development impacts with capital improvements. Mitigation should be relative to the size of the transportation impact expected. When adverse transportation impacts are expected on Strategic

## Importance of Multimodal Considerations

Intermodal System (SIS) facilities, FDOT should work with local governments and other transportation agencies to identify and agree upon mitigation measures. This is important even when FDOT comments are only advisory.

There are opportunities for including multimodal considerations at each stage of the transportation impact analysis. Some of the best references that both applicants and reviewers should be knowledgeable of regarding multimodal considerations include the latest editions of:

- [Transit Capacity and Quality of Service Manual, 3rd Edition \(TCQSM\)](#)
- [Highway Capacity Manual](#)

The remainder of this chapter provides a more detailed discussion of each of the previously mentioned components in the transportation impact analysis process; describing key study elements both applicants and reviewers should consider when preparing and reviewing a transportation impact analysis.

## Checklists

Summary checklists for the overall site impact analysis process are provided in this handbook. These checklists can serve as a tool to help ensure that the site impact process is properly executed by both the applicant and the reviewer.

## 2.2 Methodology Development



The Methodology Development process usually begins when the applicant (developer or other party) contacts the local government, Regional Planning Council (RPC), FDOT or other agency to discuss a proposed development. Many local governments have adopted official methods they require for development related traffic studies. Even if no formal process is required, it is good practice for participating agencies to agree to a methodology before requesting the applicant to perform a transportation impact analysis.

*Establish responsibilities and analyses that will be performed*

Part of methodology development is for the applicable authorities to agree on the level of transportation analysis required and acceptable tools to use for this analysis. The use of various tools and their appropriate application is described throughout this chapter. In some cases the reader is referred to other FDOT publications which explain these tools in more detail.

## Regional Planning Council (RPC)

Pursuant to revisions to Section 163.3184, F.S., Regional Planning Council (RPC) review and comments shall be limited to adverse impacts on regional resources or facilities identified in the strategic regional policy plan and extra jurisdictional impacts that would be inconsistent with the comprehensive plan of any affected local government within the region. A RPC may not review and comment on a proposed comprehensive plan amendment prepared by such council unless the

plan amendment has been changed by the local government subsequent to the preparation of the plan amendment by the RPC.

### 2.2.1 Study Area Requirements

*Adjustments to the study area boundaries may be needed to account for site specific circumstances*

The applicant and FDOT's reviewer should consult with the appropriate agencies to identify applicable policies and criteria in defining the study area because these policies vary (see **Error! Reference source not found.**). The study area is sometimes referred to as the "traffic impact area" or simply the "impact area." Local criteria for defining the study area typically involve a comparison of project traffic to thresholds of the percentage of the maximum service flow rate at an established LOS target.

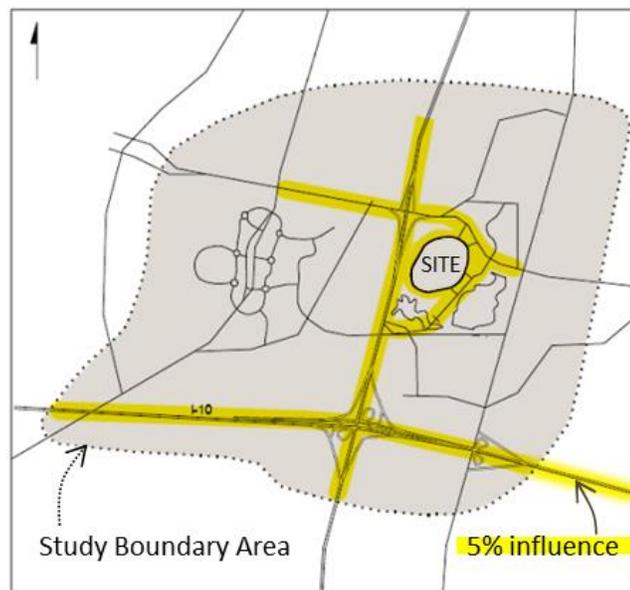


Exhibit 3  
Example Study Area

Many local governments have adopted procedures that prescribe the methodology used in defining the study area for traffic studies used to support comprehensive plan amendments or development concurrency reviews if applicable. The FDOT reviewer should be familiar with the local ordinances and how they apply to the review process. Pursuant to , comments from reviewing agencies, including FDOT, on plan amendments are limited to adverse impacts on important state resources and facilities, which are currently undefined. In general, FDOT is limited to issues within the FDOT's jurisdiction as it relates to transportation facilities and resources for a particular site. The FDOT reviewer may include technical guidance in their review.

## Distance from Site

Another method of establishing a study area for mitigation analysis is by defining as a given distance based on the number of trips generated by a development. For example, the study area will encompass a radius of 0.5 miles for developments generating 50 peak hour external trips. Some local governments have adopted a tiered approach to determining a study area.

For example, a small-scale analysis might be required for developments generating between 50-100 trips with a study area radius of .5 miles, and a large scale study might be required for developments of greater than 100 trips with a 3 mile study radius. Due to the potential for varying methodologies among local governments, FDOT reviewers should pay particular attention to trips that cross jurisdictional boundaries. Adjustments to the study area boundaries may be needed to account for site specific circumstances. The [Transportation Concurrency Best Practices Guidebook \(DCA 2007\)](#) has detailed descriptions of these methods of determining impact areas.

Exhibit 4 shows an example of the traffic impact area using a radius from the development based on trip generation.

### Exhibit 4 Example of Traffic Impact Area or Study Area

Source: *Transportation Concurrency Best Practices Guide, DCA 2007* (note DCA was disbanded in 2010 and the State Land Planning Agency is now housed in DEO)



## 2.2.2 Intersection Control Evaluation (ICE)

Intersections are designed points of conflict in all roadway systems. This includes U.S. and state highways, county roads, and local streets. All modes of traffic cross paths as they travel through or turn from one route to another. Where different paths separate, cross or join are known as conflict points, and these are always present at intersections. Limiting the number of conflict points at an intersection not only reduces the frequency and severity of crashes, but also improves the overall operation and mobility.

FDOT has developed an Intersection Control Evaluation (ICE) manual to facilitate objective evaluations of intersection alternatives. With the intent to promote innovative thinking and overcoming reluctance at looking at new options.

### Development Conditions that Require an ICE

An ICE is required when:

- (a) New signalization is proposed;
- (b) Major reconstruction of an existing signalized intersection is proposed (e.g., adding a left-turn lane for any approach; adding an intersection leg);
- (c) Changing a directional or bi-directional median opening to a full median opening;
- (d) Driveway Connection permit applications for Category E, F, and G standard connection categories (defined by average daily trips thresholds in Rule 14- 96.004, F.A.C.) add, remove, or modify a traffic signal; or
- (e) District Design Engineer (DDE) and District Traffic Operations Engineer (DTOE) consider an ICE a good fit for the project.

FDOT encourages local agencies and counties to perform an ICE for projects they lead on locally maintained roadways, but ultimately it is the choice of the local jurisdiction.

### Relationship to the Strategic Highway Safety Plan

The Florida Department of Transportation (FDOT) along with ten other state and federal agencies prepared a 2016 update to the Strategic Highway Safety Plan (SHSP). Intersection safety is one of 13 emphasis areas shown in the SHSP. Nationally, Florida ranks as the #1 state in the country with the most intersection related traffic fatalities. In 2015, over 30% of all Florida traffic fatalities occurred from intersection-related crashes (based on 2015 Fatal Accident Reporting System (FARS) data). The SHSP intersection emphasis area acknowledges the safety benefit of roundabouts and has a control strategy saying: Use traditional and alternative designs and technologies to reduce

## Relationship to the Complete Streets

conflict risks such as innovative interchange designs, access management and roundabouts.

In September 2014, the FDOT adopted the Statewide Complete Streets Policy (Topic No. 000-625-017). The FDOT Complete Streets policy builds on flexibility and innovation to ensure that all state roadway projects are developed based on their context classifications. Intersections play an essential role in the roadway network and offer connections to different routes and facilities while providing necessary access to adjacent residential, commercial, and industrial developments. As a result, FDOT's Intersection Control Evaluation (ICE) procedure is a key component of the Department's Complete Streets implementation.

Intersections comprise a small portion of total road system mileage, but they account for a high percentage of all crashes, especially severe crashes producing injuries and fatalities. Safety of all road users must be considered during intersection design.

Traditionally, the most common solutions to intersection challenges involved stop controlled, conventional signalization scenarios, or interchanges. Many of the performance metrics used to select between these common solutions focused on the movement of vehicles through the intersection. In recent years, several new or innovative intersection designs have been introduced across the United States. These "alternative" intersection control types are enhancing safety and improving operations, along with varying degrees of other benefits. This reimagining of geometric design and traffic control has improved the movement of people and vehicles across and through intersections. Alternative intersections (including roundabouts, cross-over-based designs, and U-turn-based designs) often consider community needs, transportation needs, and control strategies to achieve multiple objectives. This is consistent with the FDOT Complete Streets policy. Objective intersection control evaluations use performance-based criteria to determine the most viable control type for a project.

Adopting "performance based" policies for Intersection Control Evaluation (ICE) creates a transparent and consistent approach for agencies to consider intersection alternatives based on metrics such as safety, operations, cost, and social, environmental and economic impacts. ICE is intended to be a data driven, performance-based framework to optimize the State's investment and provide solutions that consider all users.

## Stages of ICE

ICE has three stages:

Stage 1: Screening – completed during a project’s initial stage. FHWA’s Capacity Analysis for Planning of Junctions (CAP-X) is an operational analysis tool to evaluate selected types of innovative intersection designs. FDOT has expanded this tool for use in Florida. FHWA’s Safety Performance of Intersection Control Evaluations (SPICE) is a separate tool used for safety analysis.

Stage 2: Preliminary Control Strategy Assessment – completed following a project’s initial stage when more detailed information is available. SPICE is used for a more detailed safety analysis than in Stage 1. FDOT has developed default Synchro templates for operations analysis of certain types of alternative intersections. The FDOT ICE Tool is a separate tool for benefit-cost analysis.

Stage 3: Detailed Control Strategy Assessment – completed prior to Preliminary Design/Phase I plans. Stage 3 analysis is not required for Project Development and Environment (PD&E) studies as this type analysis is a normal part of PD&E.

At the completion of each stage, the appropriate FDOT ICE form is completed and submitted to the DTOE and DDE.

## ICE Manual and Forms

The FDOT Manual on Intersection Control Evaluation (ICE) and related forms and tools can be found at:

[http://www.fdot.gov/traffic/trafficservices/Intersection\\_Operations.shtm](http://www.fdot.gov/traffic/trafficservices/Intersection_Operations.shtm)

## 2.2.3 Time Horizons – Analysis Years

In general, the analysis years should include:

- The existing year
- The opening date of the proposed development
- Completion of major phases in a multi-year development

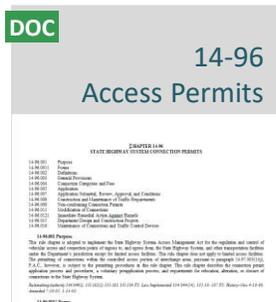
In some cases, it may be needed to take into account:

- Long-range transportation plans or Local Government Comprehensive Plan (LGCP) horizons,
- Metropolitan Planning Organization (MPO) prepared Transportation Improvement Program horizons or other significant transportation network changes
- Corresponding local government’s Transportation and Capital Improvement Elements (CIE)

Analysis years should be clearly defined in the report (i.e., “2010 Existing Conditions” instead of just “Existing Conditions”) and agreed to during the methodology process.

### Exhibit 5 Suggested Study Horizons

<b>Local Government Comprehensive Plans</b>	Existing, short-term (5-year), and long-term (10-year minimum or greater) analyses are required for comprehensive plan elements. The short-term horizon is covered by the Plan's five-year schedule of capital improvements; the long range horizon is a minimum of ten years but can be longer based on the local government's supporting data and analysis.
<b>Concurrency Reviews</b>	Typically, these developments occur in a single phase. Therefore, the anticipated opening year of the development assuming build out and full occupancy is the only horizon year required. Local government requirements should be reviewed.
<b>Access Permits</b>	Depends on the size and scope of the development. Many will be studied only for the opening year, and larger developments may have longer time horizons. For information on driveway connection permits, please refer to .



Under Section 163.3177, F.S., a comprehensive plan must be based on a planning period of at least 10 years with a Five-Year Schedule of Capital Improvements located within the CIE. Additional planning periods for specific plan components, elements, land use amendments, or projects are allowed. The Five-Year Schedule of Capital Improvements must identify facilities and any associated funding necessary to meet adopted LOS during a 5-year period; however, there is no requirement that the CIE prove the schedule is financially feasible. Listed facility improvements must be identified as “either funded or unfunded and given a level of priority for funding.”

Legislative changes in 2011 eliminated mandatory transportation concurrency requirement for local governments. Local governments may choose to repeal concurrency and establish other approaches such as mobility-fee based systems. Pursuant to Section 163.3180(5)(h)1., F.S., local governments should consult with

FDOT whenever a SIS facility is expected to be impacted by a comprehensive plan amendment. There are stipulations if a local government chooses to continue using transportation concurrency.

If a local government elects to repeal transportation concurrency, it is encouraged to adopt an alternative mobility funding system that uses one or more of the tools and techniques identified in section 163.3180(5)(f), Florida Statutes:

- Adoption of long-term strategies to facilitate development patterns that support multimodal solutions, including urban design, appropriate land use mixes, intensity and density
- Adoption of an area wide level of service not dependent on any single road segment function
- Exempting or discounting impacts of locally desired development
- Assigning secondary priority to vehicle mobility and primary priority to ensuring a safe, comfortable, and attractive pedestrian environment with convenient interconnection to transit
- Establishing multimodal level of service standards that rely primarily on non-vehicular modes of transportation where existing or planned community design will provide adequate a level of mobility
- Reducing impact fees or local access fees to promote development within urban areas, multimodal transportation districts, and a balance of mixed-use development in certain areas or districts, or for affordable or workforce housing

Mobility Fees relate to concurrency and multimodal fees relate to flexibility. Multimodal fees are seen in places like Orange County, and the Cities of Orlando, Ovideo, Cassleberry, Tampa, and Sarasota. Places such as Pasco County have a mobility fee. For more information on the Pasco County mobility fee visit the County's website at: <http://www.pascocountyfl.net/index.aspx?NID=329>

The FDOT has also produced a Guidebook on "Using Mobility Fees to Fund Transit Improvements" in November 2016 which can be found at <http://www.fdot.gov/transit/Pages/FinalMobilityFeeGuidebook111816.pdf> This guidebook helps local governments plan, develop, and implement a mobility fee program to fund local or regional transit and transit-supportive investments. It serves as a resource for local government in the early stages of considering mobility fees to those interested in improving an existing mobility fee program.

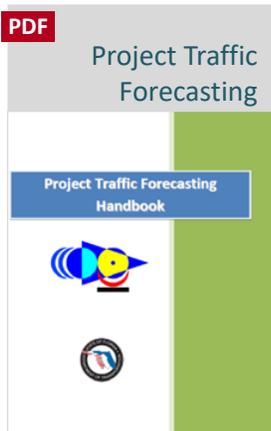
### 2.2.3 Travel Adjustment Factors

## Analysis Periods – “K” Factor

Transportation impact analyses are usually based on a peak-hour analysis. The analysis period should be related to the expected peaking patterns on the roadway and anticipated development traffic.



Selecting a proper time period to analyze is crucial for planning and designing transportation facilities. For example, the “K” factor, which is described in more detail under [Chapter 2.2.4](#), is the ratio of the peak hour traffic volume being analyzed to the Annual Average Daily Traffic for a specific facility which is an important component in selecting a proper time period. Detailed discussion of the K factors and analysis period are found in the [and website](#).



The analysis period selected should be the period that has the highest combination of development and background traffic. This is referred to as the “**peak hour**.” To illustrate this concept, typical peak hours for selected land uses are illustrated in [.](#)

*(Please Note this Handbook is being Updated)*

The analysis period to be used should be clearly stated in the methodology. The FDOT reviewer should check that appropriate factors have been applied to field collected data so that the appropriate analysis period is being used. Detailed information about the application of adjustment factors to collected traffic counts is found in the FDOT [Handbook](#).

Exhibit 6

**Typical Peak Hour Analysis Period for Various Types of Developments**

Development	Weekday Street Peak Hour		Other
	AM	PM	
Residential	X	X	
Office	X	X	
Shopping Center		X	(including freestanding Discount Superstores)
Intersection capacity		X	
Access Design		X	Saturday 11:00-15:00
Restaurants   Fast Food		X	11:00-13:00
Dinner Trade		X	
Industrial	X	X	Industrial Plant shifts may precede typical commuter adjacent street peak hour
Hotel/Motel		X	
Schools       Grade	X		14:30-15:30
High	X		14:30-15:30
College	X	X	
Medical       Hospitals	X	X	6:30-8:00  14:30-15:30
Doctors' offices		X	9:00-10:00  16:00-18:00
Convenience Markets/Gas	X	X	
Sports/Recreational			Peak entry/exit of particular events

*Adapted From: ANALYSIS OF TRAFFIC IMPACT FOR NEW DEVELOPMENTS  
PAUL C. BOX, Skokie, Illinois Public Works Magazine: February 1981*

**Trip Generation and Adjustments**

Trip generation is the process by which the number and type of trips associated with a given land use is estimated. Trip generation may be the most critical element of the transportation impact analysis because it estimates the amount of vehicular travel associated with a specific land use or development. An estimate of trip generation from the development using FDOT approved trip generation methods, such as the most current Institute of Transportation Engineer (ITE)'s *Trip Generation Manual*, is required in all analyses.



Due to the amount of guidance on the subject on trip generation, we have put most of the trip generation guidance under [Chapter 2.4](#).

*If there is no land use code in the Trip Generation Handbook for a specific development, a local government may require the applicant to either use the equations or rates of a similar land use or conduct trip generation studies at sites with characteristics similar to those of the proposed development.*

**Source:** [Transportation Concurrency Best Practices, DCA, 2007](#)

When dealing with adjustments to trip generation that are made to lower the gross trip generation (for example internal capture percentages for mixed-use projects, transit oriented development, pass-by capture rates for retail land uses, etc.) they should be accompanied by sufficient logical justification and/or empirical data early in the process. This should be a major item of discussion during the Methodology Development phase.

### Use of “Manual Methods” and Travel Demand Forecasting Models for Future Conditions

Future conditions for impact assessments can be estimated using “manual methods,” travel demand forecasting models, or a combination of the two. For the purposes of this handbook, “Manual Methods” are those methods of trip generation NOT done with large scale travel demand models, such as Florida Standard Urban Transportation Model Structure. The most common examples of “Manual Methods” are trip generation estimation done through the use of trip generation rates or equations, and background traffic growth calculation done using growth factors or adding known trips from other developments to the surrounding road system.

In addition to trip generation, trip distribution is needed to determine the travel patterns (origins and destinations) of the trips generated which is described in more detail under [Chapter 2.6](#). The method to be used to project trip distribution will often depend on the size and scope of the project, as well as the availability of a travel demand model for the study area. The method to be used should be determined as early as possible in the process through coordination with FDOT and local agencies.

In many cases, a hybrid approach can be used that uses elements of both manual and model methods. For example, background conditions and trip generation might be estimated using manual methods while trip distribution and assignment might be based on large scale model methods. In another example, if the FDOT reviewer questions the distribution and assignment of trips generated by a development analyzed using a manual method, the component potentially could

be compared with the results of an assignment made with a travel demand model.

## Other Major Committed Developments and Redevelopment

*Other major committed developments should be considered in any site impact analysis*

Major committed developments are developments that have an approved Development Order (DO) or an approved concurrency management certificate. These should be considered in the transportation impact analysis. These trips are known as “Vested Trips.” “Vested” or “committed” trips are those that have already been taken into account when analyzing for transportation deficiencies. While the development associated with these trips may not be built yet the trips have been mitigated; thus they should be handled as existing trips.

Pursuant to Section 163.3180, F.S., “the term “transportation deficiency” means a facility or facilities on which the target level-of-service standard is exceeded by the existing, committed, and vested trips, plus additional projected background trips from any source other than the development project under review, and trips that are forecast by established traffic standards, including traffic modeling, consistent with the University of Florida’s Bureau of Economic and Business Research medium population projections. Additional projected background trips are to be coincident with the particular stage or phase of development under review.” For additional guidance, please see Sections 163.3177(1)(f), 163.3180, and 163.3184, F.S. Background trips should be discussed with the local government, as the methodology in calculating this can vary.

The traffic from these developments is part of the background traffic and is addressed in greater detail in [Chapter 2.5](#). The manner in which committed development will be accounted for in the analysis should be determined as early as possible in the process through coordination with FDOT and local agencies.

## Redevelopment Sites

*How to account for previous traffic from site that is being redeveloped*

If a new development is being proposed on a site that previously generated a significant amount of traffic, the reviewer should determine, in advance, the treatment of the traffic that was generated on that site.

In order to encourage in-fill development, some local governments and other agencies “discount” the older site developed traffic and treat it as part of the Background Traffic. This will depend on local government practices, and other considerations such as, the time the property was vacant and existing traffic conditions around the site.

### 2.2.4 Standard “K” Factors

The ratio of peak hour to Annual Average Daily Traffic (AADT) factor (K) is used in the Department's planning through design phases. It is one of the most critical factors in transportation analysis.

In an effort to simplify the confusion around the “K” factor, FDOT transitioned into using a standard peak factor for most planning level analysis in 2012. It’s called the “Standard K”. Originally the term “K” was developed for the practice of converting daily volumes to the 30th highest hourly volume of the year. This became K<sub>30</sub>, commonly referred to as the "design hour". Over time the practice of using K<sub>30</sub>, K<sub>100</sub>, peak to daily ratios or other approaches has created confusion throughout the state on the most appropriate K factor to use. During peak travel hours many Florida roadways are oversaturated or constrained: travel demand exceeds the capacity of the roadways to handle it. Using measured K factors for oversaturated roads distort how roadways should be planned and designed. Measured volumes simply cannot exceed a roadway's capacity even during peak hours. Especially problematic is the determination of appropriate K values in large urbanized areas. Exhibit 7 displays the following standard K factors below.

Exhibit 7  
Standard K Factors

Area (Population) [Examples]	Facility Type	Standard K Factors (%AADT)
Large Urbanized Areas with Core Freeways (1,000,000+) [Jacksonville, Miami]	Freeways	8.0-9.0
	Arterials	9.0
Other Urbanized Areas (50,000+) [Tallahassee, Ft. Myers]	Freeways	9.0
	Arterials	9.0
Transitioning to Urbanized Areas (Uncertain) [Fringe Development Area]	Freeways	9.0
	Arterials	9.0
Urban (5,000-50,000) [Lake City, Key West]	Freeways	10.5
	Arterials	9.0
Rural (5,000) [Chipley, Everglades]	Freeways	10.5
	Highways	9.5
	Arterials	9.5

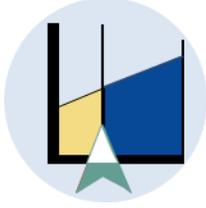
WEB

FDOT  
Standard K Factor

Please go to the FDOT Website on this issue at:

[www.dot.state.fl.us/planning/systems/programs/sm/transition/information/default.shtm](http://www.dot.state.fl.us/planning/systems/programs/sm/transition/information/default.shtm)  
bit.ly/1gq5dpP

## 2.3 Existing Conditions Analysis and Data Collection



The existing traffic information (year, adjustment factors regarding peak season, daily and peak hour traffic) should be discussed during the **Transportation Methodology** component and accepted by the reviewing agencies before conducting traffic counts.

This analysis establishes a basis for comparison of the proposed development. The basic analysis should consist of identifying the operational and physical characteristics of the transportation system using professionally accepted practices. FDOT’s guidelines for data collection found in the most current FDOT Quality/Level of Service Handbook, This Handbook also addresses measuring the quality of service for transit, and non-motorized travel.

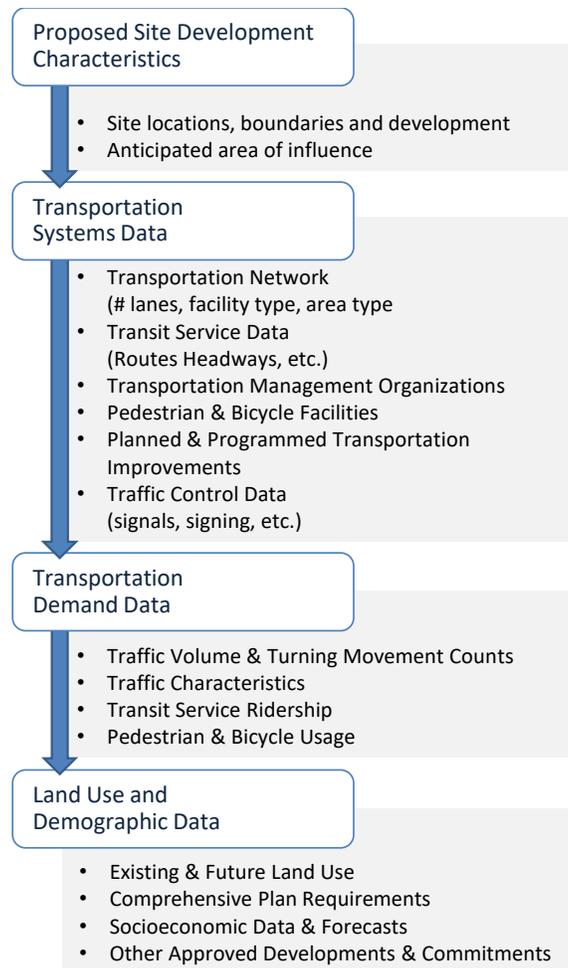
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QLOS Handbook [Draft QLOS Handbook](#)

### 2.3.1 Data Collection

Types of data generally required for the study area are discussed below. summarizes the data collection and existing conditions requirements.

#### Exhibit 8 Common Data Needs for Site Impact Analysis



### 2.3.2 Proposed Site Development Characteristics

*The proposed land uses should be identified by intensity and characteristics consistent with ITE's Trip Generation Manual*

The proposed site development characteristics will identify the location of the proposed development, site boundaries and other site related characteristics. This information should be presented based on the following guidance:

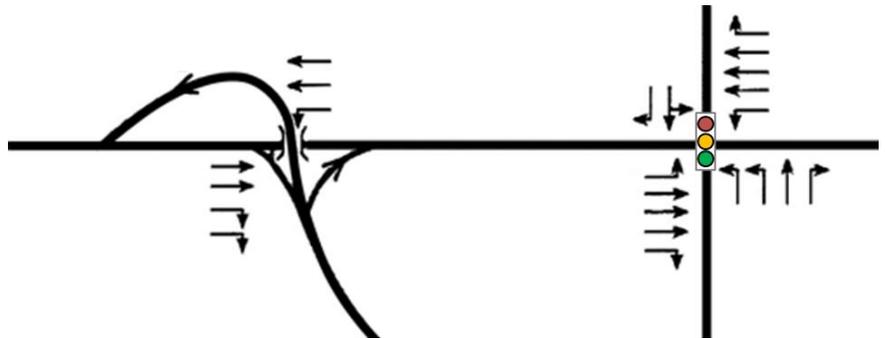
- A site plan or master plan should be provided that clearly indicates the location of proposed land uses and intensities, and internal roadways
- The proposed land uses should be identified by intensity and classification consistent with ITE's *Trip Generation Manual* as much as possible
- The proposed traffic signals, median openings, major driveway and access locations serving the site should be identified
- The required study area or anticipated area of influence for the proposed development should be identified with site development characteristics

### 2.3.3 Existing Transportation System Data

The existing transportation system data will include the physical and functional characteristics of the transportation system. Required data to be provided include:

- Geometric data such as the number of lanes, locations of intersections and signals (see example below)

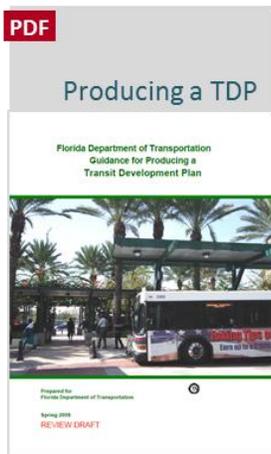
*Required data*



- The access management classification and jurisdiction responsible for the facility (state, county or local) for all facilities within the area of influence
- The area type (rural, transitioning, urban or urbanized area)
- Identification of transit, bicycle, and pedestrian routes
- Crash information for all modes, including pedestrian crashes. This may point out problem areas for future remediation

- Identification of programmed improvements on state highways and significant regional, local (city or county) roads
- Transit facilities and services within the next three years or through each major phase of the proposed development
- Identification of planned improvements that are reported in the MPO long-range transportation plan
- Identification and review of multimodal information, data, and considerations with appropriate agencies

### Data Considerations for Future Transit Service

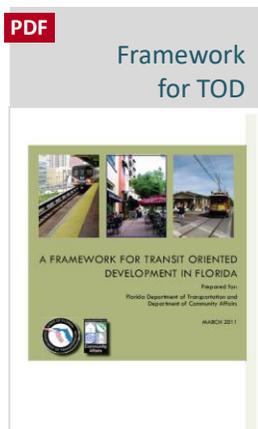


When considering potential transit services, the density, diversity, and distance factors associated with a proposed development should all be considered. Specifically, transit needs should be assessed in the context of the types of housing, mixture of land uses, density and intensity of development, as well as walking distance to transit stops.

As the need for transit services is reviewed, the focus of the analysis should extend outward from development projects and activity nodes to consider the potential for modifying existing transit service.

The study area should not be restricted in terms of walking distance; rather the reviewer should consider, in consultation with the transit provider, whether it is desirable to extend service a modest distance to serve new development.

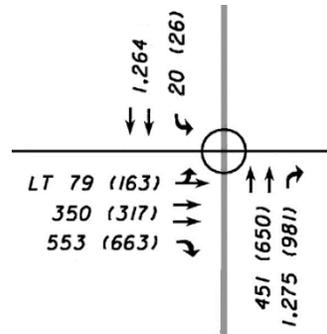
The transit development plan (TDP) may be reviewed and the transit agency serving the area should be contacted to determine the current and committed service in the area.



Additional transit-related tools and resources are available to assist reviewers, including [Guidance for Producing a Transit Development Plan](#), and A [Framework for Transit Oriented Development in Florida](#).

### 2.3.4 Traffic Counts and other Transportation Data

Existing transportation demand data will include current and historical traffic volumes, turning movement counts, traffic characteristics such as peak and directional factors, ridership data, bicycle and pedestrian activity. All traffic analysis summaries and reports should clearly identify the specific year of analysis.



**Exhibit 9**  
**Example of Existing Intersection Counts**

*Numbers in parenthesis are PM Peak and without are AM Peak*

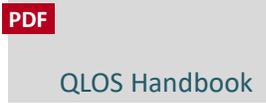
Where FDOT data is not available, the applicant is responsible for collecting data in accordance with review agency guidance and procedures. Data from years when significant transportation network changes occurred or major phases of related developments were opened to traffic should be noted and possibly excluded if they could skew the trend analysis.

For a planning analysis of existing conditions, FDOT recommends calculating roadway traffic volumes and specific traffic factors based on 3-day counts. This would be 72-hours of consecutive counts taken within the time frame of Monday afternoon through Friday morning in urbanized, transitioning and urban areas. For rural areas, 7-day counts are usually recommended. Weekend counts may be necessary for some developments (sport/recreational land use activities such as theme parks and stadiums).

For larger developments, the last five years of historical data should be collected (if available). FDOT’s existing Annual Average Daily Traffic (AADT) counts, classification counts, and Automated Telemetry Recorder (ATR) sites (sometimes called Permanent Count Stations) could be a prime source for historical traffic data.

This data is stored in the traffic characteristics inventory (TCI) and roadway characteristics inventory (RCI) databases maintained by FDOT.

FDOT Traffic Counts also available on-line at:  
[www2.dot.state.fl.us/FloridaTrafficOnline/viewer.html](http://www2.dot.state.fl.us/FloridaTrafficOnline/viewer.html)



The two major sources for guidance on data collection and use are:

- [FDOT Quality/Level of Service Handbook](#)

## Top 9 Things to Review with a Field Visit

*The aerials are not always right*

*Why do you need to go out in the field when everything is right there on the aerial? First, because the aerials aren't always right.*

The aerials may not be up to date. You may need to adjust your data collection to account for reality. If a traffic study is based on an obsolete road network it would have zero credibility.

### **Field Review of Physical Features**

*There are a lot of important details you can't always see on an aerial.*

The second reason to go out to the site is that there are a lot of important details you can't always see on an aerial. In addition to verifying the information on your hand sketches is correct, add the following details to them while you are in the field:

- Transit Stops
- Traffic Signal Operations (Protected Left Turn Phasing, Protected/Permitted Left Turn Phasing, etc.).
- No Turn on Red Restrictions
- Parking Restrictions
- Speed Limits
- Road construction in the area that would impact normal traffic counts
- Construction or signs for new developments near the site
- Excessive grades or slopes that make widening a road/ intersection difficult
- Any objects on corners of intersections that block a clear view of oncoming traffic or pedestrians

*Take plenty of pictures*

While you are at the site, take photographs. Get one photo of each approach to each study intersection. A smartphone can be a useful field

## Field Review of Traffic Operations

tool with its maps, camera, stopwatch, etc). Keep a log of the photos to identify them later. These pictures may save you from future field visits.

In addition to documenting the existing conditions of the environment, you should observe how traffic operates in your study area during peak hours. Things to look for include:

- Do shoulders get used by cars as separate right turn lanes?
- Do the traffic signals along a corridor seem to be coordinated so through traffic moves down the corridor smoothly?
- Using a stop watch to perform a few spot checks of each traffic signal cycle.
- Are there any queues that back up out of turn lanes into the through lane or do queues extend back from one intersection blocking the upstream intersection?
- Is it difficult to turn onto a major street from a cross street which is controlled by a stop sign?
- Consider the routes traffic will take to get to or leave your site.

*These firsthand observations can add credibility with the public. If you have been out there during peak hour, you can respond to comments with personal experience and how these observations were incorporated into your recommendations.*

A field visit is a good part of the quality control process to ensure the details in your traffic study are correct.

Source: Mike on Traffic - Mike Spack - [www.mikeontraffic.com/top-9-things-to-review-with-a-field-visit/](http://www.mikeontraffic.com/top-9-things-to-review-with-a-field-visit/)

Here's a link to another link to a useful article from Mike Spack at "Mike on Traffic" – **11 Items to Get From Aerials When Preparing for a Field Visit**

[www.mikeontraffic.com/11-items-to-get-from-aerials-when-preparing-for-a-field-visit/](http://www.mikeontraffic.com/11-items-to-get-from-aerials-when-preparing-for-a-field-visit/)



### 2.3.5 Land Use and Demographic Data for Large Scale Models

*See Exhibit 15 for guidance on converting employment data into business square footage.*

Land use and demographic data will include future land use classification, intensity, population, employment, comprehensive plan information. If a large-scale transportation model will be used in the analysis, the transportation analysis zones (TAZ) representing the location of the proposed development should be identified. The socioeconomic data contained in the ZDATA files of the model should be verified for accuracy and reasonableness within the study area.

Pursuant to Section 163.3177(1)(f)3., F.S., demographic data for comprehensive plans must be based upon permanent and seasonal population estimates and projections, which shall either be those provided by the University of Florida's Bureau of Economic and Business Research (BEBR) or generated by the local government based upon a professionally acceptable methodology. For land use, local governments must provide a minimum amount needed for land uses based upon BEBR midrange for a 10 year planning period. However, need must be more than just population projections and must provide adequate supply for real estate market. For areas designated as Areas of Critical State Concern, as defined under Section 380.05, F.S., associated administrative rules shall apply.

Other committed developments should also be identified, within the area of influence. Also, document adopted amendments to the comprehensive plan or other development agreements. The extent of data required for other committed development should be agreed upon during the methodology meeting.

When considering the use of large scale transportation model data, it is important to understand the model application and the base data. Traffic projections from fringe areas of a travel demand model are often considered less reliable and should be carefully evaluated.

FDOT has adopted a level of service policy in 2017. The Policy statement is the following:

It is the Department's intent to plan, design and operate the State Highway System at an acceptable level of service for the traveling public. The automobile mode target level of service standards for the State Highway System during peak travel hours are "D" in urbanized areas and "C" outside urbanized areas. The Department shall work with local governments to establish appropriate level of service targets for multimodal mobility and system design. The targets shall be responsive to all users, for context, roadway function, network design, and user safety. The complete policy can be found at:

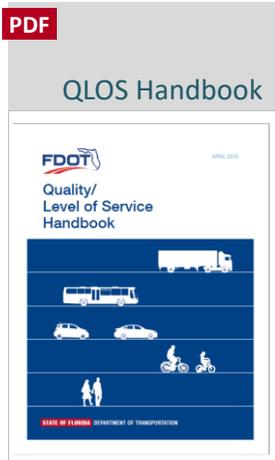
[http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/LOS\\_Policy\\_April\\_2017.pdf](http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/LOS_Policy_April_2017.pdf)

#### Model Data Considerations

#### Level of Service Analysis

PDF

[Policy 000-525-006-C](#)



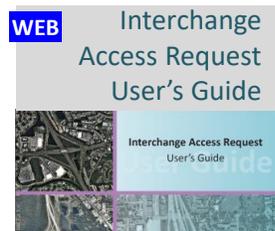
LOS determinations should be based on methodologies consistent with the most current [Highway Capacity Manual](#) , the most current [FDOT Quality/Level of Service Handbook](#) or a methodology determined by FDOT as being comparable.

For existing conditions, Level of Service analysis should be performed along each segment of the roadway system identified in the methodology component within the area of influence. These facilities will include the major roadways and intersections within the study area.

Critical intersections for analysis may be identified based on the importance of the roadways or the volume of development traffic using the intersection. Although arterial facility LOS is stressed in highway LOS targets, detailed analyses at selected intersections may be necessary to evaluate specific movements. Both facility LOS and intersection analysis are appropriate to determine impacts from proposed developments.

~~The policy in the most current of the [FDOT Quality/Level of Service Handbook](#) may be sufficient to perform existing condition analyses at the facility level.~~

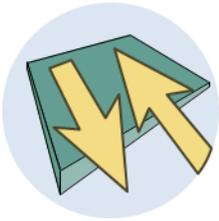
~~If a freeway interchange is affected by the proposed development, additional freeway segment, ramp and weave analysis procedures from the latest approved software may be required. A more detailed description of the FDOT Level of Service analysis tools are near the end of this chapter under [Chapter 2.10.1](#).~~



For more information on interchange analysis you may refer to the Interchange Access Request Users Guide and the Traffic Analysis Handbook. These are available at:

[http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/LOS\\_Policy\\_April\\_2017.pdf](http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/LOS_Policy_April_2017.pdf)

## 2.4 Trip Generation of the New Development



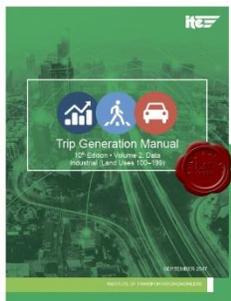
Trip generation is the process by which the number and type of trips associated with a given land use is estimated. Trip generation may be the most critical element of the transportation impact analysis reviewed by FDOT because it estimates the amount of vehicular travel associated with a specific land use or development. An estimate of trip generation from the development using FDOT and professionally accepted methods should be required in impact studies even when the model method is used.

Adjustments to trip generation that are made to lower the gross trip generation (such as internal capture percentages for mixed-use projects, pass-by capture rates, etc.) should be accompanied by sufficient logical justification or empirical data early in the process. FDOT suggests this be a major item of discussion during Methodology Development and during the ongoing analysis.

### 2.4.1 Trip Generation Data

*A trip end either begins or ends in the development*

*One of the most recognized and comprehensive compilations of trip databases available*



To understand trip generation, it is first necessary to define a trip end. For the purposes of this handbook, a trip end is a single or one-direction vehicle movement with either the origin or the destination (entering or exiting movement) inside the study site and one origin or destination external to the land use.

To avoid confusion, all “trips” in this section of the handbook (regarding Manual Methods of Trip Generation) will be vehicle movements. The term “person-trips” will be used when the number of people traveling is referred to. Person trips are usually a term used in the model calculations of trip generation. For example, a family of four traveling from home to school would represent one vehicle trip and four person-trips.

Trip generation databases have been developed over time and can be used to estimate the number of trips likely to be associated with a given land use. One of the most recognized and comprehensive report of trip generation data available is the ITE’s most current *Trip Generation Manual*. It is comprised of data collected nationally. A wide variety of land uses are represented in *The Trip Generation Manual*, though users should exercise judgment in selecting and applying trip rates for their situation.

<https://www.ite.org/tripgeneration/index.asp>

**Source: Most current ITE *Trip Generation***

## Data Applicability

*Evaluate whether the trip generation data is applicable to the specific project*

*Collect additional empirical data when needed.*

*The Trip Generation Manual* contains a tremendous amount of data; however, that data is not necessarily appropriate in all situations. *The Trip Generation Manual* users should carefully review the data available and consider its applicability in the context of each project's circumstances.

Some key items to consider in assessing the usefulness of *The Trip Generation Manual* data for a particular application include:

- Selection of the land use closest to that being assessed is critical (Read the land use description about where and when sites were studied). Many land uses in ITE may sound similar but have very different trip generation rates.
- The number of data points available: some of the ITE data is very limited in terms of sample size and/or number of analysis periods
- Trip patterns change from suburban to urban areas (most of the data in *The Trip Generation Manual* reflects suburban development settings with free parking and limited transit service
- Trip patterns may evolve over time (for example, drive-in bank trip generation rates have steadily decreased over the last decade due to the evolution of the banking industry and the introduction of direct deposit, web-based banking, automatic teller machines, etc.)
- ITE encourages users, when practical, to collect local data to supplement the ITE data; particularly in situations where data samples are small or other conditions warrant

It will sometimes be necessary to collect additional empirical data or document other supplemental studies in the absence of sufficient comprehensive data from *The Trip Generation Manual* or other resources.

Exhibit 10

ITE Trip Generation Manual Page Example

Single-Family Detached Housing (210)

Land Use

ITE Land Use Code

Average Vehicle Trip Ends vs: Dwelling Units

Independent Variable

On a: Weekday

Time Period

Sample Size

Number of Studies: 351

Average Size of Independent Variable

Avg. Number of Dwelling Units: 197

Directional Distribution: 50% entering, 50% exiting

Percent of total trip ends entering and exiting the site during indicated time period

Trip Generation per Dwelling Unit

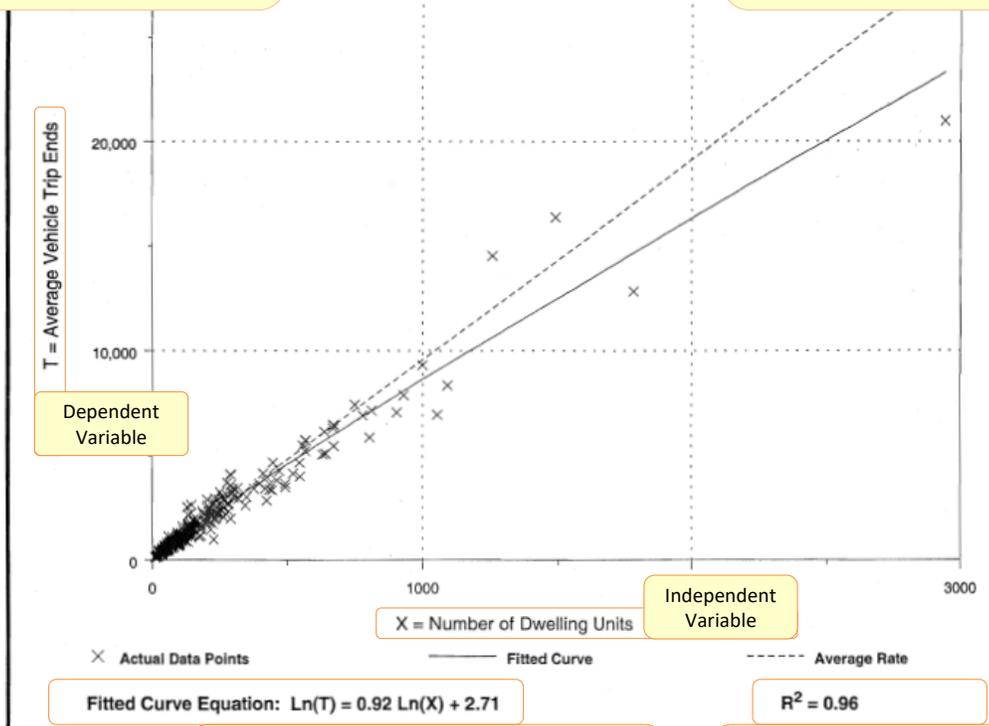
Average Rate	Range of Rates	Standard Deviation
9.57	4.31 - 21.85	3.69

Weighted Trip Generation Rate:

The weighted average number of trip ends per one unit of independent variable e.g. Dwelling Unit

Minimum and maximum trip generation rates from the entire range of studies reported

The standard deviation estimates the difference among the trip generation rates in all studies for a land use and independent variable



Dependent Variable

X = Number of Dwelling Units

Independent Variable

Fitted Curve Equation:  $\ln(T) = 0.92 \ln(X) + 2.71$

$R^2 = 0.96$

Trip Generation, 8th E

Best fit regression equation; expresses the optimal mathematical relationship between two or more related variables. If the variables are related linearly, the equation will be :  $T=aX+b$ . In a non-linear relationship:  $\ln(T)=a\ln(X) + b$ .

Measure of correlation between 2 variables, expressed on a scale of 0 to +1. The closer to +1 the  $R^2$  is, the better the correlation between the variables

## 2.4.2 Use of Trip Generation Rates or Equations

***ITE's Trip Generation Manual*** provides guiding principles for selecting equations or average rates

The average rates provided in ITE's *The Trip Generation Manual* are given, but you should look at the range of data selected and the number of sites sampled.

Trip generation equations are also provided in ITE's *The Trip Generation Manual* that can provide better estimates of trip generation under certain conditions. In general, the fitted equations tend to reflect a decreasing trip rate as building size increases. This is particularly true with large shopping centers and office developments.

Many of the land use categories in *The Trip Generation Manual* provide both an average trip rate and an equation to estimate the number of trips for that use. FDOT often applies the guidance in ITE's *Trip Generation Manual* for selecting regression equations or average rates. The *ITE Trip Generation Manual* only provides equations where their national committee felt there was sufficient data. This does not always mean that the equation is always the best choice.

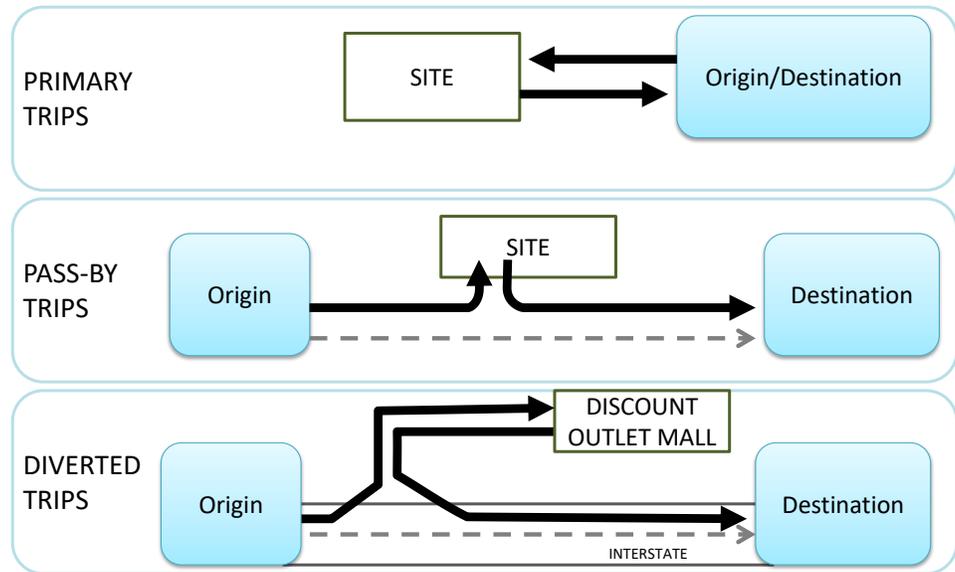
The most current volume of the *Trip Generation Handbook*, contains a detailed method for determining the choice of average rate or equation. However, sometimes a plainly numerical approach as suggested in the *Trip Generation Handbook* is inadequate. The professional will look at the size and type of development they are proposing and see where it "fits" in the graph provided. The professional should look at the number of similar size developments before recommending the trip generation method.

## 2.4.3 Trip Types



After the number of trips has been estimated, the type of trips should also be addressed. The most recent ITE *Trip Generation Manual* defines three basic types of trips generated by a development: primary, pass-by and diverted. Exhibit 11 illustrates the types of trips from the most recent ITE *Trip Generation Manual* illustrates the trip types.

**Exhibit 11**  
**Types of Trips**  
**Source: ITE**



**Primary Trips**

**Primary trips** are trips made for the specific purpose of visiting the generator. The stop at the generator is the primary reason for the trip [ITE Trip Generation Manual](#). Primary trips are new trips on the network.

**Pass-by trips**

*With pass-by trips, the total driveway volumes are not reduced.*

**Pass-by trips** are trips that are currently on the roadway system and pass directly by a generator on the way to the primary destination. These trips are involved in a “trip chain” of destinations with neither the origin or the final destination of the primary trip being in the development. Pass-by trips can be convenience-oriented; for example stopping to refuel a vehicle during a commute from work. Pass-by trips are applied only to retail-oriented and some commercial land uses and would have traveled on the roadway adjacent to the retail land use even if the retail was not present.

**Diverted trips**

*With diverted trips, the total driveway volumes are not reduced.*

*Diverted trips are counted as new trips where they travel on segments required to reach the site where they previously did not travel*

**Diverted trips**, like pass-by trips, are not new to the system. However, diverted trips are now using a segment of the roadway system that they previously were not. Facilities that receive diverted trips may require analysis of the impacts of the development trips.

In most situations, no reduction is made for diverted trips because they tend to be difficult to account for. Reviewers may allow consideration of diverted trip impacts on a case-specific basis when there is a clear reason for doing so and the diversion can be reasonably estimated. For example, a reasonable case might be made for considering diverted trips in the analysis of a large commercial development proposed to be located adjacent to an Interstate interchange. If use of diverted trips were to be justified and supported by FDOT in a situation such as the example above, then the diverted trips would be treated similar to pass-by trips. However, their impact to the development access points and signals is important.

### Estimating the Number of Pass-by & Diverted Trips

In all cases, pass-by and diverted trip rates should be justified by the applicant, and clearly documented in the analysis.

The *Trip Generation Manual* provides pass-by and diverted trip data for several different retail land uses as well as guidance on the process for estimating pass-by trips.

The A/V presentation provides examples of pass-by trips, works the example of 10% of Adjacent Street traffic on page 45 and additional examples.

### Pass-by Trip Impacts

Properly estimating the number of pass-by trips is important because even though they do not add extra trips to the surrounding roadway system, they do impact the traffic at the driveways and all the turning movements expected at these driveways.

*The number of pass-by trips is calculated after accounting for internal trips*

- The percentage of trips that can be classified as pass-by for a site will vary by the type of land use, time of day, type and volume of traffic carried on the adjacent street, and the size of development;
- Credit for pass-by trips is usually only allowed for retail and some commercial land uses such as fast-food restaurants with drive-through windows, service stations, and drive-in banks; and
- The number of pass-by trips is calculated after accounting for internal trips (Total Site Trip Generation – Internal Trips = External Trips; apply pass-by reduction to External Trips).

*Pass-by rates should be approved by the lead reviewing agency*

In all cases, pass-by rates should be justified by the applicant and approved by the reviewing agency. The pass-by trips estimated in the trip generation component are preliminary.

### 2.4.4 Explanation of the 10 Percent of the Adjacent Street Traffic

Final pass-by trips are estimated following trip assignment when the number of pass-by trips considered can be compared with the total traffic on the facility. Proper application of pass-by trips requires that the following check for a reasonableness or “common sense” check, involving a comparison of the number of pass-by trips and assuring that they do not exceed 10 percent of the adjacent street traffic volume during the peak hour. Explanation is provided in the next section.

The FDOT-approved methodology for determining the 10 percent reasonableness check divides the total pass-by trip reduction by the adjacent-street traffic volume. This process ensures the resulting pass-by volume is less than 10 percent of the adjacent street traffic. The calculation would become more complex when the development is served by more than one arterial roadway. Another consideration is the availability of median openings directly serving the property. This 10 percent value is a rule-of-thumb and not a statistically studied factor and should only be used as a measure of reasonableness.

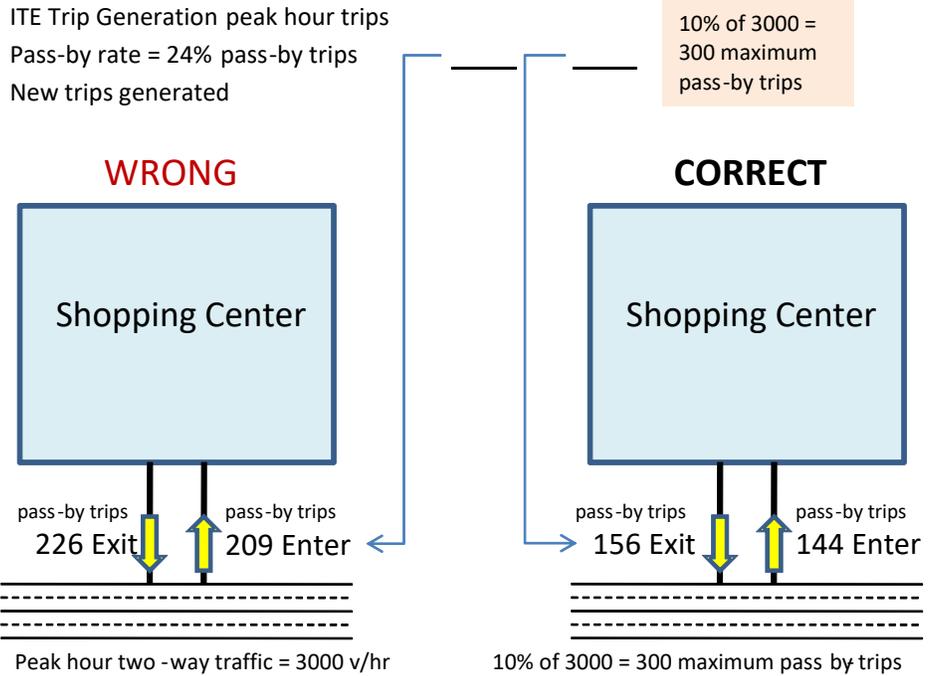
Historically, some applicants and reviewers determined the maximum allowable pass-by trips by taking 10 percent of the adjacent-street traffic and allowing this number of trips to enter and then exit the retail development. FDOT does not accept this method because it results in up to 20 percent of adjacent street traffic to be subtracted from the base trip generation as pass-by trips.

Please add the bottom of the page 44 of the old handbook for pass-by and we are missing the A/V presentation.

**Exhibit 12**  
**Application of**  
**10 Percent Pass-**  
**by Trips**

**10% Pass-by Trip Example**

for a Shopping Center  
 Peak hour two-way traffic on adjacent street = 3000 v/hr



Adjust pass-by trips to equal 300

**Pass-by Trip Assignment**

Pass-by trips are assigned to the development’s driveways based on local knowledge of expected trip patterns and traffic volumes. When considering pass-by trips, the distribution of driveway volumes may change and be related to the street traffic. The analysis of pass-by trips should occur in two steps:

First, determine the number of new trips and pass-by trips for the site, then assign the pass-by trips in proportion to the street traffic and the driveways, and then assign the new trips in accordance with standard trip distribution procedures. Once the number of pass-by trips is determined, their assignment should be prepared in a way that reflects local travel patterns.

The following section requires some knowledge of large scale regional transportation planning models. In Florida, the modeling framework is the

Florida Standard Urban Transportation Model Structure (FSUTMS). This section will be using technical terms related to regional transportation modeling. For more information on FSUTMS, see [Chapter 2.5.4](#) and the [FSUTMS website](#).

## 2.4.5 Development Trips and Model Volumes

### Model Method of Analysis for Trip Generation

The model method of site impact analysis typically uses an adopted regional travel demand model for development generated trips. Model trip generation estimations of the site being studied should be adjusted to match estimations from ITE's *Trip Generation Manual* or other approved method. Trip generation should be calculated off line using ITE's *Trip Generation Manual* or other approved method. Model trip generation estimations should be adjusted to match estimations from ITE's *Trip Generation Manual* or field data. The following summarizes the steps required to estimate trip distribution and internal capture using regional travel demand models:

1. **Develop a new transportation analysis zone (TAZ)** for the development and provide connectors from this zone's "centroid" to the transportation network. The connectors should be coded consistently with other centroid connectors in the model (facility type, area type and number of lanes). The connections should be made to a facility that is appropriate to the intensity and type of land uses associated with the development and is consistent with the preliminary site access plan. Residential and nonresidential land uses should be modeled in separate TAZs unless they will be located in a single mixed-used site. Socioeconomic data consistent with the development program should be coded within ZDATA 1 and ZDATA 2 files.
2. **Conduct initial model run to:**
  - Obtain initial person trip generation outputs to extract the trip purpose percentages.
  - Extract total vehicle trips from the development zones using the O-D matrix output.
3. **Estimate site trip generation by using ITE's *Trip Generation Manual*.** Although preliminary estimates of pass-by and diverted traffic may be estimated using information contained in ITE's *Trip Generation Manual*, pass-by and diverted trips cannot be calculated when using the model method and may therefore be ignored until post-processing model outputs. The model identifies development trips on the network. The

*Model trip generation estimations of the site being studied should be adjusted to match estimations from ITE's *Trip Generation Manual* or other approved method*

subsequent pass-by analysis after modeling is complete determines which of those trips are primary (new) trips and which are pass-by trips.

4. **Compare vehicle trip generation obtained manually to the large scale transportation planning model.** If the model-generated trips for any given land use is less than the ITE-generated trips, the total external site trip generation obtained using the planning model should be adjusted until convergence occurs with manually estimated trip generation using the following methodology. Identify any difference in vehicle trips between manual and model calculations.

- Convert vehicle trip difference to person trips by using vehicle occupancy factors coded within the model.
- Insert person trip difference values in the ZDATA3 file. Trip purpose percentages obtained from Step 2 should be assigned to person trips entered into the ZFDATA3 file.
- Rerun the model and repeat Steps 2 through 4 until convergence is obtained between the manual and model vehicle trip values.

*Note:* Later iterations may be required to reach a level of convergence that satisfies the lead reviewing agency. Model-generated vehicle trips for the project should be greater than or equal to the manually generated trips (typically no more than 5 percent greater). A table comparing the trip generation based on ITE's *Trip Generation Manual* and the model-generated trips should be provided for each development TAZ.

*Note:* Any reductions that encourage transit usage such as transit oriented design (TOD) should be negotiated later during the mitigation process.

5. Estimate internal capture using the guidelines contained in ITE's *Trip Generation Manual* or other mutually agreed to method. With FDOT approval, model intrazonal trips can be used to replicate internal capture analysis performed in accordance with ITE-recommend procedures. Internal capture should be negotiated based on specific design criteria such as the appropriate mix of specific land uses, the quality of connections between the land uses (particularly pedestrian connections), the density of the proposed development, and the relative difficulty of accessing alternative off-site destinations. The model does not allow input in the first two criteria. (Industrial, commercial, and service employment inputs in the model are not specific enough.) Models, therefore, should not be the primary determinant of the internal capture percentage. The inclusion of

intrazonal trips (trips that never leave a project TAZ) in internal capture estimations are subject to approval by FDOT.

6. If trips are anticipated to have an origin or destination external to the model’s study area, ZDATA4 files should be adjusted. For instructions on distributing See [Chapter 2.5.4](#).

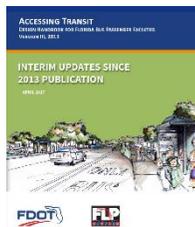
### 2.4.6 ITE Limitations

*Florida’s unique demographic makeup and the influence of tourism on travel in Florida may require variances from these national averages for certain land use types*

While offering the most comprehensive national trip database available, the *Trip Generation Manual* does not offer data for all situations. Some of the key limitations of *The Trip Generation Manual* include:

- Not all land uses are represented in the *Trip Generation Manual* database

Due to data availability and the need to understand site specific conditions, professional judgment is required.



### Special or Unusual Generators

*The reasoning and data used should be documented and approved by FDOT prior to use*

When a proposed development cannot be adequately described by the most recent ITE Trip Generation Manual, or recent recognized research, new trip generation data collection may be required. Judgment may be used to recommend trip generation characteristics that are appropriate for the development. However, the reasoning and data used to support these estimates should be documented and approved prior to use. Examples of special or unusual generators include unique places not well represented by data contained in ITE’s Trip Generation Manual like outdoor flea markets, theme parks, and venues with special events. If new data is to be collected, the method for its collection (number of sites, days of data collection, location of sites, etc.) should be thoroughly discussed and agreed upon with the **reviewer’s reviewers**.

### Alternatives to ITE Trip Generation Data

Given these limitations, it is sometimes necessary to adjust trip rates to reflect documented local conditions and/or develop additional trip generation

*Local trip data should be collected in accordance with ITE's Trip Generation Manual, Chapter 4*

procedures. First, a review should be conducted to determine if other applicable data is available. Trade publications such as ITE Journal, university studies, government studies, and studies by other recognized parties are made available from time to time and often serve as an interim guidance until incorporated into a future edition of *The Trip Generation Manual*.

Lacking any published data, a common alternative to using data from ITE's *Trip Generation Manual* is to collect data from other developments of similar use and size. Local trip data should be collected in accordance with ITE's Trip Generation Manual Handbook.

### 2.4.7 Internal Capture Rates for Multi Use Developments

Estimating an internal capture rate for a mixed-use development is often one of the most debated and challenging steps in the overall site transportation impact assessment process. Internal capture rates vary by the mix of land uses, size, and location context. Location context consists of factors such as remoteness, presence of competing retail, and job destinations.

Because there are so many factors, FDOT cannot recommend just one method or one set of internalization factors to be used for all mixed-use developments. Research done in the past provides guidance on the best way to estimate internal capture. Whatever is the chosen method will need to be discussed and agreed to by the people and agencies involved in the analysis.

#### **The Importance of the latest FDOT Research on Internal Capture**

The most recent research done by FDOT shows that the internalization rates will vary greatly depending on the type of mixed use development is being studied. FDOT studied multi-use developments in suburban areas, and those in dense transit oriented areas. The research shows that the factors you would use, let's say between on-site residential and on-site retail would be very different in a true transit oriented, tightly integrated development, than a mixed use development which is auto oriented, single family residential oriented, and has a standard shopping center at its entrance.

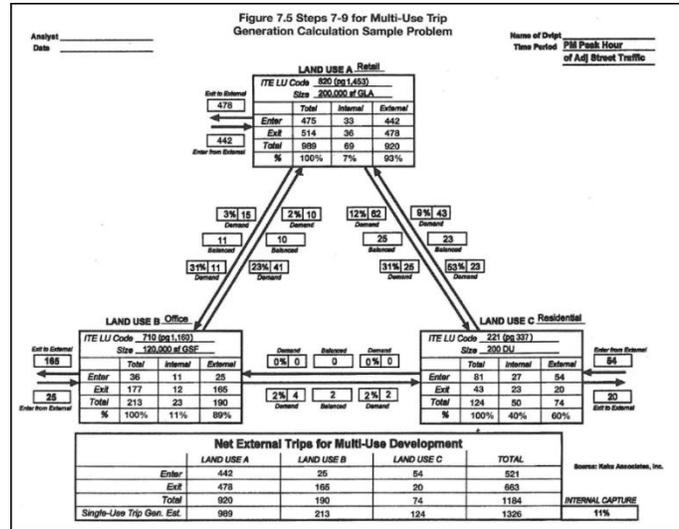
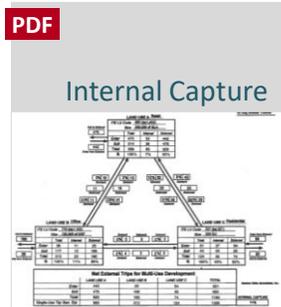
The FDOT study, *Trip Internalization in Multi Use Developments*" BDK84 977-10, is can be found at:

[www.dot.state.fl.us/research-center/documents.shtm](http://www.dot.state.fl.us/research-center/documents.shtm)

<http://www.fdot.gov/planning/systems/documents/sm/default.shtm#trip>

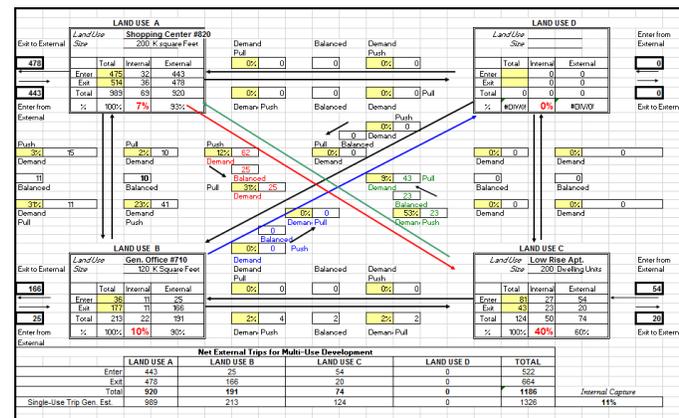
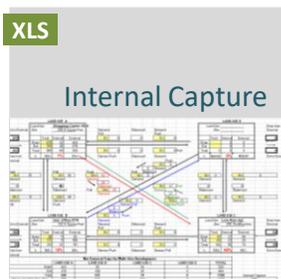
The ITE Trip Generation Handbook contains a method where three major land uses are used to balance trips between the three uses (residential, retail, and office). Examples of this method can be found below from the Trip Generation Handbook. For more readable versions, use the links found under each exhibit.

Exhibit 13  
**Internal Capture  
 Example  
 3 land uses**



[View a full page version](#) of internal capture for 3 land uses in Exhibit 13.

Exhibit 14  
**Internal Capture  
 Example  
 4 land uses**



This spreadsheet shows internal capture for 4 different land uses. [Open the spreadsheet](#) for Exhibit 14.

**Some General Considerations**

In evaluating a proposed internal capture rate, the following general guidance should be considered:

- Separate land uses within “Shopping Centers” (ITE code 820) are generally not considered a mixed-use development because of the way shopping center data has been collected. Historically shopping center trip generation data was collected for the entire site, such as

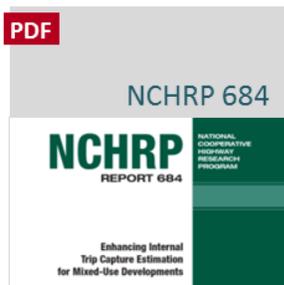
restaurants and movie theaters. Even trips from gas stations and restaurants (on-site, but not physically connected to the shopping center) have been counted. Therefore, internal trips have already been taken into account in those studies.

- Sites having a mix of residential and nonresidential components have the highest potential for internal capture trips. Mixes of nonresidential land uses are less likely to have a significant internal capture rate unless a hotel or motel is contained within the site.
- Internal capture rates should only be used for communities that have income compatible residences and employment centers. The design of the internal roadway system/site circulation system of the development may impact internal capture. A well-designed development with good internal connectivity and pedestrian/bicycle facilities will make it more convenient for trips to stay on site.
- If there are nearby developments then the internal capture rate may need to be adjusted. Internal capture rates should be calculated for each phase of a multiuse development. If development plans change during the review process, all internal capture calculations should be updated and the site impact assessment should be submitted for additional review. Other methods and techniques have been studied and proposed for internal trip capture estimates.

**A/V** What is Internal Capture?

**Internal Capture Presentation (Audio/Visual Presentation)**

This presentation on Internal capture is shown using the ITE *Trip Generation Handbook* 2001 version. However, important concepts can be gained by viewing.



**National Cooperative Highway Research Program (NCHRP) Report 684 Enhancing Internal Trip Capture Estimation for Mixed-Use Developments**

In 2011, the National Cooperative Highway Research Program (NCHRP) completed a study on enhancing trip internalization estimates especially for modern emerging land uses served by transit and well integrated land uses. The report and technique now recognizes three more land uses than the ITE method of three land uses. In addition to the original residential, retail, and office, they added restaurant, cinema, and hotel.

**2.4.8 Community Capture: Internal Capture for New Towns**

The ITE-recommended method for analyzing internal capture is based on a very small sample of conventional suburban mixed-use developments intended to be part of the fabric of an urban region. Typical internal capture percentages reflect

*The Rationale for  
Community Capture*

the limited opportunity for overall trip-making to be satisfied within the proposed development boundaries. For example, if a development contains residential and retail components, the on-site residents would have relatively few trips satisfied onsite (by visiting other on-site residents and shopping—or in some cases, working—at the adjacent retail center). Many more of the residential trips generated would travel off-site for work, education, recreation, personal business, medical needs, additional shopping, and many other purposes.

**Where May Community Capture Be Applied?**

From time to time a vast development encompassing an entire new town is proposed. Examples of new towns in Florida include The Villages, Babcock Ranch, and Palm Coast. These new towns are not intended merely to be bedroom communities for nearby larger cities. They are designed to be home and workplace for residents numbering in the tens of thousands, with a wide range of housing types and housing values, and encompassing all the urban services and jobs of a self-contained city. These services include offices, industrial parks, shopping centers, hospitals, schools, places of worship, public parks, entertainment, government facilities, and civic space. They are truly self-contained communities, usually located a distance away from other established urban areas, further reinforcing their self-sufficiency. (Large mixed-use developments adjacent to a larger city have no reason to be self-contained; there is no reason to duplicate hospitals and other urban services that already exist in the adjacent city, for example.)

In these specialized cases of comprehensive new towns, it becomes impractical to apply ITE internal-capture analysis methods due to an overwhelming number of land uses and the self-contained nature of the development. Internal capture rates for an entire city can be radically higher than typical multiuse-development capture rates. Florida DOT, therefore, has begun studying this phenomenon of what they are calling “community capture.” (See the document in the left margin and visit the Florida Department of Transportation web page: <http://www.fdot.gov/planning/systems/programs/SM/siteimp/capture.shtm>) While “community capture” and “internal capture” are different, some of the research and applications associated with internal capture may apply to community capture.

Section 163.3164 (32), F.S., defines “New town” as an “urban activity center and community designated on the future land use map of sufficient size, population, and land use composition to support a variety of economic and social activities consistent with an urban area designation. New towns shall include basic economic activities; all major land use categories, with the possible exception of



agricultural and industrial; and a centrally provided full range of public facilities and services that demonstrate internal trip capture.” These communities may be separated by travel-time, design, or distance from other major land use concentrations. They provide a wide range of internal services, which may satisfy a significant portion of their needs within the community.

New towns may have several town centers or villages, which embrace connectivity within, and between, each center and village with a transportation system of multiple modes, including pedestrian paths, bicycle facilities, and shuttles.

### **Numerical Factors for Community Capture**

Because each free-standing community will have unique characteristics, FDOT will not recommend minimum or maximum values for community capture. Reasonable analysis of proposed developments will be used and will be verified by substantial and ongoing monitoring programs. Ideally, after further study, agreement in the professional community should occur on some ranges and measurement criteria. However, because this is an emerging topic, many of the early estimates will be negotiated, based on best professional judgment and verified with substantial and detailed monitoring agreements.

### **Justification of Community Capture Values**

The justification will need to include summaries showing the numbers and percentages of trips served within the proposed development. For example, depending on the development, it could read like this,

*“X% of the entering shopping trips expected in the PM peak hour make up Y% of the total exiting shopping trips from homes within the community.”*

Additionally, there must be information provided in sufficient detail to clearly support and explain the process used to determine a proposed community capture value. This analysis should be done for each phase, with an agreed upon monitoring program.

### **Commitment to Traffic Monitoring**

Expanded traffic monitoring beyond the prior basic requirements of the DRI annual/biennial report might be a required provision in accepting community capture rates. While the detailed needs of the traffic monitoring program will be determined through the traffic study process, elements such as origin and destination studies, trip generation studies, and an evaluation of land use mixes in the development and the surrounding community will usually be included in the monitoring program. Monitoring will probably be necessary before the

## The Factors Impacting Community Capture

development enters a new phase. If appropriate, trip characteristic assumptions and impact mitigation requirements will be revised based on the monitoring.

Community capture will go beyond internal capture, accounting for the unique trip making aspects of a large, self-standing development with a balanced mix of uses such as a new community or town. The concept focuses on:

**Land Use Characteristics:** A balance of land uses where form and function result in trips being satisfied within the development must exist for significant community capture to occur. Some of these factors are:

**Income-Compatible Uses:** Residential and employment centers should be income-compatible so residents have ample employment opportunities in the community. Employment centers should attract a significant amount of the workforce from within the community.

**Type of Community:** Is this a community planned for all age groups with job opportunities, or is it a retirement community? Is the new community primarily recreational? These issues can have an important impact on community capture.

**Community Design:** The design features of the community can affect both the number of external vehicle trips, as well as the internal trips using major roadways. For example, a well-designed development with good internal connectivity will make it more convenient for trips to stay on site. By providing alternative connections internal to the site, the number of vehicle trips needing to use a major roadway to traverse the site can be reduced. Internal capture is facilitated by a high level of connectivity and short travel distances between complementary land uses.

**Development Maturity:** The project's fullest community capture may not occur until the complementary land uses mature. This may occur late in the development program and may depend on the quantity and balance between complementary land uses. However, each phase or increment must mitigate the cumulative impacts to the regional network resulting from the current phase or increment and previously approved phases or increments.

**Location Context:** The location context of large, mixed-use developments may impact community capture in the following ways:

**Remote Locations:** For a remote location with a balance of complementary land uses, high trip capture may occur. For the trips not captured on site, longer external trip lengths will result because there would be few opportunities for trips to end near the site.

**Competing External Opportunities:** If there were ample nearby destinations (shopping, jobs, or entertainment) outside of the community, the community capture rate would likely be lower. For

example, if a mixed-use development is located near other large developments, the community capture rate may be reduced.

**Trip Generation of Isolated Communities:** Discussion is ongoing regarding the trip generation characteristics of isolated communities. One assumption proposed is if a community is isolated, and a trip cannot be satisfied on site, some discretionary trips are less likely to occur. While not making a trip can be an option for some trips, such as shopping, it is not an option for work-related trips, which have the highest impact during peak hours.

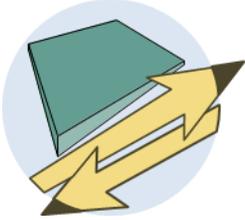
**Multimodal Elements** (Encouragement of transit, walking, and cycling): The provisions of on-site transit circulators and integrated systems of bicycle, golf cart, and pedestrian paths may have an impact on vehicle trip generation and vehicle trip capture. Such amenities make it easier for trips to remain on site and may reduce the need for vehicle trips to occur.

### Using large scale transportation models to estimate community capture

Current Florida travel demand models (FSUTMS) do not contain sufficient detail to predict internal capture, and are therefore not appropriate tools to be used as the primary determinant of community capture values.

## 2.5 Projecting Future Conditions

### 2.5.1 Projecting Future Background Traffic



Future Background Traffic serves as the base condition in determining the impacts of development on the transportation system in future years. Background traffic is comprised of two elements:

- The expected increase from overall growth in through traffic (traffic movements through the study area that do not have an origin or destination in the study area)
- Traffic from other developments in the study area (other than the project being analyzed). For example, major committed developments defined as developments that have an approved development order (DRIs) or concurrency management certificate should be included in background traffic

Future Background (non-site) Traffic is typically estimated using one of three methods based on local area needs and conditions:

- 1) **Growth rate/trend methods** relying on historic trends. The growth rate (trends) and build-up methods are often referred to as “manual”, even if done with a computer. This method is typically appropriate in applications for:
  - Small projects that will be built within one or two years
  - Areas with at least five years of data showing stable growth and expected to remain stable
- 2) **Build-up methods** that use specific development information. This method is typically appropriate in applications for:
  - Areas experiencing moderate growth
  - Areas where multiple projects will be developed during the same period
  - Project horizon years of 5 years or less
  - Locations where there is thorough documentation of development approvals
- 3) **Model methods** involve the use of a large scale travel demand model, such as FSUTMS. Model methods are typically appropriate in applications for:
  - High growth areas
  - Large regional projects that may have multiple build-out phases
  - Locations where there is sufficient information available to calibrate the model to current and future conditions

### *Special Note on Using Large Scale Transportation Models*

Modeling is a complex practice involving knowledge, experience, and understanding of the geographic area. The following discussion is meant to provide broad guidance. The practices in your area may vary. All modeling decisions should be made with regular contact with the transportation modeling staff of the appropriate FDOT District.

Considerations for selecting the appropriate method for a given situation include; the type of development project, the development within the study area, available data, horizon year, and agency requirements. It is possible that the applicant may be requested to document growth assumptions using more than one method. For example, rates based on using the growth rate (trends) method and the model method may be requested so that comparisons can be made.

## 2.5.2 The Growth Rate/Trend Method for Projecting Background Traffic

These methods are typically performed using trend or growth rate analysis of historic traffic data. The process of adding vested development traffic into background traffic is known as the “Build-up Method” and is described in further detail below.

### **Growth Rate/Trends Method**

*Growth rates based on trends are the most basic approach to developing future growth projections*

The Growth Rate/Trends Method is the most basic approach for developing future growth projections (Reference: [ITE Transportation Impact Analyses for Site Development](#)), because the growth rate method reflects historical trends. The estimates using this approach will be dependent upon how the historical trend reflects the horizon year traffic. Traffic volumes should be used in developing growth trends and should be based on at least five years of data. However, care should be exercised in using data beyond five years as the results may over-emphasize past trends. For example, an area that has remained rural for many years may have recently changed to a “booming” growth area. In this case, the use of many past year counts will significantly under-predict future traffic. Note also that peak hour growth patterns do not necessarily follow daily traffic growth patterns.

The ITE’s Transportation Impact Analysis for Site Development has this caution:

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*The growth rate method is often insensitive to localized changes. It should not be used in cases where other extensive nearby development will occur during the study period, or where growth rates are unstable. Sizable errors could develop. Furthermore, growth in average daily traffic does not always parallel growth in peak-hour traffic, and most historical data are for average daily traffic. This method should also not be used where substantial transportation system changes (infrastructure changes) will alter traffic patterns within the study area, unless an accurate redistribution step is included.*

---

### Growth Rate/Trend Analysis Techniques

When using either traffic growth/change or a related demographic characteristic for forecasting background traffic, the following steps should be followed:

- Identify the data that is required based on the study area and the sources of relevant data
- Obtain the historic traffic-count data for the existing location(s) or demographic data
- Perform a growth trend analysis using one of three growth forms identified below and plot the patterns of traffic growth rates for the existing location(s)

Growth rate trend analysis is the method of fitting a mathematical curve that will adequately describe a trend in data for projection purposes. Three growth forms are used for site impact analysis:

1. linear
2. exponential
3. decaying exponential

Further details and an example application of each of these methods are presented in the following sections.

**XLS**  
Traffic Trends Analysis Tool

*Allows an analyst to estimate future traffic based on the historical data collected by FDOT.*

### FDOT Trends Spreadsheet Program

FDOT developed and maintains a software analysis tool that can be used to prepare trend analysis. is an Excel-based tool that allows an analyst to use the Florida Traffic Information count database, select a traffic count station data set (from a database of count locations organized by County), and then prepare future trend analysis. The software allows for a comparison of results using all three growth techniques. The automated analysis process provides the analyst with opportunities to select the range of historic data to be included and consider multiple future projection years.

### Example Application of Trend Analysis and the Trends Spreadsheet

The following example is provided to illustrate the use of the three equation based models for forecasting traffic volumes on a roadway (US 17/92) in Seminole County. Information regarding the applicability of the three growth trend techniques is also presented. Exhibit 15 summarizes the historical AADT on the roadway facility.

**Exhibit 15**  
**Historical Volumes**  
(Seminole County site 0040)

Year	Volume (AADT)
1998	21,000
1999	21,500
2000	19,000
2001	21,500
2002	25,500
2003	25,000
2004	25,000
2005	21,500
2006	23,000
2007	25,000

### Linear Growth

*Linear growth assumes a constant amount of growth in each year and does not consider a capacity restraint*

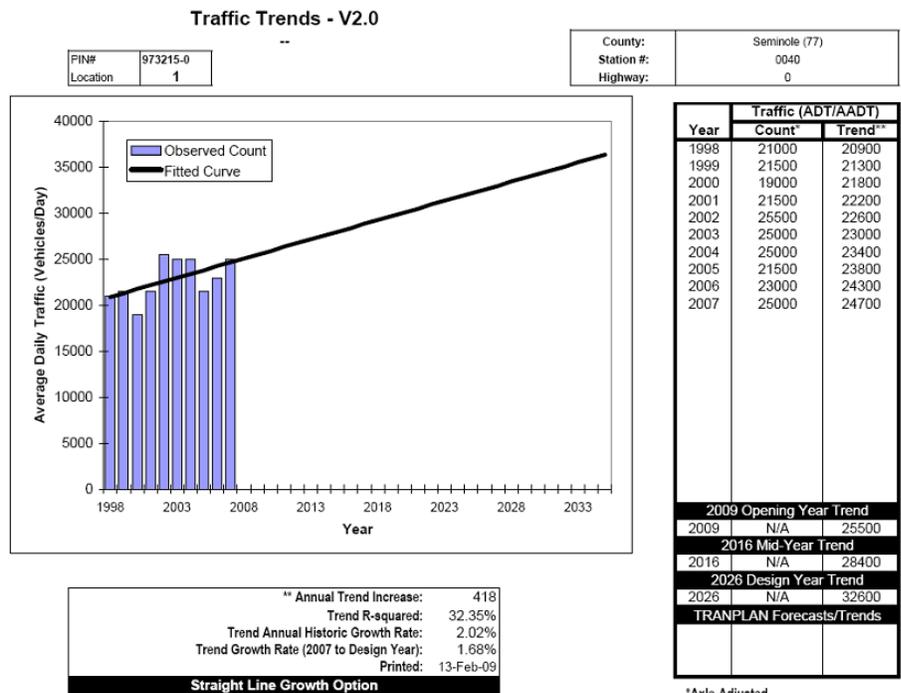
Linear growth predicts the future traffic based on a straight line developed from historic traffic growth. This model assumes a constant amount of growth in each year and does not consider a capacity restraint. The mathematical model for linear growth is as follows:

$$\text{Future Volume} = (\text{Linear Growth Rate} * \text{Number of Years}) + \text{Base Year Volume}$$

$$\text{Volume}_{\text{FY}} = G_{\text{Linear}} * N + \text{Volume}_{\text{BY}}$$

Where:  $G_{\text{Linear}}$  = Linear growth rate  
 N = Years beyond the base year  
 Volume<sub>FY</sub> = Future year  
 Volume<sub>BY</sub> = Base year

**Exhibit 16  
 Linear Growth  
 Projects Using  
 Traffic Trends**



Using the Seminole County example data, the results of the linear growth rate estimated an average growth of 418 vehicles per year as shown in Exhibit 16. The software allows users to select three analysis horizon years per evaluation run. In this example, an opening year of 2009 was evaluated along with a mid-year of 2016, and a long-term horizon of 2026.

### Exponential Growth

Exponential growth predicts the future traffic based on a percentage of growth from the previous year. This model is most applicable where there is rapid growth and capacity available. The mathematical form of exponential growth is as follows:

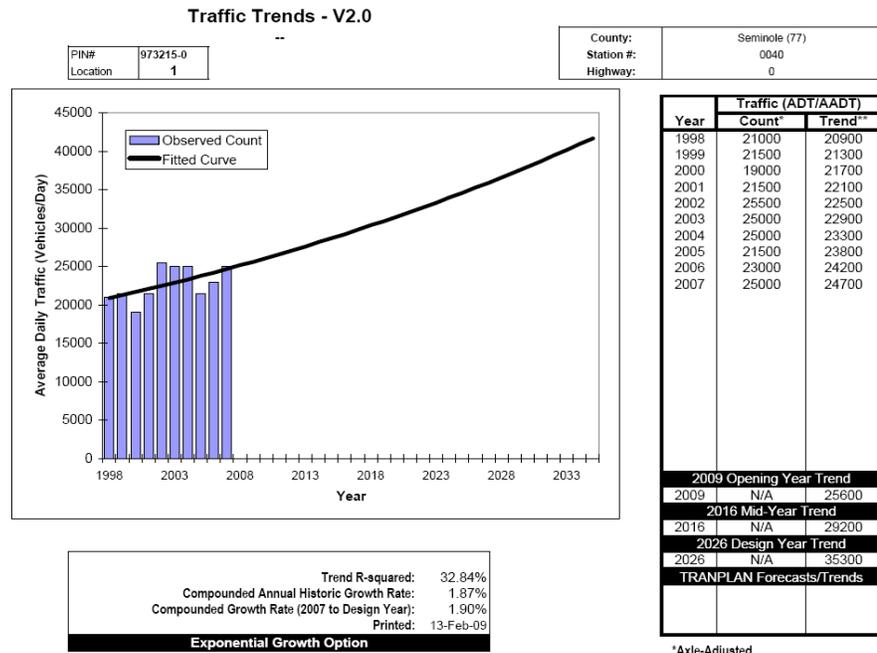
*Exponential growth is most applicable where there is rapid growth and capacity available*

$$\text{Future Volume} = \text{Base Year Volume} (1 + \text{Growth Rate})^{\text{Number of Years}}$$

$$\text{Volume}_{\text{FY}} = \text{Volume}_{\text{BY}} * (1 + \text{Gr})^{(\text{FY}-\text{BY})}$$

Where:  $G_{\text{Geometric}}$  = Geometric growth rate  
 Volume<sub>FY</sub> = Future year  
 Volume<sub>BY</sub> = Base year

### Exhibit 17 Exponential Growth Projects Using Traffic Trends



### Decaying Exponential Growth

Decaying Exponential Growth is used to project future traffic in areas with a declining rate of growth over the analysis period. This model form is recommended for site impact analysis in more built out areas.

*Decaying Exponential Growth is used to project future traffic in areas with a declining rate of growth over the analysis period*

$$\text{Volume}_{\text{FY}} = \text{Volume}_{\text{BY}} * \sum_{\text{BY}}^{\text{FY}} \frac{X}{\text{FY} - \text{BY}} \sum_{\text{BY}}^{\text{FY}} \frac{X}{\text{FY} - \text{BY}}$$

Where: X = Normal straight line growth from trend data  
 Volume<sub>FY</sub> = Future year  
 Volume<sub>BY</sub> = Base year

**Exhibit 18  
Decaying  
Exponential Growth  
Projects Using  
Traffic Trends**

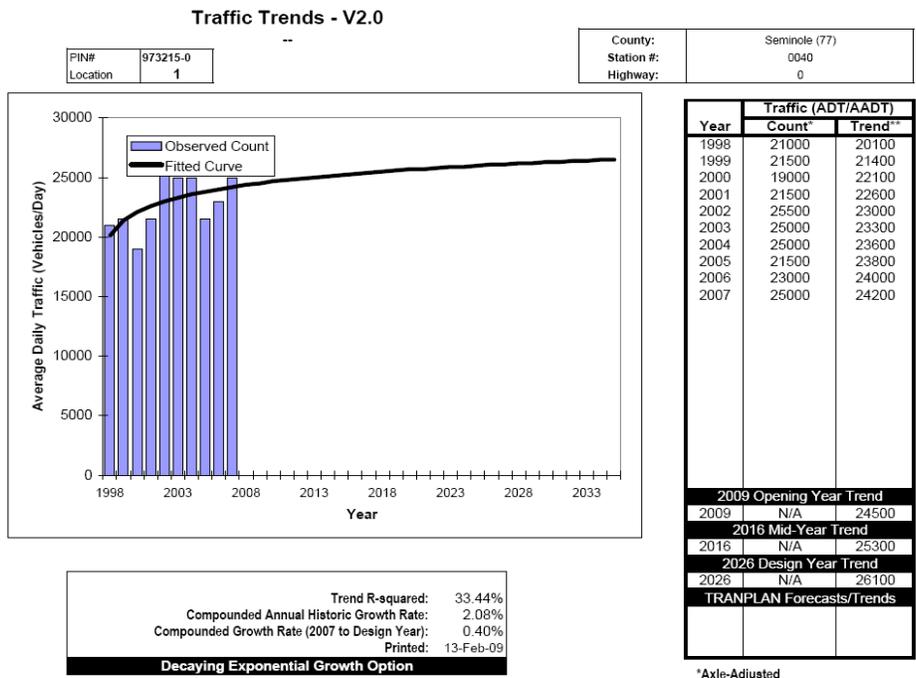


Exhibit 18 illustrates application of a decaying exponential growth project to the Seminole County data.

The Presentation link contains a step-by-step illustration of the use of the software on these three examples shown in Exhibits 16 through 18.

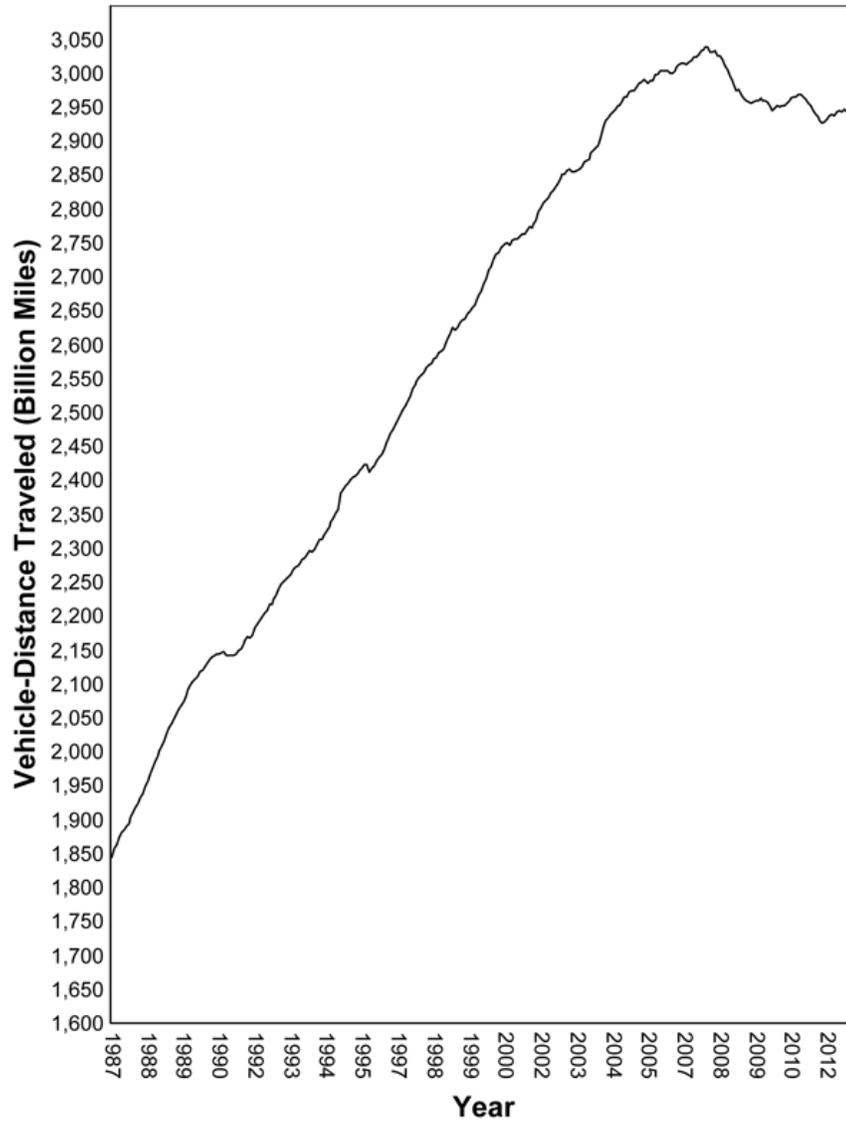
**What if the  
Background Traffic  
Has Declined?**

In the event that an area has a decline in traffic, the probable cause must be determined. Analysis should be done to decide if the decline is a long term trend. Some local governments and other agencies use a minimum growth rate guide. In these cases, the FDOT reviewer must join the discussion with all parties to arrive at an acceptable agreement.

Since 2006 the United States has seen some decreases in traffic on some facilities. This leads us to the situation when some professionals argue a zero growth rate to be used for future background traffic. Traffic can fall for a few reasons such as; the addition of a reliever roadway; or declining economic activity as seen from 2006 through 2012.

Note the figure from the Federal Highway Administration (FHWA) shows the drop and plateau in between the years of 2008-2012.

Exhibit 19  
**Nov. 2012 Traffic  
 Volume Trends**



When a smaller than usually used growth rate is suggested, there should be some discussion of the underlying low, or zero, growth rate. There should also be multiple indications to support this low, zero, or negative growth.

Figure from [http://www.fhwa.dot.gov/policyinformation/travel\\_monitoring/tvt.cfm](http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm)

### 2.5.3 Build-Up Method

*The build-up method = vested developments*

The build-up method of traffic involves the identification of the trips associated with approved developments in the study area, assigning those trips to the study area transportation system, and then adding the background through traffic. The build-up method of projecting background traffic is appropriate when other area

+ *background through traffic*

developments are proposed that will affect local area traffic patterns during the same horizon period.

Considerations for using the build-up method are outlined below.

**Assess impacts of committed system improvements**

- Work with local and state agency staff to identify a subarea
- Identify committed transportation projects and probable travel pattern changes within the subarea.

**Identify and add approved development traffic**

- Confirm committed projects and phasing within the subarea with local and state agency staff
- Obtain trip assignment associated with approved projects (desirably including documentation of trip generation, trip distribution, and trip assignment)

Double counting of development generated trips may occur when estimating the other background traffic. Checks for reasonableness should be made. If the build-up method is used, a lower traffic growth rate than a direct trend analysis may be used.

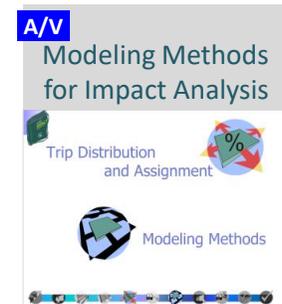
*Check for reasonableness*

**2.5.4 Model Methods Using FSUTMS to Distribute Trips for Developments**

The FDOT and some regional agencies typically maintain travel demand models that incorporate large planning areas. These models are typically calibrated to a base year and include a long-term future horizon year for the corresponding transportation system. Travel demand models can be used to assist in the identification of traffic patterns and needs associated with site development.

The model method of transportation impact analysis typically uses an MPO-adopted regional travel demand model to forecast. There are two general methods for using a FSUTMS model for distributing and assigning ITE-generated trips during a traffic impact analysis: the special generator method and the link volume factor method.

Note: in the examples below, care can be taken to avoid over estimating internal trips, as the model’s trip tables already provide some intra-zonal trips.



**Special Generator Method:**

- Develop a new transportation analysis zone (TAZ) or set of zones for the development and code in connectors from the new zone centroids to the transportation network.
- Connection points should be consistent with the preliminary site access plan
  - Code socioeconomic data consistent with the development program into the model’s ZONEDATA file



- Identify appropriate ITE vehicle trip rate(s) and estimate site trip generation manually using ITE's *Trip Generation Manual*
- Identify appropriate trip purposes for commercial properties based on prevailing land use type (e.g., shopping center would be predominantly home-based shopping trips)
- Identify reasonable auto occupancy rates for each trip purposes. Look for consistency with the pre-established model parameters. Apply auto occupancy rates to ITE trips by purpose to calculate person trips and sum for residential and non-residential uses in each development TAZ
  - 1) Enter person trips by zone and trip purpose into SPECGEN file
  - 2) Set up model to execute using script files that isolate development trips from other background trips
  - 3) Conduct initial model run with a select link analysis on all centroids for zones comprising the project to
  - 4) Obtain initial vehicle trip distribution patterns of site-generated trips
  - 5) Compare vehicle trip generation obtained manually and with the planning model
  - 6) If the model-derived number of vehicle trips is less than the manual calculation for any given land use, the total external site trip generation obtained using the planning model should be adjusted until the modeled number of trips is greater than or equal to the manually estimated trip (most likely for non-residential uses)
    - Identify any difference in vehicle trips between manual and model calculations
    - Adjust number of trips in SPECGEN file by a similar ratio
    - Rerun the model
    - Identify any remaining difference in vehicle trips between manual and model calculations
    - Continue steps 3 and 4 until model calculations are **greater than or equal to** manual calculations
  - 7) Convert site-generated trips to PM peak period or other, as directed by local concurrency ordinances
  - 8) Estimate internal capture using the previously approved methods
  - 9) Adjust trips to commercial properties on site to account for agreed upon pass-by trip percentages

### Link Volume Factor Method

Develop a new transportation analysis zone (TAZ) or set of zones for the development and code in connectors from the new zone centroids to the transportation network. Connection points should be consistent with the preliminary site access plan.

- 1) Code socioeconomic data consistent with the development program within the ZONEDATA file (e.g., single-family homes in development = single-family dwelling units in FSUTMS). For land use types not found in the ZONEDATA file, use rates for land use types that are comparable to FSUTMS land uses and

- acceptable to review agencies (Example land use conversion rates are shown in Exhibit 20)
- 2) Take supplemental demographic data (persons per dwelling units, percent automobile ownership, percent of dwelling units vacant, etc.) from zones in the ZONEDATA file that contain land use and population characteristics that are expected to be similar to the character of the project site (Example land use conversion rates are shown in Exhibit 20)
  - 3) Set up model to execute using script files that isolate development trips from other background trips (Selected Link Analysis on centroids)
  - 4) Identify cordon line around the proposed development
  - 5) Estimate internal capture using the previously approved methods
  - 6) Calculate the total number of external trips (i.e., those crossing the proposed development cordon line)
  - 7) Calculate the percent distribution of external project trips (link distribution percentages) by dividing the number of project trips on each link of the network by the total number of external project trips
  - 8) Identify appropriate ITE vehicle trip rate(s) and estimate site trip generation manually using ITE's Trip Generation
  - 9) Factor the total number of ITE external project trips by the link distribution percentages calculated earlier for each link in the loaded network
  - 10) Resulting ITE trips times link distribution percentages can be plotted link by link
  - 11) Adjust trips to commercial properties on site to account for agreed upon pass-by trip percentages
  - 12) Factor the total number of ITE external trips (with Internal Capture and Pass by subtracted) by the link distribution percentages)

**Exhibit 20**  
**Land Use**  
**Conversion Rates**  
**for Traffic Impact**  
**Assessments**

Land Use	Conversion Rate*
Single-Family Dwelling Unit	3 persons per DU
Multi-Family Dwelling Unit	2 persons per DU
Office	4 service employees per 1,000 sq ft
Hospital	3 service employees per 1,000 sq ft
Retail <200k sq ft	2 - 3 commercial employees per 1,000 sq ft
Large Retail	1.5 - 2 commercial employees per 1,000 sq ft
Industrial	2 industrial employees per 1,000 sq ft
Warehousing	1 industrial employee per 1,000 sq ft
Hotel	.5 - 1 service employee per room

\*This data is a compilation of “Rules of Thumb” and calculations using the ITE *Trip Generation Manual*. These conversion rates should only be considered when local data, FDOT District guidance or more specific knowledge is not available.

*Justification and documentation of all adjustments to the model generated distribution should be included in the traffic analysis*

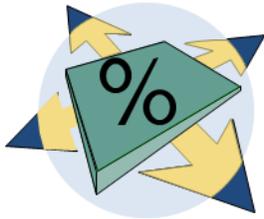
Model methods are commonly used with manual assignment processes when determining distribution percentages of vehicles. A blended methodology (using manual adjustments to model trip assignments) should be approved by FDOT or another reviewing agency prior to use.

Manual trip distribution results and model outputs can be compared to provide reasonableness checks. Model methods may be used to determine an initial trip distribution and then manual adjustments may be made based on professional judgment and familiarity with the transportation network. Justification and documentation of all adjustments to the model generated distribution should be included in the traffic analysis. The model adjustments must be documented and approved by the FDOT.

*Understand the model’s strengths and limitations*

It is essential that the model user has a thorough understanding of a given model’s analysis strengths and limitations so that model output can be properly interpreted and used.

## 2.6 Trip Distribution



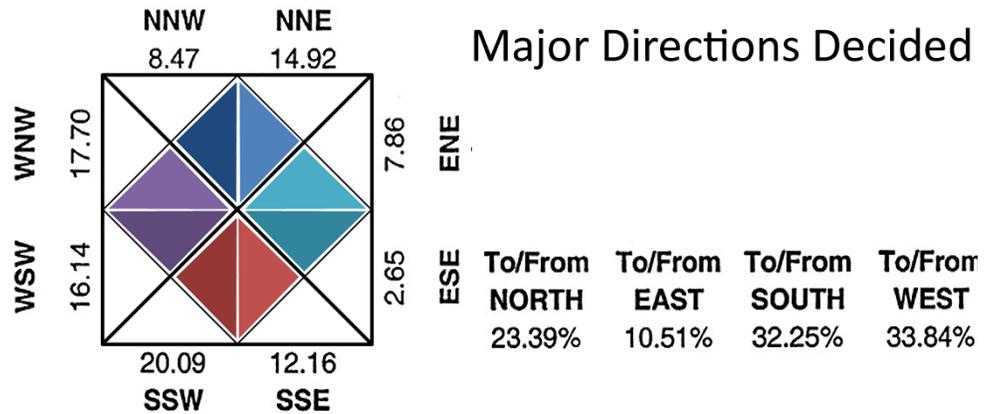
Another component in the site impact analysis is trip distribution. The purpose of trip distribution is to determine the final destination and origin transportation analysis zones of the traffic studied in the impact analysis.

Trip distribution can be estimated using a number of different methodologies reflecting either large scale model or manual methods. FDOT and any participating local review agencies should approve of the trip distribution methodology selected.

Whether a manual or large-scale modeling method is used, trip distribution should be performed in each analysis year and documented and summarized in a figure that illustrates the percentage of total site trip generation. The figure should clearly show that the distribution of external trips from the site adds up to 100%.

**Exhibit 21**  
**Major Directions of Trip Distribution from site**

*Trip distribution should be summarized in a figure that clearly shows the distribution of external trips from the site.*



Source: KHA from a traffic study of a Miami Wal-Mart Circa 2005

### 2.6.1 Different Types of Manual Methods for Trip Distribution

Manual methods of trip distribution provide the analyst with a basic understanding of the travel patterns and market areas associated with the development. When performing manual methods of traffic distribution, good judgment is essential to conduct a proper evaluation. Key assumptions should be clearly documented for the reviewers. Exhibit 22 provides a visual example of the manual distribution method.



## 2.7 Mode Split/Alternative Travel Forecasts



Mode split is the process of estimating the number of travelers between zones that are anticipated to use modes other than automobiles in transportation impact analysis. This process estimates how many people travel to and from a site by auto, transit, and other modes such as by bicycle or walking. **In some cases, the mode split portion of the typical four-step modeling process will not be sufficient for corridor or site-specific transit forecasting.**

For example, a Transit Oriented Development (TOD) is an area that requires special modal study based on more detailed considerations.

*The level of analysis will be made in coordination with FDOT and local agencies, including transit providers*

### Transit Mode Split Assessment Methods

The applicant should provide justification on any transit, bicycle, or pedestrian adjustment reducing vehicle trips. The justification will usually consist of a special study prepared to better understand the impact of existing or proposed transit service, levels of walking and bicycling and necessary commitments to needed infrastructure, or funding to support the existing or planned transit service in the area.

### The Transit Boardings Estimation Tool (TBEST)

The FDOT’s Transit Office has developed the transit analysis tool TBEST (The Transit Boardings Estimation and Simulation Tool) that may be used in transit assessments.

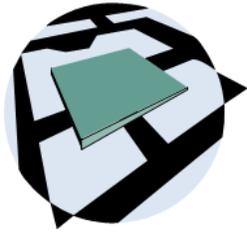


*More detailed information about TBEST and its use can be reviewed on-line at [TBEST.ORG](http://TBEST.ORG).*

This tool is a comprehensive transit analysis and ridership forecasting model that is capable of simulating transit travel demand while accounting for factors such as sidewalk coverage, network connectivity, bus headways, transfers, time-of-day variations, and route competition. The tool simulates transit ridership in a way that allows it to provide detailed information regarding ridership estimates at individual stops. The tool can also be used to obtain route level, segment level, location-based, or system level measures through the stop-level outputs. By simulating ridership at the level of the individual stop, the model can provide a strong framework for modeling transit ridership.

The use of TBEST for impact assessments should be discussed by the applicant and review agencies (including transit agencies) and a clear methodology should be defined. It is recognized that TBEST may not be applicable in all cases. The tool provides users with a specialized transit planning model to supplement or to replace the use of the more standard travel tools.

## 2.8 Trip Assignment



*Trip distribution and assignment are two related but distinct activities*

PDF

Project Traffic  
Forecasting

Trip assignment involves determining the amount of traffic that will use each route on the roadway network. Trip assignment determines the number of site-generated turning and through movements at each intersection, as well as the roadway segment of the study area network.

Trip distribution and assignment are two related but distinct activities. Trip distribution determines where trips wish to go. Assignment is when the trips are placed on the network to reach their desired destination.

The products of the assignment component are traffic volumes appropriate for use in the analysis of operating conditions. It is important to note that traffic factors will usually need to be applied to both field collected data and model derived volumes. For example, Model Output Conversion Factors (MOCF) by the FDOT are used to convert Peak Season Weekday Average Daily Traffic (PSWADT) volumes assigned by travel demand forecasting models to estimated AADT volumes. Even when using FDOT approved adjustments, care must be taken to see if the output is reasonable. A full description of the MOCF as well as other adjustments can be found in the .

### 2.8.1 General Considerations

Several important general considerations are involved in preparing trip assignment. These considerations are highlighted below, followed by detailed discussion of specific modeling techniques and analysis procedures.

Trip assignment should begin by identifying multiple paths between origins and destinations. The potential for using these paths can then be evaluated on a comparative basis using the following considerations:

- Driver tendencies and local patterns in developing logical travel routes.
  - For example, drivers often will use the first convenient driveway they reach to access a site with multiple driveways.
  - Driver characteristics reflecting the proposed land use (will drivers tend to use back roads/local connections or are they new to the area and will tend towards major travel routes that are well signed).

- The design of the internal circulation systems and the location of residential land uses;
  - The outbound trips tend to be more evenly distributed among multiple exits than the inbound trips;
- Available roadway capacities
  - Identify known capacity constraints and assess how constraints may impact alternative evaluation/routing.
  - Turn movement capacity and restrictions; particularly for left-turns.
- Relative travel times.
  - The proposed land use may impact driver needs and tendencies – for example, the differences between a daily commute trip and a recreational tourist exploration trip.
  - Horizon years and corresponding conditions at the time.
  - Planned improvements or network changes could result in changes to trip assignment compared to current conditions or when evaluating multiple horizon years.
  - Travel paths may vary by time of day.
- Assignment percentages typically apply to two-way trips (arriving and departing).
  - While generally oriented the same way, individual routes may defer to reflect multiple access and egress options and turn movements will likely be different or reversed between an entering and exiting trip.
  - One-way streets may influence assignment patterns.
- The presence of on/off ramps at interchanges.
  - Pass-by trips enter from adjacent streets and typically exit to the same street to continue on their original path.

**Adapted from:** [Transportation Impact Analyses for Site Development](#), ITE 2005

## 2.8.2 Manual Methods of Trip Assignment

Manual trip assignment often assigns site traffic based on existing or anticipated future turning and through movement percentages. The assignment may reduce site volumes along roadway segments using attenuation factors (see [Chapter 2.2.3](#)) to account for “intervening opportunities” for the trip to end. In simple terms, this means trips may be added and subtracted to the roadway network between major intersections and corridors to reflect local area origins and destinations. Manual assignments for each analysis period should be made for

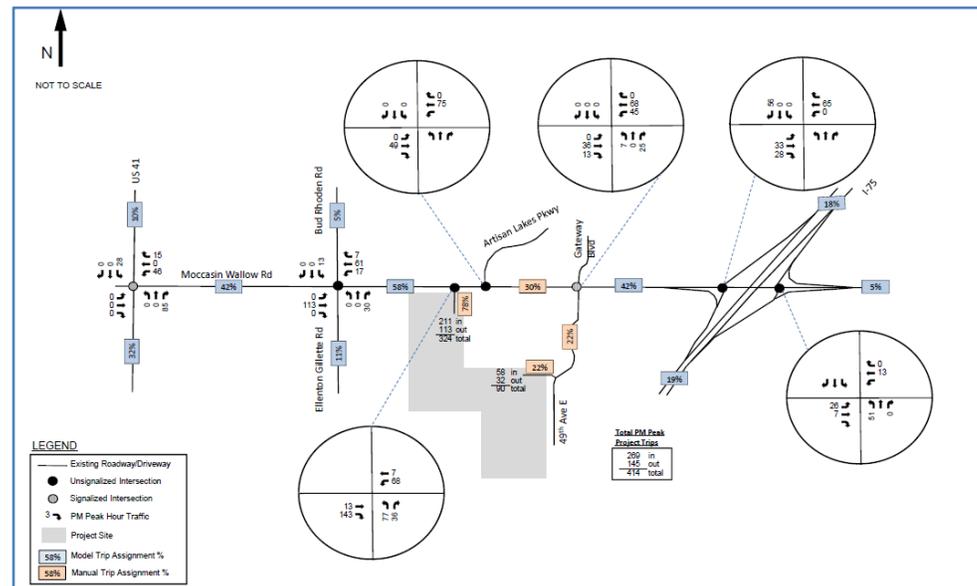
*If the access plan is modified, the assignment process may have to be repeated until*

*a logical assignment is achieved for the network*

each analysis year. Multiple paths should be assigned between origins and destinations based on experience and judgment to achieve realistic estimates.

The assignment process may be performed numerous times during a typical analysis based on the number of site access and internal circulation alternatives and traffic impact mitigation alternatives considered. If the access plan is modified during subsequent reviews or permitting, the assignment process may have to be repeated and alternative site access and circulation plans considered until a logical assignment is achieved for the network.

**Exhibit 23  
Manual Assignment  
Example**



Source: Manatee County Project PDR 16 -03-(Z)(P), Approved November 30, 2016

**Recommended  
Procedure for Manual  
Trip Assignment  
When Pass-by Trips  
are Present**

Pass-by trips in the network should be analyzed carefully. The following procedure is based, in part, on the recommendations of ITE’s [Transportation Impact Analyses for Site Development](#) when pass-by trips are involved in the assignment.

1. Apply the trip reduction factors for internal capture and pass-by traffic, and then assign volumes to each roadway segment. Illustrate in a map the assignment of development trips and provide a corresponding table.
2. In addition to estimating a normal distribution, estimate a trip distribution for pass-by and diverted trips.

Perform separate trip assignments using the individual distribution patterns for primary, pass-by and diverted trips. Pass-by trips and diverted trips should be evaluated carefully considering the location of the driveway and the total traffic on the adjacent roadway links. The assignment should consider the unique turn movement patterns of pass-by and diverted trips and should

account for the subtraction of existing turn movements related to the pass-by trips that are no longer made.

- For example, a pass-by trip assignment might require that an eastbound through trip be removed and replaced with an eastbound right-turn and companion northbound right-turn at a site driveway.
- Diverted trips are not subtracted from the roadways and access points they are added to. They are new trips on the roads they divert to.

Applicants should assign trips to the network such that the primary, pass-by and diverted trips are distinguishable and can be easily reviewed.

3. Consider the effects of traffic diversion by existing traffic to other facilities as result of the site-generated traffic, if appropriate.
4. Check the assignment for reasonableness. Generally, pass-by traffic should not exceed 10 percent of traffic on adjacent streets. For an explanation of the 10 percent of adjacent street traffic for pass-by traffic, see [Chapter 2.4.4](#).

### 2.8.3 Traffic Attenuation with Manual Traffic Assignment

As the distance that traffic from a specific site travels, the number of those site generated trips drop. The trips drop (or attenuate) because as longer distance is traveled, more and more people reach their final destinations. In order to reflect this reality in a manual traffic assignment, it is necessary to use something called traffic attenuation. It determines what percentages of trips are satisfied at various distances from the originating site. In evaluating trip assignment alternatives, a commonly used guideline by FDOT is that no more than 10 percent of trips should dissipate (or attenuate) per study segment of roadway unless there is a cross street or some major land use that could attract a large number of trips from the usual flow.

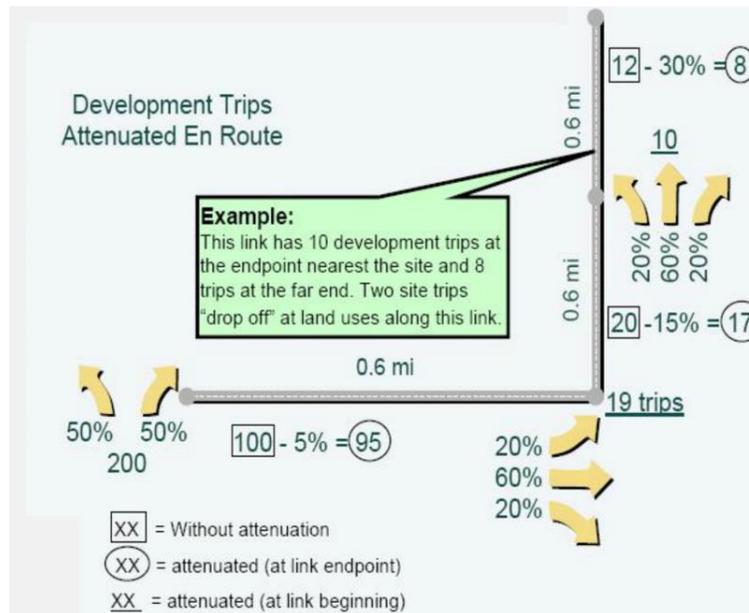
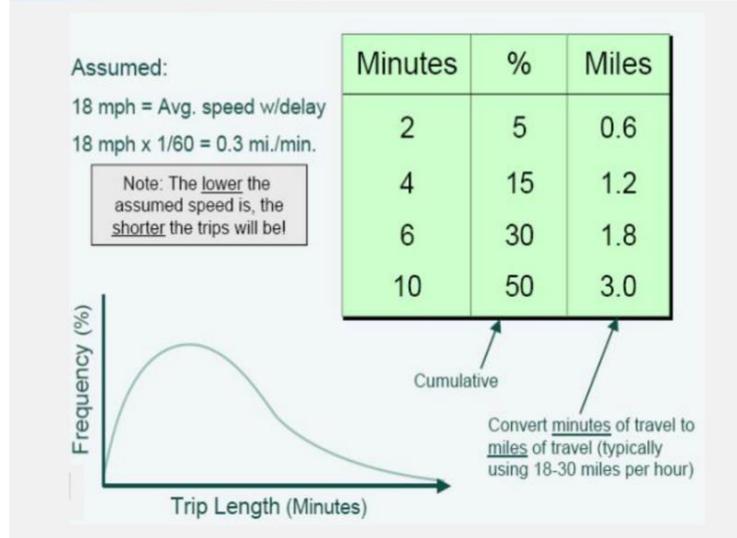
Another method for establishing traffic attenuation is the use of the trip length frequency curves of the urban area or a similar area. These may be available as part of an area's large-scale transportation model.

*No more than 10 percent of trips should attenuate per segment*

Exhibit 24  
**Traffic Attenuation  
 Example**

Traffic Attenuation

**Trip Attenuation Method**



**2.8.4 Model Methods of Trip Assignment**

Large scale travel demand models such as FSUTMS use a capacity restrained routine, known as user equilibrium, to perform the final highway assignment. The model decreases speeds on congested roadways and shifts traffic between routes after each iteration of the assignment until equilibrium is achieved. At that point, all trips in the model area have found the least congested, shortest-time path to their destination such that no other adjustment can be made to traffic without increasing travel times.

## Selected Zone Analysis

*The preferred technique is the Selected Zone Analysis tool*

The preferred technique for transportation impact analysis trip assignment is called selected zone analysis. Selected zone analysis allows for review of network-wide trip assignment associated with a single or multiple Transportation Analysis Zone(s) (TAZ).

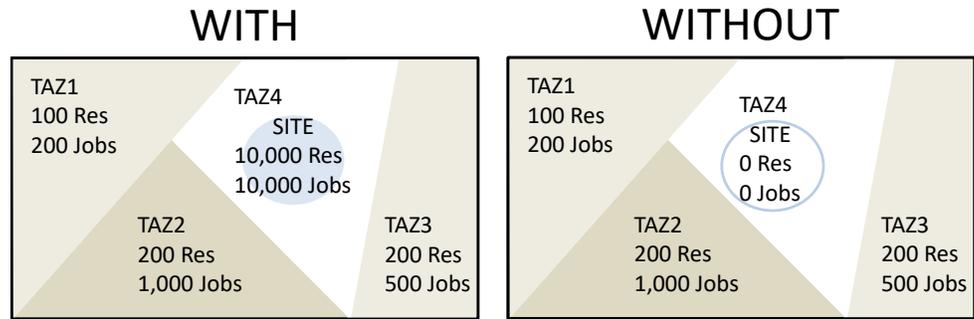
- If using Cube Voyager, the trip assignment module must be rerun with the “Create a Path File” option selected.
- After opening the new loaded network, select “Path” then “Use Path File” and navigate to the HIGHWAY.PTH file in the appropriate output folder.
- Within the Path File interface, choose “Selected Links” from the Mode menu. In the Selected Links/Nodes edit box, type N= followed by a comma-separated list of the development TAZ numbers.
- Click “Display.”

Central Office modeling contact information is listed on [FSUTMSOnline.net](https://www.fsutms.com), “Contacts” link in the page footer.

**Do Not** run a “with and without” analysis

Analysts should *NOT* attempt to evaluate traffic by running two separate model scenarios in which one scenario has the data corresponding to the development included and the other scenario has had the data corresponding to the development removed. The resulting estimate derived from subtracting the volumes of the scenario with the development data from the scenario without the development data, a technique commonly known as the “Net Impact” or the “With and Without” method, *DOES NOT* directly represent the site-generated trip assignment impact. This is because the equilibrium highway assignment process that drives the model diverts trips, often resulting in virtually no change in traffic volumes. This is a subtle but critical point. Judicial precedent in Florida has established that the development review process must account for *ALL* trips caused by development, *NOT* the net impact resulting from displacing existing trips to other roadways (*Reference: Westinghouse Gateway Communities, et al. v. Lee County Board of County Commissioners Case*).

**Exhibit 25**  
**With or Without**  
**Modeling Method**

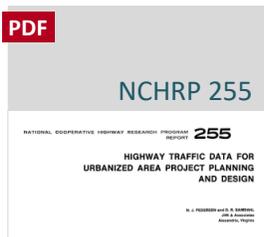


The appropriate use of the selected zone analysis is to identify the pattern of site trip assignment by roadway link and, in turn, use that pattern to prepare the actual assignment of site-generated traffic using other model or manual methods. The model assignment should *NOT* be used to calculate internal capture, background traffic, or turning movements. There are two appropriate methods for using travel demand models for traffic impact analysis:

- Special Generator Method
- Link Volume Factor Method

These methods are discussed in [Chapter 2.5.4](#).

**FSUTMS Modeling of**  
**Assignment**



*NCHRP 255 should be used by the applicant unless another procedure has been approved by FDOT.*

At a conceptual level, five key steps are taken to perform a trip assignment.

1. Input proposed development’s land use into zonal data and/or adjust the model’s special generators
2. Run FSUTMS
3. Display traffic that enters/exits development zone(s) on the loaded network using the traffic assignment path file
4. Save development traffic as a new link attribute for further analysis (a new attribute may need to be created in the network for this purpose if one does not already exist)
5. Check for reasonableness

In some circumstances, such as at the fringe of a model, manual adjustments may be necessary. If post assignment adjustments are made, the process should be clearly justified and documented. *National Cooperative Highway Research Program (NCHRP) Report No. 765, Analytical Travel Forecasting Approaches for Project-Level Planning and Design*, identifies some procedures for adjusting link volumes and arriving at design traffic and turn movements. Even though published in the 1980’s, the principles inside are still relevant.



*Webinar with an entire segment on the use of NCHRP 255*  
– September 2008

The model output volumes from FSUTMS typically represent the Peak Season Weekday Average Daily Traffic (PSWADT) condition. These volumes must be converted to AADT and then to peak hour volumes using conversion factors. This process is described in the FDOT [Project Traffic Forecasting Handbook](#). All adjustments and conversion factors should be documented, reviewed and approved by FDOT. Some models may represent AADT by default or may automatically convert model PSWADT to AADT during the model process. The analyst is encouraged to reference all available model documentation and coordinate with the appropriate professional staff if there is a question concerning the units of the model output volumes.

### 2.8.5 Trip Assignment at Intersections



The operational analysis of individual intersections is often required as part of a transportation impact assessment. The trip assignment at intersections should be compared to the assignment shown at the facility level so that both analyses are using consistent values. It is also noted that the background volumes used in a detailed intersection assessment should be compared to the background volumes used in the facility analysis. For example, the sum of a specific approach (left turn movements plus through movements plus right turn movements) at an intersection should reasonably match the approach volume used in the facility analysis.

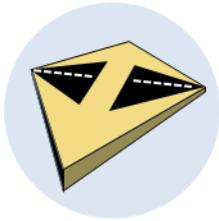
FDOT has also developed an Excel spreadsheet tool called "TURNS5" which may be useful. Instructions for the use of this spreadsheet are found in Chapter 7 of the FDOT .

### 2.8.6 Documentation of Trip Assignment

*Proper documentation will allow for careful and thoughtful review of the assignment*

Trip assignment, by nature, will reflect driver tendencies behavior, and in part becomes a case study of personal preferences. Because the process can reflect a complex decision process, it is important to document the basis for making an assumed trip assignment. Proper documentation of the assumptions and decisions made in developing the trip assignment will allow for review of the assignment. Applicants are encouraged to work with FDOT and other local agencies to ensure trip assignment assumptions are reasonable and reflective of local conditions.

## 2.9 Access Management, Site Access, and Internal Circulation



The proper application of access management and basic site planning principles is essential to all transportation impact analysis. This process involves the review of proposed site plans and expected improvements. During this stage, the reviewer assesses the impact of the project on traffic movements and evaluating safety and operations at, and near the access points (driveways or roadways). The level of detail of the site plans associated with the impact assessment will vary based on the purpose of the study and what level of approval is being sought. For example, DRI applicants should provide approximate locations of major driveways and new roads, and address overall internal and external network connectivity.

The design of site circulation, parking, and access should also easily accommodate bus and pedestrian movements for existing or future bus services. Having a safe and well-marked pedestrian path to the entrance of the development is one important aspect of good design. In addition, bicycle access and parking should be included.



The FDOT Transit Office has produced several publications that discuss pedestrian and transit-friendly design in greater detail and can be found at the website.

Site impact design issues include identifying an appropriate design vehicle (the largest vehicle that will typically use the roadway), speeds, and multimodal accommodations. Most site plans should include the following information, at a minimum:

- Median opening locations and spacing
- Sufficiently detailed drawing of access, circulation and parking
- Landscaping details for analysis of sight distances
- Location of proposed multimodal accommodations

### Access Management Standards

FDOT has developed numerous standards, guidelines, policies and recommended practices in the areas of corridor access management and site access planning. These standards are provided in , (driveway permitting) and (access management standards).



Rule 14-96, F.A.C.:  
<https://www.flrules.org/gateway/readFile.asp?sid=0&tid=0&cno=14-96&caid=250859&type=4&file=14-96.doc>

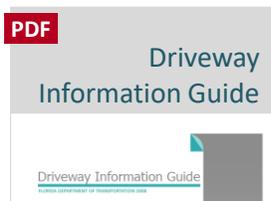


Rule 14-97, F.A.C.:

<https://www.flrules.org/gateway/readFile.asp?sid=0&tid=0&cn=14-97&caid=250956&type=4&file=14-97.doc>

All driveways associated with a new or expanded development will need to be permitted through the process described in the Rule Chapter 14-96, State Highway System Connection Permits. Directions for traffic studies for access permits are located under Rules 14-96.005(3) and (4), F.A.C.

The application of these principles to roadway and corridor design features are discussed in greater detail in a number of FDOT publications such as:



- Driveway Information Guide - [dot.state.fl.us/planning/systems/programs/sm/accman/pdfs/driveway2008.pdf](http://dot.state.fl.us/planning/systems/programs/sm/accman/pdfs/driveway2008.pdf)

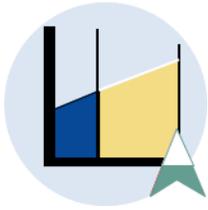


- Median Handbook – <http://www.fdot.gov/planning/systems/programs/sm/accman/pdfs/dotmedianhandbook.pdf>



- The Driveway Information Guide and Median Handbook are currently being combined into one document. This project should be complete by 2018.
- The FDOT also maintains an extensive on-line collection of technical resources on access management on the [FDOT Systems Planning Access Management](#) webpage.

## 2.10 Mitigation and Future Transportation Needs



*Future conditions analysis determines what mitigation may be required*

The future conditions analysis determines if the transportation system will operate acceptably with the additional site-generated trips. If not, one must determine what mitigation may be required. The reviewer should have a clear understanding of the evaluation method used.

This section assumes that an evaluation methodology is based on the most recent generally accepted professional practice. In some instances, local governments may use a different methodology or performance measure. The applicant should clearly document and justify the methodology used and confirm all methodology assumptions and analysis requirements with FDOT.

*“Use of Department’s LOS targets and guidance on acceptable highway capacity and LOS methods (including software) apply to all appropriate Department reviews and assessments of proposed developments directly impacting the SHS. In the review of plans and designs of other entities directly impacting the SHS, the Department recommends the adoption and use of the Department’s LOS targets. Regardless of adoption or use by non-Department entities, the Department will use the LOS targets for the review of actions directly affecting the SHS for all its planning and permitting processes. The Department can modify a connection permit based on adverse impacts to operational, LOS or safety issues as part of a transportation impact assessment.”*

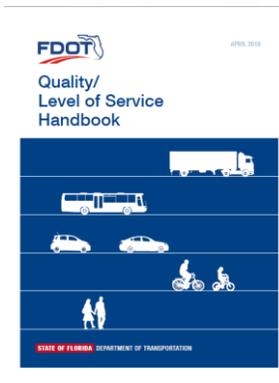
### Intersections

*Both facility LOS and intersection v/c are appropriate to determine impacts*

Although arterial facility LOS is stressed in highway level of service targets, detailed volume-to-capacity analyses at selected intersections may be necessary to evaluate specific projects. Both facility LOS and intersection volume-to-capacity ratio criteria are to determine impacts from proposed developments. Additional information about intersection assessments is provided in the *FDOT Quality/LOS Handbook*.

### 2.10.1 LOS Analysis Tools

The Q/LOS Handbook is intended to be used by engineers, planners, and decision makers in the development and review of roadway users’ quality/ level of service (Q/LOS) and capacity at a generalized planning level. The Q/ LOS Handbook



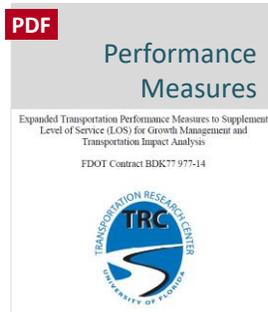
provides Generalized Service Volume Tables and background regarding statewide default values used in their development.

Quality of service (QOS) is a traveler-based perception of how well a transportation service or facility operates. Level of service (LOS) is a quantitative stratification of quality of service into six letter grades. LOS provides a measure that assesses multimodal service inside the roadway environment (essentially inside the right-of-way). Capacity conceptually relates to the maximum number of vehicles or persons that can pass a point on a roadway or sidewalk in a given amount of time under normal conditions. The , found at the end of the , present maximum service volumes, or the highest numbers of vehicles for a given LOS.

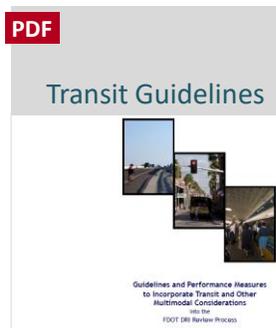
Direction found within the Q/LOS Handbook provides assistance in selecting the most appropriate tools for Q/LOS analysis. There is specific instruction within the handbook on how to use the Generalized Service Volume Tables.

## 2.12 Multimodal References

There are opportunities for including multimodal considerations at each stage of the transportation impact analysis. Some of the best references on these multimodal considerations are listed below. Even though some of the linked documents in this chapter list statutory and agency requirements that are no longer needed, the technical guidance is still valuable.



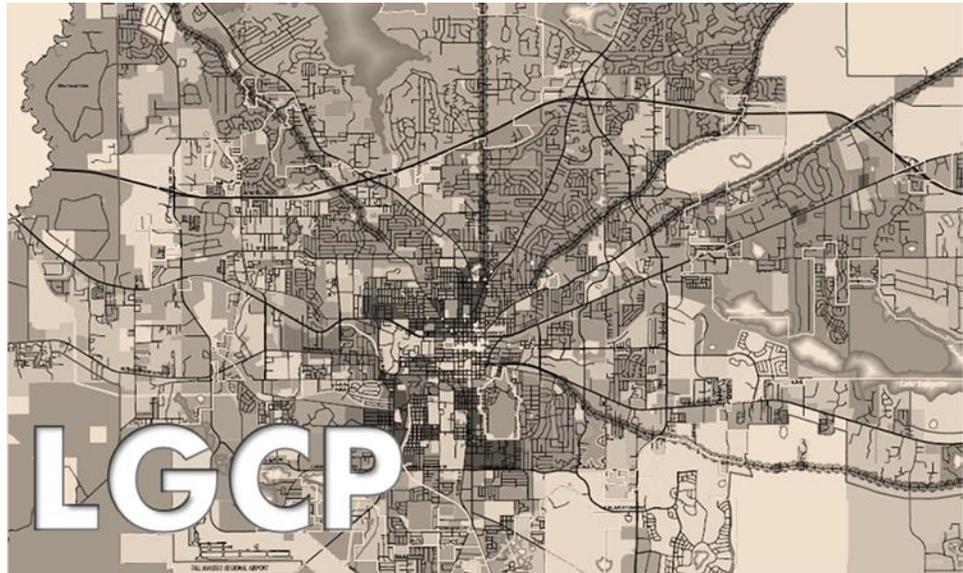
- [“Expanded Transportation Performance Measures to Supplement Level of Service \(LOS\) for Growth Management and Transportation Impact Analysis”](#) FDOT Contract BDK77-977-14, October 2013



- [Guidelines and Performance Measures to Incorporate Transit and Other Multimodal Considerations into the FDOT DRI Review Process](#). Though DRIs are now reviewed as State Coordinated Review amendments and changes to DRIs are reviewed at the local level, this document still has much useful information on how to incorporate multimodal improvements into the mix. State of Florida Department of Transportation Public Transportation Office, 2008



- [Multimodal Trade-Off Analysis in Traffic Impact Studies](#), State of Florida Department of Transportation, Office of Systems Planning, 2003



# 3

## Local Government Comprehensive Plan Reviews

### 3.1 Comprehensive Plans and Plan Amendments

#### 3.1.1 Introduction to Community Planning and Comprehensive Plans

The Community Planning Act ([Chapter 163, Part II, Florida Statutes](#)) requires all local governments to adopt Local Government Comprehensive Plans (LGCP) that guide future growth and development. Comprehensive plans contain chapters or "elements" that address future land use, housing, transportation, infrastructure, conservation, recreation and open space, intergovernmental coordination, coastal management (coastal areas) and capital improvements. Comprehensive plans may also include optional elements that are consistent with statutory requirements.

#### Comprehensive Plans

*FDOT focuses comprehensive plan review on how the amendment impacts the*

Comprehensive plans and plan amendments are key components of the framework for community planning in Florida. FDOT provides comments to local governments and the Department of Economic Opportunity (DEO) in reviewing changes that affect important state transportation resources and facilities. DEO acts as the State Land Planning Agency and is responsible for the overall review

*We have tried to have the most up to date information. However, due to legislative changes, we recommend you check with the links in this handbook.*

*transportation network, including the multimodal components of the network.*

process and as the State Land Planning Agency has the statutory authority to challenge whether plan amendments have unmitigated impacts to important state resources or facilities in the case of Expedited State Review amendments or are or not consistent with state law in the case of State Coordinated Review amendments. Local governments submit plan amendments to FDOT for review. Amendments are reviewed either pursuant to 163.3184(3), F.S., (Expedited State Review) under which agencies are limited to comment on unmitigated impacts to important state resources or facilities and comments are made directly to the local government; or 163.3184(4), F.S., (State Coordinated Review) under which agencies can comment on an issue include internal inconsistencies and comments are made to the DEO which prepares a report that is sent to the local government.



states that FDOT the purpose of FDOT’s review is to identify potential adverse impacts to transportation resources and/or facilities of state importance and recommend potential mitigation measures to address such impacts. FDOT District plan amendment reviews will focus on the transportation, future land use, intergovernmental coordination, and capital improvements elements of the comprehensive plan. These elements, including the Future Land Use Map and Future Transportation Map, coordinate land use patterns, transportation systems, and capital improvements projects needed to support development of a community. Changes to an adopted comprehensive plan may impact the transportation network, including the multimodal components of the network.

*Future Land Use and Transportation Elements must be consistent*

The elements of a LGCP must be coordinated and consistent with Sections 163.3177, 163.3178 (coastal areas), 163.3180, 163.3191, 163.3245, and 163.3248, F.S. For example, the Future Land Use Element includes goals, objectives and policies and a Future Land Use Map (FLUM) that implement the jurisdiction’s desired land use pattern. Likewise, goals, objectives and policies creating the jurisdiction’s transportation system are delineated in the Transportation Element, and the Future Transportation Map identifies those transportation facilities necessary to accommodate and serve existing development and the future growth depicted on the FLUM. The Capital Improvements Element and associated Five-Year Schedule of Capital Improvements (which specify projects as either funded or unfunded and include a level of priority for funding unfunded transportation projects and other public projects required to meet the local government’s established Levels of Service) must also be consistent with the Future Land Use and Transportation Elements. The Intergovernmental Coordination Element identifies the agencies and organizations with which the local government will coordinate its planning activities and outlines the coordination mechanisms that will be used. Pursuant to Section 163.3168, F.S., local governments are encouraged to apply innovative planning tools, including, but not limited to, visioning, sector planning, and rural land stewardship area designations to address future new development areas, urban service area

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designations, urban growth boundaries, and mixed-use, high density development in urban areas.

DEO is directed to help communities find creative solutions which foster vibrant, healthy communities, while protecting the functions of important state resources and facilities. Similarly, state and regional agencies such as FDOT may use various means to provide direct and indirect technical assistance within available resources.

## 3.2 The Comprehensive Plan Amendment Process

A citizen, property owner, or the local government itself may initiate an amendment to the local comprehensive plan. But only a local government may transmit an amendment for review, as the amendment is to the local government's comprehensive plan, and ultimately it is the action of the local government to adopt the amendment regardless of who initiates the amendment. Amendments often involve changing the future land use designation of property to another designation that allows a different (usually greater) amount of or type development. Future Land Use Map (FLUM) changes may alter the intensity of allowed non-residential development or the types of land uses allowed on the property. In addition to such FLUM amendments, changes to the comprehensive plan's goals, objectives and policies (text) may be requested.

The amendment application is first considered by the local planning agency (LPA). Pursuant to Section 163.3174, F.S., the LPA (usually the planning board or for smaller local governments often the local governing body) is responsible for preparing the comprehensive plan and plan amendments, as well as oversee the evaluation and appraisal review (see below). After a public hearing, the local planning agency makes a recommendation to the governing body regarding the requested plan amendment.

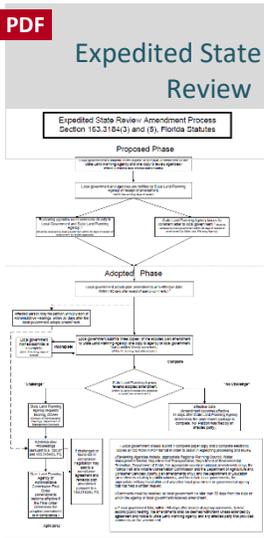
There are three separate processes that govern the review of comprehensive plan amendments. An expedited state review process, based on the previous Section 163.32465(2), F.S., pilot program. All plan amendments must follow this expedited process, except amendments that: are in an area of critical state concern designated pursuant to Section 380.05 F.S.; propose a rural land stewardship area pursuant to Section 163.3248 F.S.; propose a sector plan pursuant to Section 163.3245 F.S., or an amendment to an adopted sector plan; update a comprehensive plan based on an evaluation and appraisal pursuant to Section 163.3191 F.S.; propose a development that is subject to the state coordinated review process pursuant to s. 380.06; or are new plans for newly incorporated municipalities adopted pursuant to Section 163.3167, F.S. These exceptions must follow the "state coordinated review process" established in Section 163.3184(4), F.S. Finally, the small scale amendment plan review authorized under Section 163.3187, F.S., is reserved for amendments under ten acres in size that may be adopted without state review.

### 3.2.1 Expedited State Review Process

Statutory Authority: [Section 163.3184\(3\), F.S.](#)

Flowchart: [Expedited State Review](#)

After receiving a recommendation from the local planning agency, the local governing body may transmit the requested plan amendment, with or without changes, to DEO and review agencies. A flow chart illustrating the comprehensive plan amendment process can be accessed by clicking on the PDF link.



The FDOT reviewers must transmit their comments so they are received by the local government no later than 30 calendar days from the date the agency received the proposed plan amendment. These comments must be in writing. Agencies must also send a copy of their comments to DEO. FDOT comments are limited to issues as they relate to transportation resources and facilities of state importance. All reviewing agencies are limited to important state resources and facilities that would be adversely impacted by the amendment and must specifically state how the plan amendment will adversely impact an important state resource or facility, identifying measures the local government may take to eliminate, reduce, or mitigate the adverse impacts. Such agency comments, if not resolved, may result in a challenge by DEO to the plan amendment.

Agencies can make two types of comments on amendments: “technical assistance” and “challenge” comments. Technical assistance comments are those which are given to improve the plan amendment in form or function and are not intended to be the basis of a potential challenge if not addressed. Challenge comments are those that if not addressed could lead to an agency requesting DEO to challenge the local government amendment. When making comments on an amendment, it is important for the FDOT to be clear to the local government what type of comment is being made.

Local governments have 180 days from the date the last agency comment letter is received to hold the second public hearing on the amendment. This timeframe can be extended by agreement; however, if it is not extended the amendment is consider withdraw.

An adopted plan amendment, along with the supporting data and analysis, must be transmitted within 10 working days after the second public hearing to the DEO and any reviewing agency that commented in a timely manner at the proposed stage and requested a copy of the adopted amendment. The transmitted amendment package must be “complete” for the DEO to take final action on the amendment. To be complete, an amendment must contain:

- In the case of a text amendment, a full copy of the amended language in legislative format with new words inserted in the text underlined, and words deleted stricken with hyphens;

- In the case of a future land use map amendment, a copy of the future land use map clearly depicting the parcel, its existing future land use designation, and its adopted designation; and
- A copy of any data and analyses the local government deems appropriate.

DEO must notify the local government of any deficiencies within five working days after the receipt of the amendment package. An amendment adopted under this process that is not challenged, in a timely manner, becomes effective 31 days after DEO notifies the local government that the plan amendment package is complete.

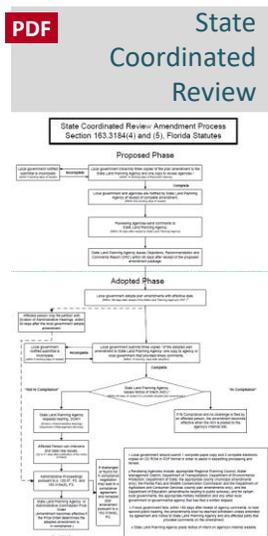
If during the review of the proposed amendment, the FDOT identified “challenge” comments on the proposed amendment, it is imperative during the review of the adopted amendment that close coordination is conducted between District and Central office as well as with the DEO due to the short time frames. Reviewers should utilize the Community Planning Handbook developed by the Office of Policy Planning for specific processes and deadlines regarding the Expedited State Review Process.

### 3.2.2 State Coordinated Review Process

Statutory Authority: [Section 163.3184\(4\), F.S.](#)

Flowchart: [State Coordinated Review](#)

The only amendments that are reviewed pursuant to the State Coordinated Review process are those plan amendments that are in an area of critical state concern designated pursuant to Section 380.05, F.S.; propose a rural land stewardship area pursuant to Section 163.3248 F.S.; propose a sector plan pursuant to Section 163.3245, F.S., or an amendment to an adopted sector plan; update a comprehensive plan based on an evaluation and appraisal pursuant to Section 163.3191, F.S.; propose a development that is subject to the state coordinated review process pursuant to Section 380.06, F.S.; or are new plans for newly incorporated municipalities adopted pursuant to Section 163.3167, F.S. As the name implies review agencies comment to the DEO and the DEO is responsible for plan review, coordination, and the preparation and transmission of a report to the local government for this type of review.



Within 10 working days following the first public hearing on a comprehensive plan or plan amendment proposed under the state coordinated review process, the local government must transmit the plan amendment, clearly identified as being under this type of review, to the reviewing agencies and any other unit of local

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government or government agency in the state that has so requested by written request.

The reviewing agencies comments and any other commenter are limited to important state resources and facilities and compliance, meaning internal inconsistencies created by the amendment can also be addressed; however, comments are sent to DEO rather than directly to the local government. Agency comments must be sent to DEO within 30 calendar days of receipt of the amendment by the agency. Comments should clearly identify if the issue is objectionable and is an issue the FDOT would recommend if not addressed the DEO find the amendment not in compliance, or if the issue is a comment being made to improve the plan.

If DEO elects to review a plan or plan amendment submitted through this process, the agency must issue a report giving its objections, recommendations, and comments (“ORC report”) within 60 calendar days after the receipt of the complete plan or plan amendment. DEO, in conducting its review of local plans or plan amendments, may make objections, recommendations, and comments regarding whether the plan amendment is ‘in compliance’ with the provisions of Chapter 163, Part II, F.S. and whether the amendment will adversely impact an important state resource or facility. Any objection finding that the plan or plan amendment will adversely impact an important state resource or facility must specify how the important state resource or facility will be impacted and identify measures the local government may take to eliminate, reduce, or mitigate the adverse impacts.

Upon receipt of the report from the DEO, the local government must hold the second public hearing, to adopt or not adopt the plan or plan amendment, pursuant to the provisions of Section 163.3184(11), F.S. Except plan amendments processed pursuant to the DRI process, if the hearing is not held within 180 days after receipt of the state land planning agency’s report, the amendments will be deemed withdrawn, unless extended by agreement.

All comprehensive plan amendments adopted by the governing body, along with the supporting data and analysis, must be transmitted within 10 working days after the second public hearing to the DEO and any other agency or local government that provided timely comments at the proposed stage. DEO must notify the local government of any completeness deficiencies within 5 working days after receipt of a plan or plan amendment package. After DEO determines the amendment package complete, the agency has 45 calendar days to determine if the plan or plan amendment is “In Compliance” with the Community

Planning Act based on the ORC report issued and any changes made to the plan or amendment.

As with the Expedited State Review process reviewers should utilize the Community Planning Handbook developed by the Office of Policy Planning for specific process and deadlines regarding the State Coordinated Review Process.

### 3.2.3 Small Scale Amendment Process

Statutory Authority: [Section 163.3187, F.S.](#)

A small-scale amendment is a future land use map amendment for a site-specific small scale development activity of 10 acres or less, where the annual cumulative acres of small scale amendments by that local government is not in excess of 120 acres and the amendment property is not located within an area of critical state concern (with limited exceptions). A text change that relates directly to the small scale land use map amendment may be adopted simultaneously following the small-scale amendment process.

Small-scale amendments require only one public hearing. The 10-acre limit is doubled in a rural area economic opportunity as defined in Section 288.0656(2)(d), F.S., as long as the amendment can be certified to further the economic objectives under Section 288.0656(7), F.S., and meets all concurrency requirements and applicable federal, state, and local environmental permit requirements. Any affected person may file a petition to challenge the compliance of a small scale amendment within 30 days following adoption of the amendment. The local government’s compliance determination is subject to the fairly debatable standard and the DEO may not intervene in a small scale amendment challenge.

### 3.2.4 Future Land Use Map (FLUM)

*System must have sufficient capacity for proposed development*

The majority of plan amendment are Future Land Use Map (FLUM) amendments, typically intensifying the use of a site and adding entitlements and thus potential traffic impacts to the transportation network. FLUM amendments and text changes to the Future Land Use Element and the Traffic Circulation or Transportation Elements should be supported or justified by a transportation impact analysis included in the amendment package; however, it is not a requirement at the proposed stage for a local government to include data and analysis for a plan or plan amendment. The analysis should provide information that will allow a determination of whether the transportation system has sufficient capacity to accommodate the impacts of the proposed level of development and whether mitigation is needed. Many local governments have

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established thresholds for when an amendment must include a transportation impact analysis, so that amendments which are below the threshold do not need such a supporting analysis.

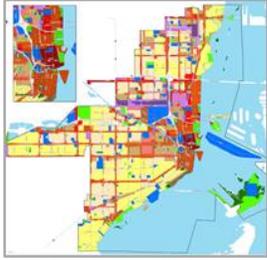
The comprehensive plan amendment process is time sensitive with specific limitations on review periods. The FDOT reviewer should thoroughly understand state statutory requirements regarding comprehensive plan amendments. The applicable statutory authority, existing guidance and suggested review procedures are provided in the resources at the end of this section and in the Community Planning Handbook created by the Office of Policy Planning.

### 3.2.5 Agency Roles

Comments from agencies on plan amendments are limited to adverse impacts on important state resources and facilities (for state agencies) and regional resources and facilities (for Regional Planning Councils, or RPCs). However, the DEO has expanded comment authority under State Coordinated Review Process only. For Expedited State Review, the DEO's review is limited to important state resources and facilities outside the jurisdiction of other agencies. For the State Coordinated Review Process, the DEO deals with issues in ORC reports and makes a compliance finding.

FDOT's comments should be limited to issues within the agency's jurisdiction as it relates to transportation resources and facilities of state importance. The Department of Environmental Protection is limited to air and water pollution, solid waste, sewage, drinking water, state parks, greenways ~~and~~ , trails, state-owned lands and conservation easements, wetlands and other surface water bodies as well as Everglades Restoration. The Florida Fish and Wildlife Conservation Commission is limited to fish and wildlife habitat, listed species and their habitat, while the applicable Water Management District is limited to wellfields, regional water supply plan, wetlands and other surface water bodies, flood protection and floodplain management. The applicable RPC is limited to adverse effects on regional resources or facilities in the Strategic Regional Policy Plan and extra jurisdictional impacts inconsistent with comprehensive plan of any affected local governments in the region.

### 3.3 Review of Future Land Use Map (FLUM) Amendments



The FLUM is a representation of the local government’s vision for the planning horizon. The comprehensive plan implements a jurisdiction’s vision for its future. The Future Land Use Element defines each future land use category in terms of uses allowed, and includes standards to be followed in the control and distribution of population densities and building and structure intensities. The proposed distribution, location, and extent of the various categories of land use are depicted on the FLUM and supplemented by goals, measurable objectives, and policies.

The Future Land Use Element must designate for future land uses at least the minimum amount of land required to accommodate the medium projections of the University of Florida’s Bureau of Economic and Business Research for at least a 10-year planning period unless otherwise limited under Section 380.05, F.S., including related rules of the Administration Commission.

The proposed distribution, extent, and location of the following uses must be shown on the future land use map: residential, commercial, industrial, agricultural, recreational, conservation, educational, and public. The following areas must also be shown on the future land use map:

- Historic district boundaries and designated historically significant properties meriting protection, generally identified and depicted.
- Transportation concurrency management area boundaries or transportation concurrency exception area boundaries.
- Multimodal transportation district boundaries.
- Mixed use categories.
- Natural resources or conditions as defined under Section 163.3177(6)(a)10., F.S.

FLUM amendments must be based upon the following analyses:

- An analysis of the availability of facilities and services
- An analysis of the suitability of the plan amendment for its proposed use considering the character of the undeveloped land, soils, topography, natural resources, and historic resources on site.
- An analysis of the minimum amount of land needed as determined by the local government.

### 3.3.1 Legal Authorities

FDOT reviews amendments to the adopted Future Land Use Map (FLUM) under the following authorities:

Florida Statutes (F.S.): [Section 163.3177\(6\), F.S. Section 163.3184\(3\) or \(4\), F.S.](#)

Resource Guide. [DEO Online Resources](#)

Resource Guide. [LGCP FLUM Amendment Review Checklist](#)

### 3.3.2 Review Procedure

The transmitted plan amendment package received from the local government should contain all or a portion of, the following data (note for the expedited state review process there is no completeness check or statutory requirements for what to include in an amendment package):

- Proposed changes to the goals, objectives and policies, if any.
- A description of the proposed FLUM change, including the maximum allowed densities and intensities of the existing and proposed land use(s).
- A map depicting the location of the proposed land use change and the surrounding area as well as the existing FLUM.
- A transportation analysis of the availability of transportation facilities.
- A map of the study area roadways.
- If a travel demand model is used, the model files used for the short term and long-term analyses.
- Copies of the analysis spreadsheets showing trip generation, internal trip capture, pass-by trips, transit trips, trip distribution and assignment, background traffic, total traffic, short-term (5-year) analysis, and a long-term analysis that is consistent with the long-term planning timeframe of the comprehensive plan.

#### Key Review Points

FLUM amendments change an adopted land use classification as depicted on the map. These changes have potential to affect the transportation system. The amendment should identify the impacts that the proposed change will have on the transportation system and any improvements needed to mitigate these impacts. These improvements should then be incorporated into the Transportation Element and in the Five-Year Schedule of Capital Improvements (located in the Capital Improvements Element).

Pursuant to Section 163.3184, F.S., FDOT's review of amendments is limited to adverse impacts on important state transportation resources and facilities. Review of FLUM amendments should focus on the following:

- 1) Whether the FLUM and the Future Transportation Map are coordinated and consistent;
- 2) Whether the established LOS standard or other mobility performance measures will be achieved and maintained over a 5-year period even with the additional development potential associated with the amendment;
- 3) Whether the infrastructure needs associated with the amendment are reflected in the Capital Improvements Element and on the Future Transportation Map; and
- 4) Whether the amendment is supported by relevant and appropriate data and analysis applied in a professionally acceptable manner.

Based on the level of sophistication, reviewers should expect more detailed degrees of documentation such as analysis spreadsheets and model files. The appropriate level of documentation should enable the reviewer to understand the assumptions and inputs underpinning the proposed amendment.

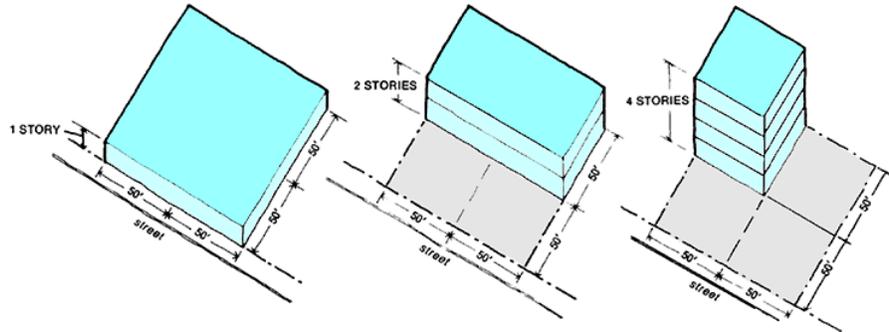
Interagency coordination between FDOT and the DEO is critical in implementing effective transportation and land use planning (). Throughout the review process, the District should communicate with the DEO plan reviewer assigned to the community that submitted the amendment to assist in determining whether a transportation issue should be included in the District reviewer's comments. DEO, the District, and the local government may participate in conference calls to discuss transportation-related issues. It is important to keep in mind the lack of data and analysis is not reason alone to comment on the amendment, the FDOT must show the amendment will have an unmitigated impact on an important state resource or facility. Reviewers are encouraged to use the process outlined in the Community Planning Handbook produced by the Office of Policy Planning.

The [LGCP FLUM Amendment Review Checklist](#) in the Resource Guide can provide a guide to criteria to consider when conducting a FLUM amendment impact evaluation.

**Floor Area Ratio (FAR)** Typically, FLUM amendments propose changes to the density or intensity of the land use for a site. An accompanying transportation impact analysis may convert the broad land use descriptions into quantifiable units. This is usually done for commercial and office land uses where square footages are calculated from gross acreages using Floor Area Ratios (FARs).

The FAR is the ratio of the gross square footage of a structure to the area of the site. The higher the ratio, the greater the intensity of the individual site development. Thus, a FLUM change to a category with a larger FAR will imply greater area (as square feet) of particular uses which in turn may affect trip generation and distribution, site access and levels of service.

**Exhibit 26**  
**Different Buildings with the same floor area (FAR 1.0)**



**Impervious Surface Ratio (ISR)**

A companion measure, Impervious Surface Ratio (ISR) describes the relationship between the total impervious surface area on a site and the gross land area. Though this may not affect trip generation specifically, a higher ISR indicates that storm water may need to be accommodated off site.

The Future Land Use Element should specify the allowable intensities for every land use category that allows non-residential land uses. The maximum intensities should form the basis of all analyses. The FDOT reviewer should be familiar with the jurisdiction’s land use categories, how the intensity standard is determined, and its influence on land use and transportation.

A FLUM amendment may create an inconsistency between the Future Land Use and Transportation Elements if the land use change causes a transportation facility to fall below its established LOS standard or other mobility performance measures. This inconsistency may be evident from the supporting transportation analysis. In this case, the FDOT reviewer should identify the inconsistency and suggest methods to remedy it. It is important to keep in mind unless the inconsistency creates an unmitigated impact to an important state resource or facility this type of comment may be considered technical assistance to the local government. Any FLUM amendment should include an analysis demonstrating internal consistency and the continued coordination of the Future Land Use and Transportation Elements. The transportation analysis should determine whether the existing, committed or planned transportation facilities are sufficient to accommodate any new growth impacts.

This test consists of whether the FLUM and the Future Transportation Map are coordinated and consistent, and whether the established LOS standard or other adopted mobility performance measures will be achieved and maintained over a 5-year period even with the additional development potential associated with the amendment. Reviewers should keep in mind that only in the case of State Coordinated Review when DEO can review for compliance would consistency raise to the level of legal action. Reviewers are encouraged to use the process outlined in the Community Planning Handbook produced by the Office of Policy Planning.

The LOS standard determines whether a roadway has sufficient capacity to accommodate the impacts associated with the proposed land use change. It is also expressed as the maximum service volume established by policy in the comprehensive plan for a specific roadway.

In jurisdictions where the local government implements transportation concurrency, the local government must consult with FDOT regarding the establishment of LOS standards on SIS facilities adopted in the plan or when a plan amendment negatively affects the LOS on SIS facilities pursuant to Section 163.3180(5)(h)1., F.S. However, the local government makes the final decision regarding the LOS it adopts for SIS facilities and all other roadways in its jurisdiction.

On other roadways, local governments may establish adequate LOS standards or mobility performance measures that need not be consistent with any FDOT LOS target.

Resource Guide. [DEO Online Resources](#)

Resource Guide. [FDOT Online Resources](#)

Resource Guide. [Legal Authority for Department Review](#)

Resource Guide. [LGCP FLUM Amendment Review Checklist](#)

### 3.4 Review of Text Amendments

Text amendments are changes to the goals, objectives and policies of the adopted comprehensive plan. For example, an amendment of the policy that establishes maximum development densities for a particular FLUM category does not alter the map itself, but may result in additional trips on facilities that serve areas designated by the FLUM category. Text amendments may modify levels of service standards for specific local facilities, or establish which modes are to serve specific land uses or districts within the jurisdiction. The local government may make changes to its Five-Year Schedule of Capital Improvements for facility prioritization or funding by local ordinance which would not be subject to state review.

#### Legal Authorities

Florida Statutes (F.S.): [Section 163.3177, F.S.](#)

Resource Guide. [DEO Online Resources](#)

Resource Guide. [LGCP FLUM Amendment Review Checklist](#)

#### 3.4.1 Review Procedures

Text amendments in any element should be reviewed for potential impacts to the transportation system in a similar manner to the reviews of Future Land Use Map amendments.

#### Required Information

- Proposed text amendment package
- Any data and analysis used to support the amendment
- Current Capital Improvements Element and Five-Year Schedule of Capital Improvements, if required.

#### Key Review Points

Future land use, transportation, and projects in the Five-Year Schedule of Capital Improvements all affect the efficiency of the transportation system. Text amendments should be analyzed for internal consistency and impacts on land use patterns and transportation systems. However, the reviewer should keep in mind the limitations of their comments. The FDOT reviewer should coordinate with DEO when reviewing text changes to plan elements.

## 3.5 Future Land Use Element

This element contains goals, objectives and policies that implement the land development pattern for the jurisdiction which must be consistent with specific minimum criteria. Several of these affect the form and efficiency of the transportation system. These criteria include:

- Encourage the redevelopment and renewal of blighted areas;
- Encourage the elimination or reduction of uses inconsistent with the community's character and future land uses; and
- Discourage the proliferation of urban sprawl.

### 3.5.1 Review Procedure

The FDOT reviewer should be familiar with the requirements of Section 163.3177(6)(a), F.S., which specifies the criteria for the element. The element must establish the long-term end toward which land use programs and activities are ultimately directed. Similarly, the amount of land designated for future planned uses must provide a balance of uses that foster vibrant, viable communities and economic development opportunities and address outdated development patterns, such as antiquated subdivisions.

The amount of land designated for future land uses should allow the operation of real estate markets to provide adequate choices for permanent and seasonal residents and business and may not be limited solely by the projected population. The element must accommodate at least the minimum amount of land required to accommodate the medium projections of the University of Florida's Bureau of Economic and Business Research for at least a 10-year planning period unless otherwise limited under Section 380.05, F.S., including related rules of the Administration Commission.

#### Key Review Points

*Section 163.3177(6)(a), F.S., provides a method of determining ... urban sprawl.*

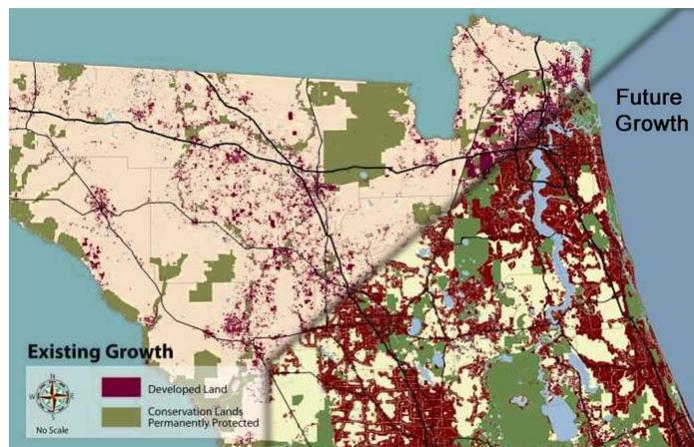
Regarding future land use, urban sprawl is defined under Section 163.3164, F.S., as low density, automobile dependent development patterns which promote inefficient extensions of public facilities and services. As illustrated in Exhibit 27, there are areas of development which have "leapt" over undeveloped/vacant areas to create areas of growth which are barely connected to other developed lands or not connected at all causing this undesirable pattern. Discouraging urban sprawl is critical in implementing transportation and land use planning and accomplishes many related planning objectives. Section 163.3177(6)(a), F.S., provides a method of determining if a plan or plan amendment discourages the proliferation of urban sprawl.

The reviewer should be familiar with this section of the Florida Statutes to assure that transportation and land use goals, objectives and policies adequately

discourage the proliferation of urban sprawl. The element or plan amendment must be determined to discourage the proliferation of urban sprawl if it incorporates a development pattern or urban form that achieves four or more of the following:

- Directs or locates economic growth and associated land development to geographic areas of the community in a manner that does not have an adverse impact on and protects natural resources and ecosystems.
- Promotes the efficient and cost-effective provision or extension of public infrastructure and services.
- Promotes walkable and connected communities and provides for compact development and a mix of uses at densities and intensities that will support a range of housing choices and a multimodal transportation system, including pedestrian, bicycle, and transit, if available.
- Promotes conservation of water and energy.
- Preserves agricultural areas and activities, including silviculture, and dormant, unique, and prime farmlands and soils.
- Preserves open space and natural lands and provides for public open space and recreation needs.
- Creates a balance of land uses based upon demands of residential population for the nonresidential needs of an area.
- Provides uses, densities, and intensities of use and urban form that would remediate an existing or planned development pattern in the vicinity that constitutes sprawl or if it provides for an innovative development pattern such as transit-oriented developments or new towns as defined in Section 163.3164, F.S.

**Exhibit 27**  
**Effects of Potential Sprawl**



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## 3.6 Transportation Element

The Transportation Element must address existing and projected level of service (LOS), system needs and deficiencies, how deficiencies are to be corrected, and how identified needs are to be met. Local governments are encouraged to promote multimodal options where appropriate.

Pursuant to Section 163.3177(6)(b), F.S., the purpose of the transportation element is to plan for a multimodal transportation system that places emphasis on public transportation systems, where feasible. The element must provide for a safe, convenient multimodal transportation system, coordinated with the future land use map and designed to support all elements of the comprehensive plan. The element must be coordinated with the plans and programs of any applicable metropolitan planning organization, transportation authority, Florida Transportation Plan, and FDOT's adopted work program.

The element must reflect the data, analysis, and associated principles and strategies relating to the following:

- The existing transportation system conditions.
- The growth trends and travel patterns and interactions between land use and transportation.
- Existing and projected intermodal deficiencies and needs.
- The projected transportation system levels of service and system needs based upon the future land use map and the projected integrated transportation system.
- How the local government will correct existing facility deficiencies, meet the identified needs of the projected transportation system, and advance this and other elements of the comprehensive plan.

### 3.6.1 Review Procedures

The transportation-related comprehensive plan requirements are not identical for all communities. Local governments located within the metropolitan planning area of an MPO must include a Transportation Element in their comprehensive plan addressing traffic circulation, all alternative modes of transportation, aviation, rail, seaport facilities, and access, and intermodal terminals, evacuation of the coastal population, as well as airports, aviation development, and airport land use compatibility. These requirements are listed in subsection 163.3177(6)(b) 1 and 2, F.S.

Local governments located outside the metropolitan planning area of an MPO (having a population of less than 50,000 for municipalities and less than 75,000 for counties) have fewer requirements in their Transportation Element (Section 163.3177(6)(b), F.S.) They must only address traffic circulation.

Furthermore, municipalities having a population greater than 50,000 and counties having a population greater than 75,000 that are located outside the metropolitan planning area of an MPO must include a Transportation Element that addresses mass transit, ports, aviation, and related facilities, as well as a new piece called recreational traffic (note: currently this requirement applies to only Citrus and Monroe Counties).

### **Key Review Points**

The Transportation Element provides goals, objectives, and policies for the future transportation modes and needs (Section 163.3177(6)(b), F.S.), and requires the community to plan for a multimodal transportation system where feasible. In the new element, it is also specifically stated that the Transportation Element and Future Land Use Element should demonstrate internal consistency and continued coordination with each other. Coordination and consistency between these two elements will help jurisdictions to create a cohesive development pattern and transportation system. Any text amendment should be reviewed for internal consistency with other portions of the comprehensive plan and for effects on the existing and future transportation network. However, reviewers should keep in mind the limitation of commenting authority based on the type of review as internal consistency is outside the scope of an important state resource or facility.

A text change to the Transportation Element may result from a FLUM amendment, an EAR-based amendment, or a need to update or revise the element. Any change to the Transportation Element may influence land use strategies and capital projects. The FDOT reviewer should be aware of the following potential changes:

- 1)** A change in level of service standards for any mode;
- 2)** Land use strategies to promote bicycle and walking or transit; and
- 3)** Measures to preserve, acquire or protect transportation rights-of-way.

The text amendment should be reviewed for required multimodal components and consistency with the Future Land Use Element. The new Transportation Element must address traffic circulation and up to five additional required components, depending on the MPO boundary and population size. The FDOT reviewer and local government staff should be communicating frequently while the element is being developed or amended.

## 3.7 Capital Improvements Element

is adopted and updated to reflect the timing and funding of capital projects to meet established LOS standards for applicable public facilities. The CIE must include the following:



- A component outlining principles for construction, extension, or increase in capacity of public facilities, and a component that outlines principles for correcting existing public facility deficiencies necessary to implement the comprehensive plan for at least a 5-year period.
- Estimated public facility costs, including a delineation of when facilities will be needed, the general location of the facilities, and projected revenue sources to fund the facilities.
- Standards to ensure the availability of public facilities and the adequacy of those facilities to meet established acceptable levels of service.
- Identification of facilities necessary to meet adopted levels of service during a 5-year period.

The schedule of capital improvements includes any publicly funded projects of federal, state, or local government, and may include privately funded projects for which the local government has no fiscal responsibility. Projects necessary to ensure that any adopted **level-of-service LOS** standards are achieved and maintained for the 5-year period must be identified as either funded or unfunded, and if unfunded given a level of priority for funding.

The schedule must include transportation improvements included in the applicable metropolitan planning organization's transportation improvement program adopted pursuant to Section 339.175(8), F.S., to the extent that such improvements are relied upon to ensure concurrency and financial feasibility. Additionally, the schedule must be coordinated with the applicable MPO's long-range transportation plan adopted pursuant to Section 339.175(7), F.S.

The five-year schedule of capital improvements may be updated without state review.

## 3.8 Transportation Concurrency-Related Amendments

*This section of the handbook will address transportation concurrency as revised in HB 7207 in 2011 and HB 319 in 2013.*

Transportation concurrency is no longer mandatory. Transportation facilities, along with parks and recreation and public educational facilities may, however, be included in a local government's concurrency system at a local government's option.

As these elements were required in LGCPs prior to June of 2011, they are still considered to be in place until a local government adopts a comprehensive plan amendment to rescind concurrency. This amendment is not subject to state review.

If local governments apply concurrency to these other facilities and services, including transportation, the amended statute, Section 163.3180, F.S., provides requirements that must be met.

### 3.8.1 Requirements Governing Optional Transportation Concurrency Program

Key requirements in Section 163.3180(5), F.S., for those local governments that utilize transportation concurrency include:

- The LGCP must provide principles, guidelines, standards, and strategies, including adopted levels of service to guide the application of transportation concurrency.
- Local government must use professionally accepted methods for measuring level of service when evaluating potential impacts of a proposed development and must consider the number of facilities that will be necessary to meet adopted level-of-service demands.
- Local governments must allow applicants for a DRI, a rezoning, or a development permit to satisfy concurrency requirements in the plan by entering into an agreement to pay for or construct its proportionate share of transportation improvements.
- The local government is encouraged to develop policy guidelines and techniques to address potential negative impacts on future development such as in urban service areas, infill and redevelopment.
- The local government is encouraged to develop tools and techniques to complement the application of transportation concurrency.
- If a local government applies transportation concurrency in its jurisdiction, it is encouraged to develop policy guidelines and techniques to address potential negative impacts on future development.
- The transportation concurrency program must exempt public transit facilities such as transit transfer facilities and terminals from concurrency.

- When considering plan amendments that affect facilities on the strategic intermodal system, the Department of Transportation must be consulted.

Transportation concurrency is implemented through a local government’s permitting process designed to ensure transportation facilities and services are available to address the impacts of development. Transportation concurrency is premised upon adoption of LOS standards or other mobility performance measures, and capital facilities planning to address existing service deficiencies, and provide infrastructure or planning strategies to accommodate new growth.

FDOT staff should understand the requirements and methodologies of local government concurrency systems as they may receive requests for technical assistance from local governments and may become involved when a local concurrency study identifies impacts to the State Highway System (SHS).

*The FDOT's primary role in transportation concurrency management is to provide technical support to local governments.*

Local governments use existing roadway capacity, estimated trips from a proposed development and the adopted LOS standard or other mobility performance measures to determine whether the service needs of a proposed development exceed the existing and scheduled roadway capacity improvements. If capacity is unavailable and no improvements are scheduled, the developer has the option to provide the improvements or a proportionate share contribution, unless the government agrees to provide the necessary improvements.

**Key Review Points**

The FDOT reviewer should focus on the goals, objectives, and policies in the local comprehensive plan that defines the framework for the concurrency management system. The FDOT reviewer should review the document and demonstrate that the amendment to the local comprehensive plan achieves and maintains the adopted LOS standards or other mobility performance measures. Having the needed data for the corridor impacted by the proposed amendment will assist the FDOT reviewer.

For example, if a SHS or SIS facility is operating near or below the adopted LOS ~~or performance standard~~, the FDOT reviewer should coordinate with the DEO during the review of a proposed comprehensive plan amendment as they may request additional data and analysis documenting the effect of the amendment on the facility.

The FDOT reviewer may provide recommendations for:

- Methodologies for evaluating concurrency;
- Identifying facilities;
- Tracking development projects;
- Considering programmed improvements;
- De minimus impacts on hurricane evacuation routes;
- Proportionate share tracking;
- Concurrency management system update schedule;

- Preferred monitoring data for the Department;
- Size of the study area; and
- Use of common methodologies between local governments for measuring level of service impacts.

The method for monitoring concurrency is an important element of a local government's concurrency management system. Local governments use various forms of tracking systems, such as spreadsheets, that can be used for segments of a transportation system to determine concurrency. Intranet tracking systems can be used for internal review and approval, and to provide automatic updates.

XLS

Concurrency  
Management  
Systems

The FDOT reviewer should be familiar with the various methodologies used by the jurisdictions in their District. A sample spreadsheet used for determining this information for concurrency management systems can be accessed online at: [http://www.cutr.usf.edu/research/access\\_m/pdf/CMS.xls](http://www.cutr.usf.edu/research/access_m/pdf/CMS.xls)

### 3.8.2 Concurrency Alternatives

Local governments may have existing alternatives to transportation concurrency in their comprehensive plans that reflect previous state requirements. These alternatives include:

- Transportation Concurrency Exception Areas (TCEAs);
- Multimodal Transportation Districts (MMTDs);
- Long-Term Concurrency Management Systems (LTCMS); and
- Transportation Concurrency Management Areas (TCMAs).

Another existing concurrency alternative that may be implemented by a local government is the designation of a Transportation Development Authority. Although this concurrency alternative is reflected in current state law, the provisions governing this alternative did change in 2011. There may be local governments still implementing these authorities pursuant to previous provisions.

## 3.9 Other Local Government Comprehensive Plan Reviews



Local governments may process other amendments to the LGCP in addition to those discussed in previous sections. When reviewing such amendments, the FDOT reviewer should evaluate the impacts on the SHS and SIS, and the use of professionally accepted techniques for measuring LOS and other mobility performance measures.

Resource Guide. [DEO Online Resources](#)

Resource Guide. [Transportation and Land Use Strategies that Support Mobility](#)

### 3.9.1 Evaluation and Appraisal of the Comprehensive Plan

The Evaluation and Appraisal of the comprehensive plan is an opportunity for a local government to determine whether amendments are necessary to reflect statutory changes. Local governments must evaluate their comprehensive plan at least every 7 years based on the schedule published by DEO to determine if amendments are needed to reflect changes in state requirements since the last update. Local governments must submit a letter notifying DEO of their determination.

#### Legal Authorities

Florida Statutes (F.S.): [Section 163.3184\(4\), F.S.](#)  
[Section 163.3191, F.S.](#)

Resource Guide. [DEO Online Resources](#)

If the local government determines that amendments are necessary, they will have 1 year to submit the amendments for review. These amendments will undergo the state coordinated review process. See Section 3.2 The Comprehensive Plan Amendment Process for an overview of the two types of reviews and the Community Planning Handbook from the Office of Policy Planning for more information on the types of reviews.

#### Key Review Points

The evaluation and appraisal review (EAR) based amendments to the comprehensive may include updates that reflect changes in local circumstances and community goals. However, the only requirement is to update the plan to reflect changes in state law.

### 3.9.2 Development of Regional Impact-based Amendments

#### DRI Amendments

A Development of Regional Impact (DRI) is authorized through the issuance of a local development order. All local development orders must be consistent with

the comprehensive plan, pursuant to Section 163.3194(1), F.S., the DRI must be consistent with the comprehensive plan. Pursuant to Section 380.06(6), F.S., all DRI's since 2015 are processed as State Coordinated Review Amendments. Changes to DRI's approved prior to 2015 are the responsibility of the local government in which the development is located.

**Legal Authorities**

Florida Statutes:  
[Section 163.3184\(4\), F.S.](#)  
[Section 380.06\(6\), F.S.](#)

Resource Guide. [DEO Online Resources](#)

**FDOT Review Procedure**

**Required information:**

- Amendment application
- Transportation impact study for the amendment

**Key review points**

The FDOT reviewer should analyze the amendment for consistency with the relevant elements in the comprehensive plan. The transportation impact study for the amendment should focus on the anticipated trips, growth trends on the adjacent roadway facilities and proposed mitigation. DRI's existing prior to 2015 are still subject to the provisions of Section 380.06, F.S.

**3.9.3 Sector Plans**

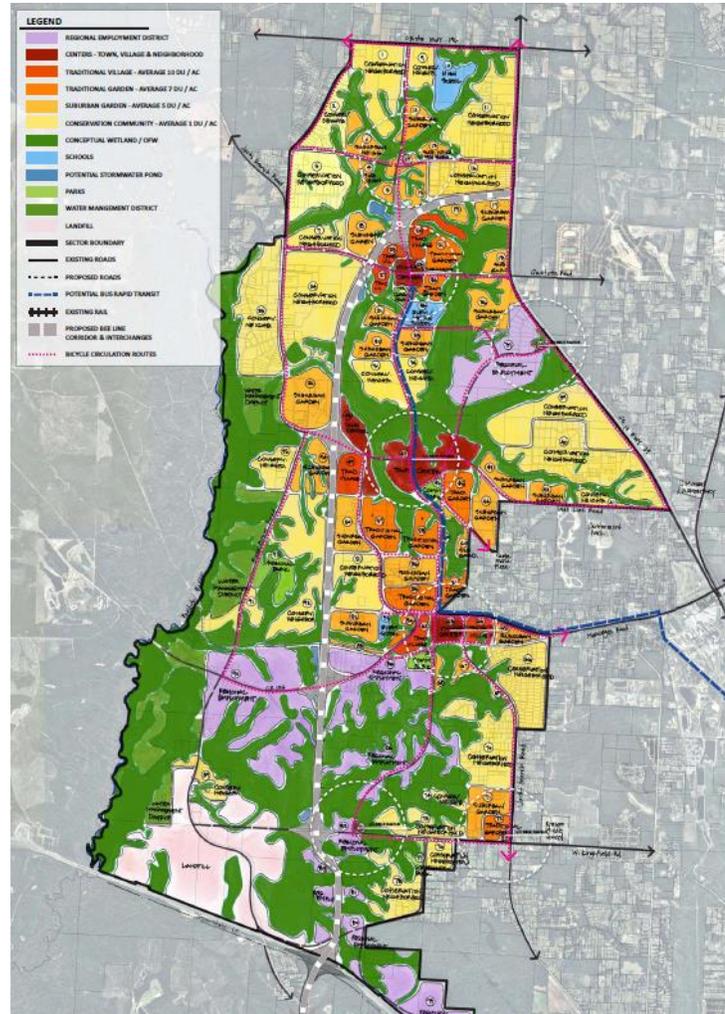
Sector planning, pursuant to Section 163.3245, F.S., is a planning tool for landscape scale planning not subject to DRI review and that is intended for large geographic areas of at least 10,000 acres in size. Sector plans emphasize urban form and the protection of regionally significant resources. Sector Plans are initiated by a local government through a high level of public involvement as comprehensive plan amendments. Sector Planning is a planning process, not a regulatory one. Sector Plans are prepared at two levels; the first level is the adoption of a long-term master plan and the second is adoption by a local development order of two or more detailed specific areas plans (DSAP). This two-level planning process provides a method for dealing with a planning period longer than the planning period of the local government comprehensive plan, yet still maintaining consistency.

**Adoption of Long-Term Master Plan**

The adoption of a long-term master plan requires the identification of public facilities and natural resources. It includes the conceptual framework map, principles and guidelines that address urban form and procedures for intergovernmental coordination. The Master Plan is adopted through the plan amendment process (state coordinated review). The DSAP is adopted by local ordinance, which must be rendered to DEO, and can be appealed (by DEO). The

key components of a master plan are a framework map, the identification of needed transportation facilities and the adoption of procedures to coordinate on extra-jurisdictional impacts. Exhibit 28 is an example of a Map in Escambia County from May of 2011:

**Exhibit 28**  
**Sector Plan Master Plan Map for Mid-West Sector Plan (Escambia County)**



Source: DEO Florida Papers

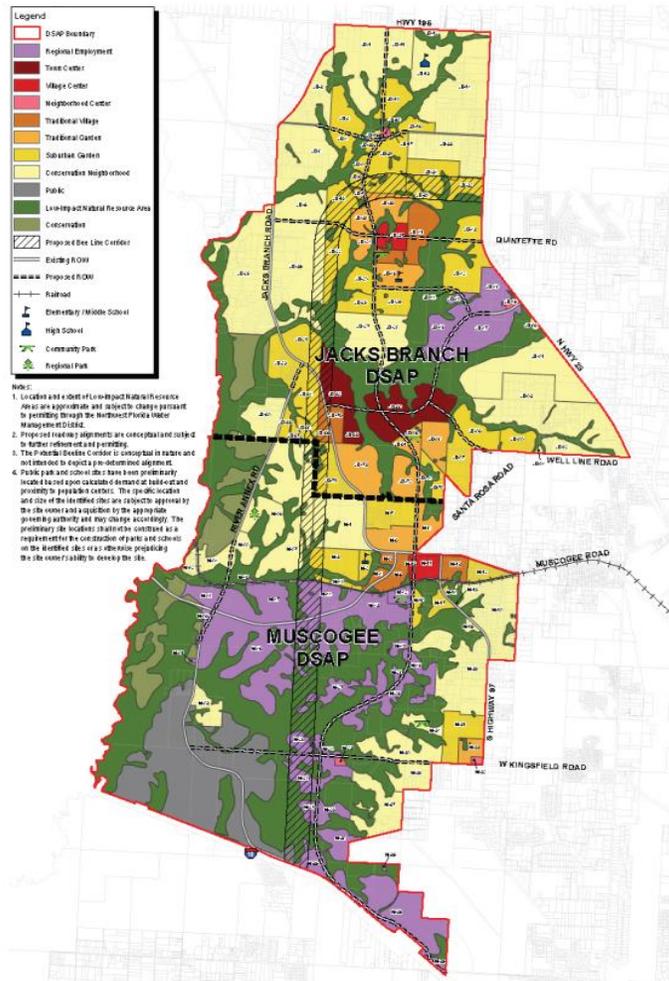
**Detailed Specific Area Plans (DSAPs)**

Detailed Specific Area Plans (DSAP) must have future uses, public facilities and natural resources in the region. Identification of the distribution, extent and location of future uses is required. Public facilities include those outside the host jurisdiction and those necessary for the short term. Like the long-term master plan, the DSAP require inclusion of guidelines and principles that address urban form and procedures for intergovernmental coordination.

Pursuant to Section 163.3245, F.S., this level encompasses adoption by a development order of two or more detailed specific area plans that implement the long-term master plan and within which development of regional impact

requirements are waived. Exhibit 29 is an example of a DSAP Boundary in Escambia County from September of 2011:

**Exhibit 29**  
**Sector Plan DSAP Map**  
**for Mid-West Sector**  
**Plan (Escambia**  
**County)**



Source: DEO Florida Papers

**Application of Sector Plans**

Pursuant to Section 163.3245(28), F.S., the sector plan process is an alternative to the development of regional impact process. Section 163.3245 F.S., establishes the minimum size for a sector plan to be 10,000 acres.

**Review of Long Term Master Plans**

Sector planning requires the adoption of a long-term master plan into the Comprehensive Plan. When reviewing the long-term master plan, the DEO is required to consult with FDOT and any applicable MPO or urban transit agency regarding the location, capacity, design, and phasing of major transportation facilities in the planning area. The long-term master plan requires a general identification of transportation facilities to serve the future land uses in the plan and will include guidelines to be used to establish each modal component intended to optimize mobility. The transportation facilities identified in the long-

term master plan should be consistent with the adopted MPO long range transportation plan to the maximum extent feasible. Furthermore, the long-term master plan should be consistent with state and regional plans. General information is required for the long-term master plan submittal, with the detailed information deferred to the DSAP. DSAPs are still used to implement long-term master plans, but they only require adoption by local ordinance, not plan amendment.

A property owner, developer, or the DEO may appeal any local government order approving a DSAP as being inconsistent with the long-term master plan or comprehensive plan by filing a petition with the Florida Land and Water Adjudicatory Commission (Governor and Cabinet) for an administrative proceeding conducted according to Section 380.07(6), F.S. Sector Plans are prohibited in areas of critical state concern.

### 3.9.4 Rural Land Stewardship Areas

Initiated in 2001, the Rural Land Stewardship Area (RLSA) program under Section 163.3248, F.S., was revised in 2011 to include legislative changes to the initiation process, designation, plan amendment process, and state agency coordination and review. The program established that counties may designate RLSAs where planning and economic incentives encourage implementing innovative and flexible planning and development strategies as well as creative land use planning techniques for areas classified as predominantly rural. An area to be designated under the RLSA program must be at least 10,000 acres, located outside of municipalities and/or established urban service areas, and designated by a comprehensive plan amendment by the local government which would have jurisdiction. It is important to note that an RSLA can include more than one county and landowners must consent to being in a RLSA.

#### Agency Technical Assistance with RLSAs

Pursuant to Section 163.3248(4), F.S., a local government or one or more property owners may request technical assistance and participation from state agencies, regional planning councils, water management districts, private land owners, and other stakeholders in the development of a plan for a RLSA. State agencies can include the FDOT, DEO, Department of Environmental Protection, Department of Agriculture and Consumer Services, and Fish and Wildlife Conservation Commission.

#### RLSA Comprehensive Plan Amendments

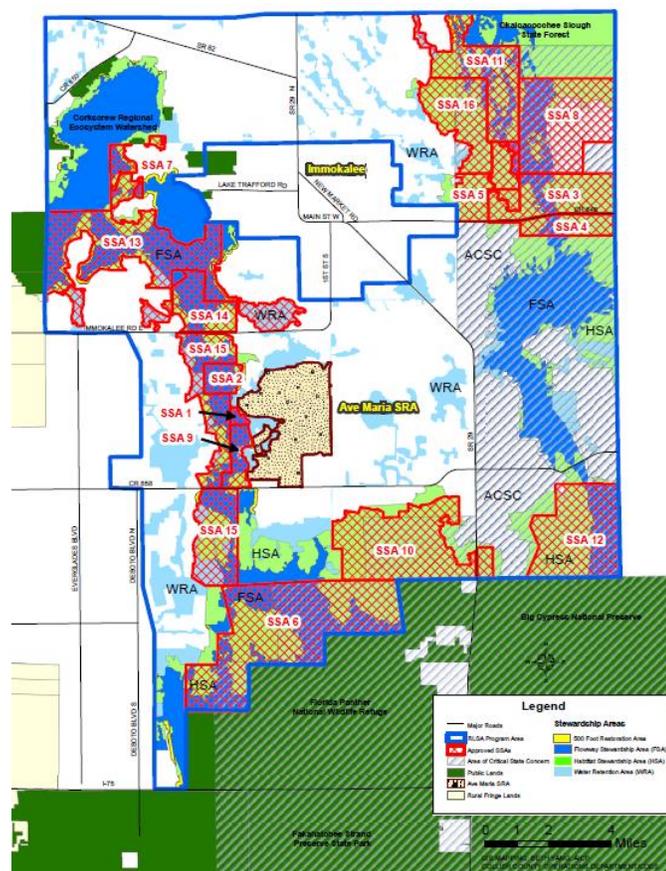
The RLSA process is initiated by the requests the applicable land owners. Comprehensive plan amendments proposing a rural land stewardship area are subject to the state-coordinated review process in Section 163.3184(4), F.S., and each local government with jurisdiction over a RLSA must designate the area

through a comprehensive plan amendment. The comprehensive plan amendment for a RLSA must include:

- Criteria for designating Stewardship Receiving Areas, or SRAs;
- Innovative planning and development strategies and associated implementation processes that include provisions for a functional mixture of land uses and other strategies described under Section 163.3248(5), F.S.; and
- Mixture of densities and intensities which would not result in urban sprawl-like development and protect natural habitats.

Upon the adoption of a plan amendment creating a RLSA, the local government must pass an ordinance establishing a rural land stewardship overlay zoning district, which provides the methodology for the creation, conveyance, and use of stewardship credits. Exhibit 30 is the RLSA Overlay Map from Collier County in March of 2010:

**Exhibit 30**  
**RLSA Overlay Map**  
**from Collier County**

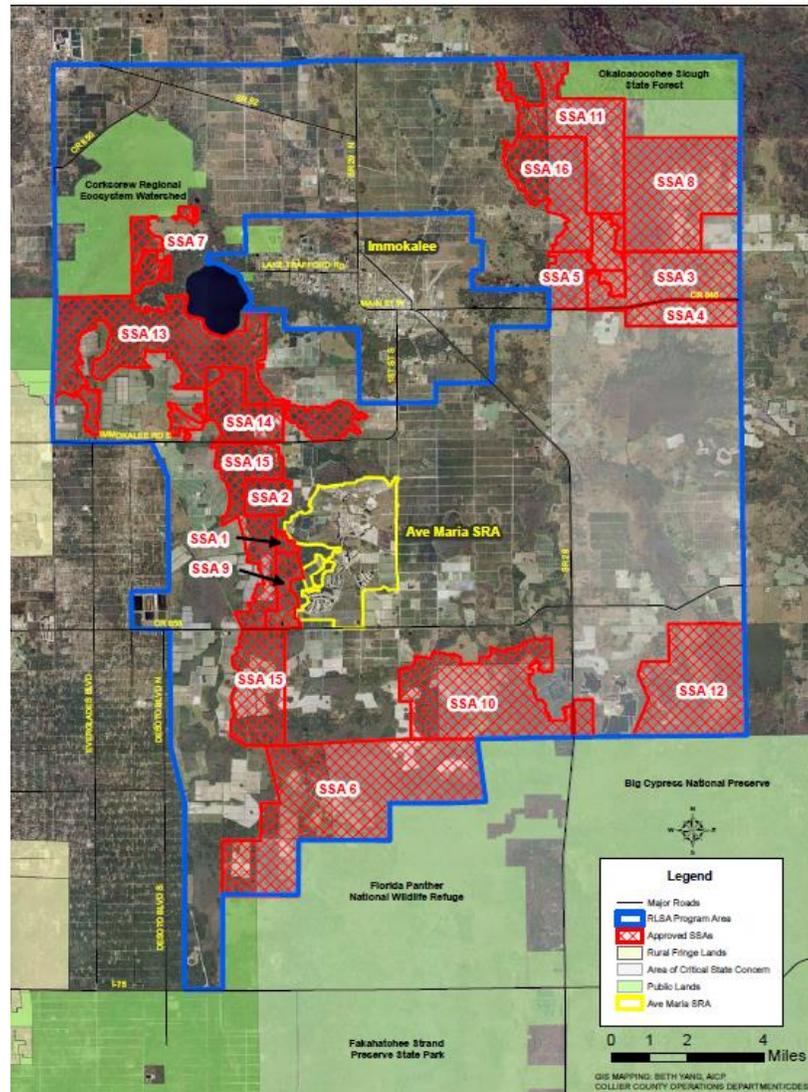


Source: Collier County Rural Land Stewardship Area Overlay Program

<http://www.colliergov.net/Modules/ShowDocument.aspx?documentid=30764>

According to the Rural Land Stewardship Area Program, the Stewardship Sending Area (SSA) is used to generate area stewardship credits to property owners which may be used to entitle SRA, which can be in the form of self-contained planned urban developments in the RLSA. The SSA Program within the RLSA establishes a method for protecting and conserving the most valuable environmental land, including large connected wetland systems and significant areas of habitat for listed species. Exhibit 31 is an RLSA Status Map of existing SSAs in the Collier County RLSA updated in June 2010:

Exhibit 31  
**RLSA Status Map of  
 existing SSAs in the  
 Collier County  
 RLSA**



**Source:** Collier County Rural Land Stewardship Area Overlay Program  
<http://www.colliergov.net/Modules/ShowDocument.aspx?documentid=30763>

Pursuant to Section 163.3248, F.S., stewardship credits, formerly known as transferable rural land use credits, created in RLSAs no longer require a minimum

of a 25-year timeframe for receiving areas. Receiving areas are to be based on available data and the development potential represented by stewardship credits created in RLSAs and correlate to that amount. Conservation easements must be placed on the sending area land prior to the transfer of stewardship credits.

### 3.9.5 Planning Innovations

**Planning Innovations and Urban Service Areas**

Section 163.3168, F.S., encourages local governments to apply innovative planning tools of visioning, sector planning and urban service areas to address future new development areas, urban service area designations, urban growth boundaries, and mixed-use, high-density development in urban areas as defined in Section 163.3164, F.S.

**Technical Assistance**

Section 163.3168, F.S., requires the DEO provide direct and indirect technical assistance to help local governments find creative solutions to foster vibrant, healthy communities, while protecting the functions of important state resources and facilities. If a plan amendment may adversely impact an important state resource or facility, upon request by the local government, the state land planning agency must coordinate multi-agency assistance, if needed, to develop an amendment to minimize any adverse impacts. FDOT’s review is limited to issues within the agency’s jurisdiction as it relates to the requirements of this part and may include technical guidance.

Resource Guide. [FDOT Online Resources](#)

## 3.10 Resource Guide. Legal Authority for Department Review

WEB

Florida Statutes

WEB

Florida Administrative Code

Florida Statutes, Online Sunshine:

<http://www.leg.state.fl.us/Welcome/index.cfm?CFID=229891382&CFTOKEN=88136963>

Florida Administrative Code: <https://www.flrules.org/>

*The following Florida Statutes and Rule 73C-40, Florida Administrative Code, provide the authority that guides the review of local government comprehensive plans and Developments of Regional Impact documents:*

### 3.10.1 Florida Statutes (F.S.)

#### Future Land Use and Transportation Elements:

Sections 163.3177(6)(a) and (b), F.S., set forth the requirements for the local government comprehensive plan Future Land Use and Transportation Elements.

#### Concurrency:

Section 163.3180, F.S., addresses concurrency and states that transportation concurrency is optional. If the local government chooses to apply concurrency to transportation facilities, the local government comprehensive plan must provide the principles, guidelines, standards, and strategies to guide its application pursuant to Section 163.3180(5), F.S. The local government may choose to rescind optional transportation concurrency pursuant to Section 163.3180(1)(a), F.S.

#### Expedited State Review Process

Section 163.3184(3), F.S., explains the processing requirements of the Expedited State Review Process for local government comprehensive plan amendments. Local governments are required to submit the proposed and adopted amendments to the Department, as it is one of the reviewing agencies. The Department is limited to commenting on issues within the agency’s jurisdiction as it relates to transportation resources and facilities of state importance.

#### State Coordinated Review Process

Section 163.3184(4), F.S., explains the processing requirements of the State Coordinated Review Process for local government comprehensive plan amendments. Local governments are required to submit the proposed and adopted amendments to the Department, as it is one of the reviewing agencies. The Department is limited to commenting on issues within the agency’s jurisdiction as it relates to transportation resources and facilities of state importance.

PDF

Procedure  
525-010-101-d

### Evaluation and Appraisal Review Amendments

Section 163.3191(2), F.S. If the local government determines amendments to its comprehensive plan are necessary to reflect changes in state requirements, as reflected in its letter to the Department of Economic Opportunity, the local government shall prepare and transmit within 1 year the plan amendments for review under the State Coordinated Review Process in Section 163.3184(4), F.S.

### Sector Plans

Section 163.3245, F.S., pertains to the requirements for establishing a Sector Plan.

### Rural Land Stewardship Areas

Section 163.3248, F.S., states the requirements for a Rural Land Stewardship Area.

### Safe, viable and balanced state transportation system

Section 334.044, F.S., establishes that FDOT has the responsibility for coordinating the planning of a safe, viable and balanced state transportation system serving all regions of the state, and to assure the compatibility of all components, including multimodal facilities.

### Development of Regional Impact

Section 380.06, F.S., requires new Developments of Regional Impact (DRI) to be processed as a State Coordinated amendment. Changes to DRIs are not subject to state or regional review these changes are subject to review of the local government in which the development is located.

## 3.10.2 Community Planning Handbook:

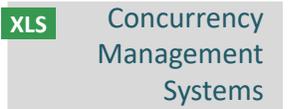
The Office of Policy Planning has created a [Community Planning Handbook](#) to assist FDOT staff in review of local government plan amendments. This handbook is intended to help reviewers walk through the comprehensive plan amendment process and includes letter templates to address various types of comments associated with plan amendments.

## 3.10.3 FDOT Policy

The Department utilizes Policy 000-525-026 to guide reviewers in their duties. The department reviewer should be familiar with it and as needed refer to it :

[Policy 000-525-026, Review of Growth Management Plans,](#)

### 3.10.4 Publications: Online Guidance



A document produced by the Department of Community Affairs with a primary focus on local government concurrency. Also includes guidance on comprehensive plan amendment reviews and cumulative analysis. Please note that the statutory requirements within this document are out of date.

[Sample Concurrency Management Spreadsheet](#)

A downloadable CMS in excel spreadsheet.

[User Guide](#)

Instructions for concurrency management system spreadsheet.

[A GIS-Based Concurrency Management System for Local Governments](#)

DCA sponsored project of Treasure Coast Regional Planning Council to use GIS as basis for concurrency management system. Please note that the statutory requirements within this document are out of date.

[www.fltdod.com/research\\_and\\_case\\_studies.htm](http://www.fltdod.com/research_and_case_studies.htm)

Transit Oriented Development in Florida Website by the Treasure Coast Regional Planning Council and the Florida Department of Transportation-

[www.ite.org](http://www.ite.org)

<http://www.ite.org/tripgeneration/trippubs.asp>

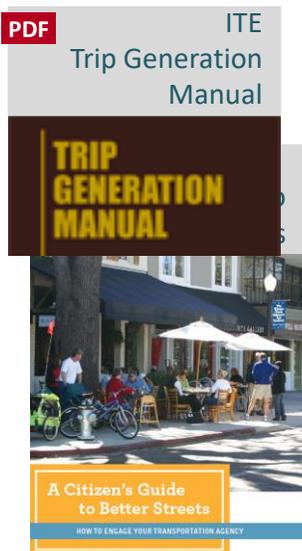
Institute of Transportation Engineers (ITE) Trip Generation documents

[reconnectingamerica.org/](http://reconnectingamerica.org/)

Reconnecting America is a national nonprofit that advises civic and community leaders on overcoming the challenges associated with community development while facilitating transportation choices. As the managing partner of the Center for Transit-Oriented Development, Reconnecting America promotes best practices in transit-oriented development.

[pps.org/pdf/bookstore/How\\_to\\_Engage\\_Your\\_Transportation\\_Agency\\_AARP.pdf](http://pps.org/pdf/bookstore/How_to_Engage_Your_Transportation_Agency_AARP.pdf)

A Citizen's Guide to Better Streets, produced by the Project for Public Spaces, Inc. is intended to be an easy-to-use guide to effective interaction with transportation planning and engineering professionals to facilitate transportation choices as a way of supporting positive community development and creating walkable communities.





[www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/urban-planning/transit-oriented-development](http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/urban-planning/transit-oriented-development)

A Framework for Transit Oriented Development in Florida.

### 3.11 Resource Guide. FDOT Online Resources



[Transportation and Community Planning](#) –

FDOT Office of Policy Planning webpage providing transportation and community planning guidance and resources.

[FDOT Systems Planning Office – Highway Capacity/Level of Service-](#)

FDOT systems planning webpage providing information and resources on measuring quality/level of service. Also hosts the 2013 Q/LOS Handbook

[www.dot.state.fl.us/planning/systems/programs/mspi/brochures/default.shtm](http://www.dot.state.fl.us/planning/systems/programs/mspi/brochures/default.shtm)

SIS and Emerging SIS facilities

PDF

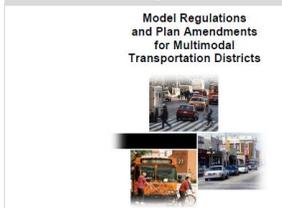
Transit  
Development Plan

[FDOT Draft Guidance for Producing a Transit Development Plan](#)

Guidance to assist Florida transit properties in the preparation of Transit Development Plans as required by Chapter 14-73 in accordance with Sections 339.135 and 339.155 of Florida Statutes.

PDF

Model Regulations

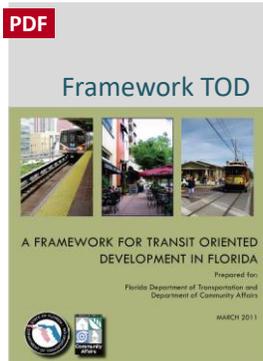


[Model Regulations and Plan Amendments for Multimodal Transportation Districts Report](#)

FDOT guidebook designed to assist local governments in adopting comprehensive plan policies and local ordinances in support of MMTDs.

[Multimodal Transportation Best Practices and Model Element](#)

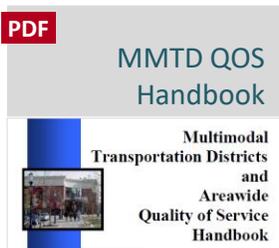
This report provides guidance in developing a multimodal transportation element of a local government comprehensive plan. Two model elements were developed to address differences in statutory requirements for communities of different sizes and planning context. The first model element includes guidance for large local governments and those within the boundary of a metropolitan planning organization (MPO). The second includes guidance for smaller or more rural



communities outside of MPO boundaries. Each model element encourages a range of best practices in multimodal transportation planning as identified through a review of the literature, agency plans, and related documents.

[fltod.com/renaissance/docs/Products/FrameworkTOD\\_0715.pdf](http://fltod.com/renaissance/docs/Products/FrameworkTOD_0715.pdf)

The Framework for Transit Oriented Development is the result of a collaborative effort among State of Florida agencies to assist local governments and state and regional agencies in their use of transit oriented development to transform the state's existing auto-oriented, largely suburban development pattern into more compact, livable patterns supporting walking, biking, transit, and shorter auto trips.



[Multimodal Transportation Districts and Areawide Quality of Service Handbook](#)

FDOT handbook designed to assist local governments create and adopt MMTDs.

### 3.12 Resource Guide. DEO Online Resources



**Comprehensive Plan Amendment Submittal and Processing Guidelines:**

[www.floridajobs.org/community-planning-and-development/programs/comprehensive-planning/amendment-submittal-and-processing-guidelines](http://www.floridajobs.org/community-planning-and-development/programs/comprehensive-planning/amendment-submittal-and-processing-guidelines)

DEO's web page on how to prepare and submit a comprehensive plan amendment for Expedited State Review and State Coordinated Review.

**Evaluation and Appraisal of Comprehensive Plans:**

<http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/evaluation-and-appraisal-of-comprehensive-plans>

DEO's webpage pertaining to evaluation and appraisal reviews of comprehensive plans. At least every seven years, (see the [Evaluation and Appraisal Notification Schedule 2012 - 2018](#) ) local governments must determine whether the need exists to amend the comprehensive plan to reflect changes in state requirements since the last time the comprehensive plan was updated.

**Capital Improvements Element:**

[www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/capital-improvements-element](http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/capital-improvements-element)

DEO's webpage pertaining to the Local Government's Capital Improvements Element, the 2011 changes, and the preparation of a Five-Year Schedule of Capital Improvements.

**Developments of Regional Impact (DRI) and Florida Quality Developments:**

<http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/general-information>

DEO webpage pertaining to the DRI program, including thresholds, procedures, rules and forms.

**Sector Planning Program:**

[www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/rural-planning/sector-planning-program](http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/rural-planning/sector-planning-program)

DEO's webpage on sector planning containing several examples of current sector plans around the State.

**Transportation Planning:**

<http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/transportation-planning>

DEO's web page on transportation planning includes important information on the comprehensive plan's transportation element, transportation concurrency and transportation proportionate share contributions.

**Rural Land Stewardship Area Program:**

<http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/rural-planning/rural-land-stewardship-area-program>

DEO's web page pertaining to Rural Land Stewardship

**DEO Community Planning:**

<http://www.floridajobs.org/community-planning-and-development>

DEO's web page containing all things related to community planning and the State Land Planning Agency

### 3.13 Resource Guide. LGCP FLUM Amendment Review Checklist

This Checklist can provide a guide to criteria to consider when conducting a LGCP FLUM Amendment Review

Project	Reviewer	Date of Review:	Comments Due:
<b>LGCP Amendment Review Checklist   Evaluation Criteria</b>			Y N N/A
A.	Study area boundaries established to include all significantly impacted SHS segments under proposed FLUM amendment land use scenario, including those located outside the jurisdiction of entity pursuing amendments?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
1.	All SIS segments identified?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
B.	Transportation impacts for existing FLUM adequately defined for comparison use in review?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
1.	Land use scenario defined for existing FLUM category which has mix, densities and intensities of primary and secondary permitted land uses?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
a.	Assumptions fully documented?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
b.	Trip-generating characteristics of the existing FLUM Land Use Scenario shown?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
2.	Professionally acceptable method employed to determine distribution of trips for existing FLUM Land Use Scenarios?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
a.	All internal capture and internal/external split assumptions properly documented?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
3.	Existing SHS segments' LOS shown?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
b.	Department and LGCP LOS standards used to determine LOS grade?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
4.	LOS determined for SHS Segments for existing FLUMs Land Use Scenario?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
C.	Maximum potential land uses permitted under the proposed FLUM Amendment allowable?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
D.	Future land use scenario defined with reasonable mix, densities and intensities of permitted land uses	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
a.	Assumptions used in defining FLUM Amendment Land Use Scenario fully documented?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
E.	Professionally accepted methods used for trip generation, distribution and assignment based on FLUM amendment Land Use Scenario?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
a.	Adequate documentation provided to permit review of the analyses?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
F.	LOS been determined for SHS segments under FLUM Amendment Land Use Scenario?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
1.	Additional improvements to SHS segments required, beyond those identified in adopted long-range plans?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
2.	Commitments to providing additional improvements made as a condition of FLUM Amendment approval?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
G.	FLUM Amendment and transportation impacts consistent with the Florida Transportation Plan and other Department-adopted approval plans, policies, standards and guidelines, rules and procedures?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
H.	FLUM Amendment provides for sufficient additional local transportation infrastructure to preserve mobility of impacted SHS segments,	<input type="radio"/>	<input type="radio"/> <input type="radio"/>
I.	Proposed FLUM Amendment impact existing or proposed public transit service, as set forth in local agency's Transit Development Plan?	<input type="radio"/>	<input type="radio"/> <input type="radio"/>

## 4



## Mitigation

## 4.1 Introduction

*This chapter provides guidance on strategies and funding mechanisms for mitigation.*

This chapter will provide general guidance on mitigation of the impacts of development. It will provide some best practice examples and discuss the FDOT's changing role in mitigation agreements as a result of changes to Community Planning legislation since 2011.

Decisions about how to meet community plans and visions for development and transportation options are a key responsibility of local government planning, and should be coordinated with neighboring jurisdictional, Metropolitan Planning Organization (MPO), and other agency plans to ensure that local and regional mobility goals are met in a proactive, comprehensive way. When development is expected to impact important state resources and facilities such as Strategic Intermodal System (SIS) facilities, local entities should also consult with FDOT on mitigation plans. Local government comprehensive plans should align with regional and statewide mobility goals through a number of planning documents. Mitigation efforts should be consistent with local government comprehensive plans and future land use maps, as well as the applicable transportation agency plans including the FDOT Work Program, SIS Cost Feasible Plan, MPO's Transportation Development Plan (TDP), Transportation Improvement Plan (TIP), the Unified Planning Work Program, and the Long-Range Transportation Plan (LRTP).

As a result of the elimination of several sections of the Community Planning statutes, much of the process regarding mitigation for the SIS is removed from law. What remains is as follows:

- Per Section 163.3177(6)(b), Florida Statutes (F.S.), the transportation element should be coordinated with plans and programs from any applicable MPO and transportation authority, as well as the State Transportation Plan and applicable FDOT Work Program; and
- Per Section 163.3180(5)(h)(1), F.S., local governments implementing concurrency must consult with FDOT when proposed amendments affect SIS facilities.

Under the expedited state review process and state coordinated review process, FDOT's role is essentially the same for identifying impacts and measures for eliminating, reducing or mitigating impacts, as noted below:

- Per Sections 163.3184 (2), (3)(b), and (4)(c), F.S., under the new expedited state review process, comments on proposed plan amendments must specifically state how the plan amendment will adversely impact important state resources and facilities and identify measures local governments can take to eliminate, reduce, or mitigate for these impacts.
  - These comments are sent to DEO and local government within 30 days after receipt of the amendment by FDOT. FDOT comments are limited to issues within the agency's jurisdiction as it relates to transportation resources and facilities of state importance.
- Per Section 163.3184(4), F.S., under the state coordinated review process, FDOT is limited to making comments similar to the expedited state review process regarding important state resources and facilities.
  - Comments are then submitted to DEO within 30 days of DEO's receipt of the proposed plan amendment for their transmission of the ORC Report.

### **Extent of Mitigation Required**

Mitigation should be relative to the scale of the expected transportation impacts. For example, while two developments might initially seem similar, a mall would expect to generate more traffic and have a greater impact to the existing transportation network than a warehouse even when both developments consists of an equal amount of commercial or retail square footage.

*Considerations for local governments employing transportation concurrency*

Transportation impact analysis and mitigation can range in complexity, from simple "pay-and-go" systems relying upon LOS impacts to more sophisticated impacts analysis employing concurrency options within the local jurisdiction.

Transportation impact analysis has traditionally focused on a few basic factors to identify expected automobile level of service impacts on the transportation system and the associated transportation facility and improvements and costs of addressing these impacts. While this traditional analysis still holds true for many traditional suburban developments and undeveloped areas, optional community concurrency planning provisions and associated strategies like Transportation Concurrency Exception Areas (TCEAs), Transportation Concurrency Management Areas (TCMAs), Multimodal Transportation Districts (MMTDs), and/or sector plans may involve additional factors that are not effectively measured in automobile level of service calculations alone. The location of these provisions and strategies are required to be indicated on a local government's adopted future land use map pursuant to Section 163.3177(6)(a), F.S. In these cases, consideration of transit needs, bicycle and pedestrian needs, and mitigation efforts to reduce automobile dependence may also be necessary. In addition to the traditional level of service considerations, some questions to consider in analyzing impacts include:

- Does the design of the proposed development work to reduce impacts on adjacent arterials?
- Are there factors in the proposed development that are expected to reduce automobile trip generation?
- Will the proposed development support higher rates of internal capture?
- Will the proposed development produce more trips by alternative transportation modes?
- Does the proposed development support more trip chaining that may affect the activity patterns on the transportation system?

See [Resource Guides](#) for Chapter 3 regarding information on how multimodal quality of service can be utilized to assess how well these questions are addressed.

For local governments using transportation concurrency, it is important that FDOT reviewers be aware of the principles, guidelines, standards, and strategies included in the local comprehensive plan that will help to guide mitigation and the relevant strategies to be employed. Direction from the local government comprehensive plan will also help to determine the level of mitigation required. Examples of techniques and tools include area-wide LOS (e.g. TCMAs), exemptions or discounting impacts in specific areas where development has been determined to be desirable (such as MMTDs), and other techniques described in Section 163.3180(5)(f), F.S., may be employed in implementing transportation concurrency, including:

- Adoption of long-term strategies to facilitate development patterns that support multimodal solutions, including urban design, and appropriate land use mixes, including intensity and density.
- Adoption of an areawide level of service not dependent on any single road segment function.
- Exempting or discounting impacts of locally desired development, such as development in urban areas, redevelopment, job creation, and mixed use on the transportation system.
- Assigning secondary priority to vehicle mobility and primary priority to ensuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit.
- Establishing multimodal level of service standards that rely primarily on nonvehicular modes of transportation where existing or planned community design will provide adequate level of mobility.
- Reducing impact fees or local access fees to promote development within urban areas, multimodal transportation districts, and a balance of mixed use development in certain areas or districts, or for affordable or workforce housing.
- Adoption of long-term strategies can include land use planning tools that can reduce vehicle miles of travel for a development or specific area. Strategies can consist of land use policies that allow for higher densities and intensities in areas designated to promote multimodal options such as transit, bicycling, and walking and discourage development in areas with low amounts of supporting infrastructure.

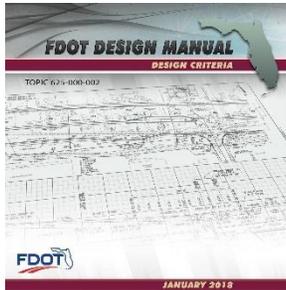
### **Transportation impacts may also vary by development type**

In addition, different transportation impacts may be expected depending upon development type. Developments that are designed to include an interconnected street network, support high density mixed-use development, or otherwise embrace transit-oriented design practices, serve to reduce reliance on adjacent arterials through design features that promote bicycle and pedestrian accessibility and the ability to move along local streets for daily trips. The transportation impacts for these developments are therefore less than conventional low density suburban developments that separate land uses and promote automobile use due to insufficient bicycle and pedestrian facilities accessibility, and vast distances to traverse.

FDOT reviewers should also recognize and look for opportunities to reduce impacts to the State Highway System. For instance, some local governments and MPOs have developed roadway constraint ordinances or policies to guide transportation investment priorities, promote community mobility goals, and offer less expensive options for enhancing regional transportation networks.

PDF

## Lake Sumter Policy



These policies should be consulted along with other local and regional planning documents, and will have a significant impact on mitigation opportunities. For instance, the [Lake Sumter MPO Roadway Constraint Policy](#) defines the maximum number of lanes for several federal, state, and county roads within their jurisdiction in an effort to maintain and enhance the overall transportation network in a cost-effective way that considers long-term community mobility goals.

FDOT provides guidance in Topic No. [Topic No. 625-000-002 Florida Design Manual \(FDM\)](#). This optional guidance can be applied to provide a balance between mobility and livability when such features are desired, appropriate and feasible. For example, the Number of Lanes section is copied below:

### **21.5.2 Number of Lanes**

*In developed urban areas, reducing the number of lanes may provide space for pedestrians, bicycles, parking, landscaping etc. This technique may be appropriate depending on volume and character of traffic, availability of right of way, function of the street, existing or planned level of pedestrian, bicycling and transit activity, intensity of adjacent land use, and availability of alternate routes. The decision to reduce the number of lanes on a project shall be supported by an appropriate traffic capacity study. If transit vehicles and school buses are currently operating in the area of the project, appropriate local agencies should be consulted.*

Another method for reducing impacts on the State Highway System (SHS), particularly SIS facilities, is the use of parallel reliever roads, nearby parallel roads that serve common destinations and run in the same direction as a major arterial. In the City of Destin, for example, parallel reliever roadways operate to preserve existing capacity on US 98 (the main east-west arterial running through the city) while contributing to the overall multimodal transportation goals and policies of the community. In conjunction with the City's adoption of a MMTD, various transportation options have been developed to improve roadway connectivity and reduce single occupant vehicle trip making in an overall effort to create a multimodal environment. When using this strategy, particular attention should be paid to safety considerations in the improvement of parallel relievers to address operational issues and unfamiliar movements that can lead to increased crash rates.

As more options become available to meet the mobility needs of the transportation network, the analysis of mitigation options becomes more

PDF

Multimodal  
Tradeoff Analysis

complex. In general, reviewers should utilize both quantitative and qualitative methods of analyzing the transportation impacts of new development.

FDOT reviewers should recognize the limitations of travel demand modeling in multimodal analyses so that transportation impacts are assessed effectively. For example, the use of transportation analysis zones (TAZs) as a unit of analysis does not consider trips within those zones, like the ones that constitute the majority of walking trips, a significant portion of bike trips, and most trips to access transit. In addition, existing land use models do not consider differences in land use configurations that may occur as a result of changes in the transportation network. FDOT reviewers may wish to consult FDOT's [Multimodal Tradeoff Analysis in Traffic Impact Studies](#) for more detailed information on multimodal considerations.

#### 4.1.1 Context-Sensitive Solutions (CSS)

FDOT's Topic No. 000-650-002a defines Context Sensitive Solutions (CSS) as, "a proactive, collaborative, interdisciplinary approach to transportation decision making, project development, and implementation, taking into account, the views of stakeholders, and the local area where a project will exist, be operated, and be maintained." The , [Chapter 200](#) Context Based Design provides implementation guidance for design originating from a CSS process. CSS strategies support a broad view of the modal transportation network to enhance local planning goals and conserve important environmental resources, while also addressing safety and mobility issues. Conventional approaches to capacity enhancement focus on widening lanes and creating more continuous roadways. This leads to the unintended result of hindering specific community and environmental objectives as well as aesthetics, accessibility and safety. A CSS strategy requires the implementation of solutions tailored to the specific community and takes multimodal and intermodal connections into account when addressing capacity needs.

Local and regional plans provide the opportunity for creating and maintaining coordinated multimodal transportation systems through CSS. Early and continuous coordination between FDOT, local governments, and the public is imperative in order to define community and environmental goals to establish long-term mobility on the transportation network. Examples of new capacity improvements using CSS include: streetscape improvements, traffic calming design elements, as well as road space reallocation to increase right of way for alternative modes such as transit or bicycle/pedestrian improvements. CSS may be combined with Transportation Demand Management (TDM)

solutions that seek to increase efficiency on the existing system by considering design elements that influence travel behaviors.

### 4.1.2 Complete Streets

Complete Streets serve the transportation needs of systems users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers. A transportation system based on Complete Streets principles can help to promote safety, quality of life, and economic development.

Complete Streets are context sensitive, and the approach provides transportation system design that considers local land development patterns. Roadways will be planned and designed to support the safety, comfort, and mobility of all users based on the unique context of each roadway. The FDOT context classification system broadly identifies the various built environments existing in Florida. The context classification of a roadway will inform FDOT's planning, Project Development and Environment (PD&E), design, construction, and maintenance approaches to ensure that state roadways are supportive of safe and comfortable travel for their anticipated users. Identifying the context classification is a preliminary step in planning and design, as different context classifications will have different design criteria.

Complete Streets are not a specific type of project, but rather an approach to ensuring that projects are based on their context. This means that a Complete Streets approach will be implemented consistently for all non-limited access projects - from capital projects qualifying from Efficient Transportation Decision Making process (ETDM) screening to Resurfacing, Restoration, and Rehabilitation (RRR), traffic operations, and safety projects.

### 4.1.3 Development or Land Use Changes

It is important to work in coordination with the applicable local government(s) when changes are necessary for a proposed comprehensive plan amendment which can impact the development plan initially proposed by an applicant. Changes may be required if there are no other feasible alternatives to mitigate for the traffic impacts such as reducing the magnitude of impacts by modifying the assignment of traffic by the development.

Examples of changes to a proposed comprehensive plan amendment could include:

- Change proposed land uses
- Modify development phasing
- Include mixed-use land uses

- Revise internal circulation
- Urban and roadway design
- Limiting the amount of traffic a site can generate through a site-specific comprehensive plan policy
- Reduce maximum densities and/or intensities within development land uses

Recommendations for changes to a proposed comprehensive plan amendment should be coordinated through the local government and should be consistent with the local government comprehensive plan and land development regulations. It should be noted that FDOT reviewer objections to a plan amendment under review are limited to important state resources and facilities pursuant to Section 163.3184, F.S. Recommendations for all identified objections should be focused on strategies to minimize adverse impacts from additional traffic which can include roadway facility improvements or land use changes. FDOT reviewers may also provide technical assistance comments regarding additional methods for mitigation outside of objections but applicable to the site plan under review to provide further support pursuant to Section 163.3168, F.S.

The successful implementation of mitigation strategies will require increased and continuous intergovernmental coordination, and as such, the final section of this chapter provides guidance on developing mitigation agreements to help facilitate coordination with local governments and other transportation agencies.

## Mitigation Agreements

According to Section 163.3180(5)(h)1.a., F.S., local governments must consult with FDOT when a proposed comprehensive plan amendment impacts designated SIS facilities. To ensure consistency and avoid confusion for all parties involved, a mitigation agreement can be used as an option to formalize agreed upon methodology, assumptions, and necessary mitigation. The mitigation agreement is entered into by the applicant the local government who issues the development order and the applicable reviewing agencies such as FDOT, RPC, or other local government which may be impacted by the proposed development.

Mitigation agreements are legally binding documents and should be thoughtfully and carefully prepared. At a minimum, the agreements need to address the following key issues:

- What are the project impacts?
  - A clear summary of project impacts should be included.
- What is the cost to mitigate the project impacts and what is the applicant's proportionate share responsibility of the needed mitigation?
  - This is usually shown in tabular form.
- What type of mitigation is the applicant proposing?

- 
- Options include paying a sum to the maintaining agency (i.e. write a check), participating in a needed study, donation of right of way, constructing a project, or a combination of strategies.
  - When should mitigation be secured?
    - Usually prior to starting project or entering phase.
    - May have a 'trigger' in the Development Order (DO), such as the number of trips.
  - Who is party to the agreement?
  - What should local governments commit to and when should commitments be made?
  - How does the agreement satisfy concurrency guidelines and strategies of the local government's comprehensive plan, if being implemented through the local government?

FDOT reviewers can assist local governments with mitigation agreements. Section 163.3168, F.S., provides a mechanism for planning innovation and technical assistance:

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*If plan amendments may negatively impact important state resources and facilities, upon request by the local government, the state land planning agency may coordinate multi-agency assistance, if needed, in developing an amendment that minimizes impacts on these resources/facilities.*

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## 4.2 Strategies

This section provides guidance on mitigation strategies and alternatives that should be considered in maintaining long-term mobility on the transportation system.

### Keys to Successful Mitigation

#### *Involvement of Partners*

When a development negatively impacts important state resources and facilities, a number of mitigation alternatives may be considered in the review process to lessen these transportation impacts. It is important to note, however, that FDOT reviewers should verify that mitigation strategies recommended are codified by the local government comprehensive plan, land development codes, transportation sufficiency plans as defined in Section 163.3182(1)(e), F.S., and outlined in Section 163.3182(4), F.S., consistent with the mitigation practices outlined below, and other applicable transportation plans.

Close involvement with transportation and land use partners can help assure that mitigation strategies proposed will effectively address the impacts of development.

Two general needs have emerged as Districts and local governments attempt to mitigate transportation impacts in a systematic way:

1. Regional Perspective
2. Land Use and Transportation Coordination

### Regional Perspective

It has become clear that transportation impacts to the State Highway System often cross traditional jurisdictional boundaries, and in order to meet the long-term needs of the transportation system, a regional perspective is needed. In addition, the consideration of other transportation modes such as, bicycle, pedestrian, and transit will help accomplish long term mobility needs on the transportation system, and present new opportunities for partnering and funding. As part of the partnering process, FDOT planners and decision makers are encouraged to coordinate with DEO, regional planning councils (RPCs), metropolitan planning organizations (MPOs), and local governments, to maximize long term approaches of achieving mobility goals.

### Land Use and Transportation

Strategies that embrace the connection between land use and good transportation service should be included in local government comprehensive plans and land development codes to meet community goals. These strategies may be found throughout the various elements of a comprehensive plan, and specifically in the transportation element. New provisions for mandatory and optional elements in Section 163.3177, F.S., dictate that the transportation element must contain “growth trends and travel patterns and interactions between land use and transportation.” It will be key for FDOT staff to coordinate with transportation partners in developing recommendations to accommodate future traffic on the impacted corridors based on solutions other than adding

## Early and Continuous Involvement

PDF

Prop Share Agreement

lanes to existing roads. This is particularly important particularly if no roadway improvement projects are programmed on deficient facilities. Examples of these and other strategies are discussed in the following sections, and include context sensitive solutions, corridor access management solutions, transportation demand strategies, and transit oriented development.

Perhaps most importantly, initial efforts of FDOT staff will require establishing early and continuous involvement between FDOT and transportation partners. Transportation partners may include local governments, MPOs, RPCs, as well as the DEO staff. Typically, an interlocal agreement or memorandum of agreement is first established to identify the roles and responsibilities of all affected parties, and to ensure proper coordination and documentation of mitigation. Documentation should include a detailed description of the proposed improvement(s), identify funding responsibilities, and demonstrate that improvements are in compliance with local, regional, and state requirements.

With the revisions to Chapter 163, Part II, F.S., in 2011 and subsequent changes thereafter, transportation concurrency is no longer state-mandated. This impacts how FDOT interacts with local governments, in particular those who have made the decision to rescind transportation concurrency within their jurisdiction and how these changes will impact agreements such as proportionate share agreements into the future. For proportionate share agreements, the changes to state law were not retroactive for existing agreements. However, there are no restrictions in state law that may preclude a developer from modifying their existing agreement to take advantage of these changes.

It's important to understand that FDOT may only grant or deny modifications to proportionate share agreements if FDOT is a party to the agreement. In addition, modification of an agreement can differ if the development in question is at a DRI or sub-DRI level. For information regarding the process at the DRI level, please refer to [Chapter 5.4.4](#). For information regarding the process at the Sub-DRI level, please refer to [Chapter 5.4.5](#). Additional information regarding proportionate share may be found on [the DEO website](#).

Long-term strategies which are also regional in nature are presented first within each subsection, and these mitigation strategies typically apply to DRIs, regional activity centers or other large development. Following these long-term, large scale strategies, short-term more project specific strategies are presented. Though the scales of these strategies differ, they are not necessarily mutually exclusive.

## 4.3 Three Basic Categories of Mitigation Strategies

As funding needs for new capacity improvements greatly exceed available funding resources, the focus of transportation impact mitigation has shifted to a more systematic approach to consider enhancing operational efficiency and increasing options for alternative modes of travel in addition to increasing roadway capacity. A variety of the following strategies may be chosen relative to the transportation impacts of the proposed development, transportation system long-term goals/plans, and applicable state and local requirements. Both short-term and long-term mitigation options should be considered to coordinate achieving long-term mobility goals. Mitigation strategies will be discussed in the following section within the framework of three general categories to provide reviewers with a range of options, specific to local and regional needs and goals:

1. Enhancing Operational Efficiency on Existing Transportation System
2. Increasing Other Modal Options
3. Increasing System Capacity

### 4.3.1 Enhancing Operational Efficiency on Existing Transportation System

#### OPERATIONAL



#### EFFICIENCY

Mitigation strategies designed to enhance operational efficiency on the existing system and reduce greenhouse gas emissions may include:

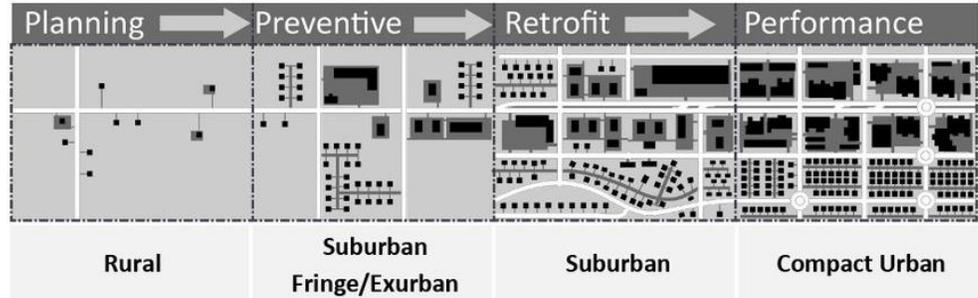
- Congestion Management Processes
- Corridor Access Management Plans
- Street Network Connectivity
- Transportation Demand Management (TDM)
- Transportation System Management (TSM)
- Enhancements for use of managed lanes or transit
- Public Transit Operational Improvements

#### Congestion Management Process (CMP)

Federal Regulation, Titles 23 U.S.C. 134(k)(3) and 49 U.S.C. 5303(k)(3) require that all MPOs maintain a Congestion Management Process using travel demand reduction and operational management strategies to identify and address congestion issues on the transportation network. Partnering with MPOs through this CMP can help identify and prioritize mitigation options that address long-term mobility on the State Highway System. Employing this strategy can both aid in identifying low-cost operational and management improvements and present an opportunity for partnering in costly, large-scale needed improvements.

## Corridor Access Management Strategies

Comprehensive corridor access management planning provides an excellent way to increase efficiency and safety on the impacted roadway systems. Good corridor access management practices can assist with orderly development patterns, increased safety, and efficiency on roadways. The management of driveways also ensures a safer environment for pedestrians and cyclists. FDOT has many resources to help with the important strategy.



Comprehensive corridor access management incorporates coordination of land use decisions within the corridor. Comprehensive corridor access management planning may be considered in coordination with the local comprehensive plan elements and any transportation sufficiency plans. It should define improvement projects, and should evaluate corridors beyond the roadway right of way to address land use, street networks, and right of way. Examples of proposed improvements resulting from the strategy may include:

- Median improvements
- Signal location and spacing
- Auxiliary lanes
- Right of way needs and requirements
- New standards for site access, connectivity and circulation design
- Effective location of commercial and transportation activity centers
- Improvements to the supporting roadway network
- Improvements involving access for other transportation modes (e.g. bus pullouts, transitions for special use transit lanes or bus rapid transit, pedestrian crossing treatments)
- Better design and integration of bicycle lanes and sidewalk facilities.

In order to implement Corridor Access Management Plans, each implementing agency (e.g. FDOT, MPOs, and local governments) should adopt the plan. State and local governments should approve these plans. Implementation is typically achieved by combining regulations, interagency or public/private agreements, design standards, and road improvement projects. Detailed guidance and resources on evaluation techniques and best practices are available in

1. [Chapter 2 of the 2013 Transportation Site Impact Handbook](#)
2. [Corridor Preservation Best Practices](#)  
(Hillsborough County Corridor Study) CUTR 2003
3. [Effective Strategies for Comprehensive Corridor Management](#)
4. [Managing Corridor Development](#)  
CUTR 1996

### Street Network Connectivity Strategies

In a number of areas around Florida, SHS facilities are being used as the primary means for transportation between developments, while local and collector street networks remain underdeveloped and/or fragmented. In addition to the strain this puts on the ability of these facilities to maintain adequate mobility and emergency access, the use of major highways results in negative impacts to the community. The higher speeds and turning movements associated with traffic on major highways create unsafe conditions for bicyclists and pedestrians. In addition, these safety issues, combined with trip length and lack of connectivity produce a greater dependence upon the automobile as the sole means for transportation.

Mitigation to address transportation impacts to these facilities involves promoting activity centers, providing alternative routes for local trips, focusing on connecting existing roads, as well as considering street network connectivity as new development emerges. Transportation sufficiency plans which could include long term corridor access management plans can use the existing local street system to identify where preferred alternative routes are located, and mitigation efforts can be focused on promoting connectivity over time. Continuous coordination with local governments is needed to implement this strategy successfully, and reviewers should consult applicable land development codes for street spacing or connectivity requirements for developments impacting SIS facilities. TRB Paper, [Accomplishing Alternative Access on Major Transportation Corridors](#) by Williams and Seggerman, provides further examples of street network connectivity strategies and sample regulatory language.

PDF

Alternative Access

### Transportation Demand Management Techniques (TDM)

TDM consists of strategies that foster increased efficiency of the transportation system by influencing travel demand by mode, time of day, frequency, trip length, regulation, route or cost. TDM discourages peak hour drive alone travel through better management of existing transportation infrastructure, services and resources. TDM strategies include, for example, public transit services, carpooling and vanpooling, compressed work weeks, telecommuting, limited parking, and provision of bicycle parking, shower, and locker facilities by employers. Detailed information about TDM strategies and existing programs can be found at the [National TDM and Telework Clearinghouse](#).



FDOT staff unfamiliar with local government land development processes will find guidance on measures that can be used to influence the incorporation of TDM into the land development process in [Incorporating TDM into the Land Development Process](#). National Center for Transit Research at CUTR, August 2005. The report documents efforts to secure TDM strategies as part of development approvals, summarizes the long range planning groundwork that frames the land development process, includes several case study examples from Florida and other states, and identifies institutional barriers to the use of TDM as part of the land development process. Note that some of the statutory references are out of date, but the basic principles are sound.



Transportation partners interested in using TDM in land development should start their involvement early. This requires participation in review and updates of the MPO long range transportation plan and transportation improvement program as well as local government comprehensive plans. The reviewer should ensure that the TDM measures are consistent with the MPO’s CMP and traffic analysis methodology. These activities will begin the integration of TDM principles and strategies into the land use and transportation planning process resulting in physical infrastructure and regulatory tools to support TDM as land development proceeds.

*TDM methodologies can also utilize state of the art transportation system management and operations strategies (TSM) such as displaying real time duration of congestion information vs. travel times on rail or bus rapid transit.*

**Transportation System Management Strategies (TSM)**

TDM strategies can also be site specific if they are part of a larger regional effort.

TSM strategies are improvements intended to utilize the existing transportation system’s capacity to the greatest extent possible. These improvements consist of

geometric improvements or traffic control strategies rather than increasing the number of general use lanes.

**Examples of TSM improvements include:**

- Add intersection turning lanes
- Improve intersection channelization
- Modify traffic signals phasing or timing
- Improve signal progression
- Implement ramp metering
- Add an auxiliary lane along a freeway
- Modify an existing interchange to handle more traffic safely (If an interchange with a freeway is proposed, these improvements require compliance with the analysis process, criteria, policies and standards set forth in FDOT's [Interchange Access Request User's Guide](#))
- Implement incident management programs
- Implement traveler information systems
- Implement intelligent transportation systems (ITS)



TSM methodologies such as developing an advanced traffic management system can be considered a regional large-scale mitigation strategy, which individual developments participate in funding.

### Enhancements for Use of Managed Lanes or Transit

Enhancements for the use of transit or managed lanes can alleviate traffic impacts by resulting in an increase in transit use and reducing the number of single occupant vehicle trips (SOV) thereby reducing the number of primary vehicle trips on the roadway system. These improvements should be evaluated carefully by FDOT and changes in mode split should be supported by the developer based on data collected on projects of similar intensity and use. In addition, FDOT should work with local governments and MPOs to encourage inclusion of these strategies into local and regional plans for potential impacts on important state resources and facilities. Managed lanes and transit operations improvements can be considered as either localized or regional mitigation strategies depending on the scale of the projects.

Some of the strategies that may be appropriate for mitigation include:

- Construction of park and ride lots
- Construction of bus shelters, turn-outs, etc.
- Construction of access ramps for managed lanes
- Implementation of managed lanes at ramp metering and intersections
- Operational funding for transit
- Incorporating site design principles to facilitate transit

- Add passing lanes so that transit vehicles can bypass congestion hotspots

### Public Transit Operational Improvements

Public transit operational improvement strategies are also strategies that are intended to reduce the amount of primary-trip vehicles on the transportation network by changing the mode split. These strategies are encouraged; however, they should be carefully evaluated to ensure that the proposed changes in mode split are realistic. Additionally, it should be ensured that local transit agencies support the change in transit service and are committed to the proposed changes associated with the proposal. Examples of public transit operational improvements that may be appropriate for mitigation include new or more frequent service and employer subsidized transit service. Please note that public transit facilities as defined under Section 163.3180(5)(h)1, F.S., are exempt from transportation concurrency.

#### 4.3.2 Increasing Other Modal Options



Another strategy for ensuring the long-term viability of the transportation network is mitigation that increases mode choice. All mitigation options utilizing non-automobile modes must be firmly rooted in local government comprehensive plans. Options for increasing mode choice are discussed below, and include:

- Transit Oriented Development (TOD)
- Providing Better Transit Options
- Bicycle/Pedestrian Connectivity

### Transit Oriented Development (TODs)

Another method for addressing congestion on the SHS is through the promotion of land uses that are supportive of transit. Transit oriented development is defined in Section 163.3164 (46), F.S. to relate to areas defined in the local comprehensive plan that is or will be served by existing or planned transit service. These areas are characterized by compact, moderate to high density mixed-use developments with integrated land uses that support multimodal options such as bicycle/pedestrian access and transit amenities.



To implement these strategies, local governments should refine comprehensive plans and land development codes to include transit supportive design criteria, such as density and intensity ranges, as part of the development standards. FDOT planners and decision makers can then support these efforts in partnership with local governments. FDOT’s [Transit Oriented Development Design Guidance](#) and [Accessing Transit Design Handbook for Florida Bus Passenger Facilities](#) contain guidance on design features, safety issues, and land use strategies that promote TODs.

## Provide Transit Options

Transit options are an important consideration in developing any mitigation strategy in urbanized areas. All transit options should be included in transit agency TDPs and LGCPs. Implementing this strategy requires early and continuous coordination with transit agency representatives, such as MPOs in addition to local governments, in the development of mobility strategies. Consideration of funding mechanisms to maintain operational costs of the system is needed to create cost feasible solutions.

PDF

Providing for  
Transit Operations

The report, [Land Developer Participation in Providing for Bus Transit Facilities/Operations](#) documents various strategies that Florida's local governments and transit agencies can use to generate public transportation funding through the involvement of private developers. Local and national case studies highlight application of these strategies. Suggestions are designed for use within the framework of local government comprehensive plans, land development codes, and transit development plans, and call for increased coordination and cooperation between local governments and transit. FDOT planners and decision makers may also become involved in this process as development impacts SIS facilities, and should work on establishing coordination efforts to plan for transit options for mitigation.

## Bicycle/Pedestrian Connectivity

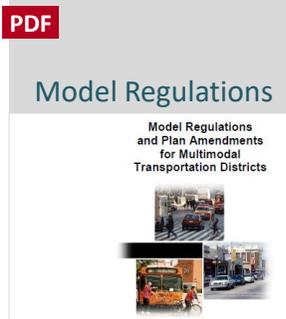
To foster the use of alternative transportation modes, connectivity for bicycle and pedestrian movement should be an integral part of any multimodal transportation network. Although often considered the realm of local government alone, FDOT planners and decision makers should be prepared to share technical expertise in this area. Ample bicycle and pedestrian connections within and between residential areas and activity centers, such as shopping areas, employment centers, transit stops, neighborhood parks, and schools may reduce the number of short automobile trips.

PDF

MMTD QOS  
Handbook



A bicycle and pedestrian network comprised of a system of interconnected and direct routes can be measured by a connectivity index. One method to perform this analysis is found in FDOT's [Multimodal Transportation Districts and Area-wide Quality of Service Handbook](#). Even though Multi-Modal Transportation Districts are no longer FDOT administered areas, this document is still useful for the concepts and strategies in the report. Missing links or gaps in the bicycle and pedestrian network should be identified and eliminated where appropriate through the development process. Missing links may include locations between cul-de-sacs, through walls or fences, mid-block where block length exceeds 660 feet, or where bicycle pedestrian routes would otherwise be "excessively" circuitous. Highest priority for improvements should be given to locations with high concentrations of pedestrian activity and where connections are needed to ensure easy access between transportation modes, with particular attention to bicycle and pedestrian access to schools, transit stops and regional greenway or



trail systems. Model comprehensive plan amendment and land development regulation language can be found in [Model Regulations and Plan Amendments for Multimodal Transportation Districts](#).

### 4.3.3 Increasing System Capacity



Options for increasing roadway capacity may include:

- Construction of new transportation facilities, such as new roads or transit
- Addition of new through lanes
- Improving the support system for main roadways – Improvements that support the main highways, such as connectivity, parallel facilities, or increased transit service

#### Construction of New Facilities

The construction of new facilities is one strategy to address transportation impact needs resulting from new development, and is encouraged when new facilities help meet long-range transportation goals and policies, such as regional connectivity. Applicable considerations when proposing new facilities include impacts to regional community and environmental objectives, congestion management system goals and policies, and air-quality planning requirements. As such, features in roadways that aid future transportation system management (TSM) strategies (e.g., Intelligent Transportation Systems), enhance the use of transit (e.g., geometric and operational improvements to accommodate bus travel) and future travel demand management strategies (e.g., access to park and ride lots) can be part of this strategy.

In addition, new roadway facilities on the SHS should be consistent with all FDOT standards and policies. Transportation facilities on the SIS are required to meet standards and limitations set forth in Highway Component Standards and Criteria, Topic 525-30-260. Construction of new facilities to the SIS and Emerging SIS are governed by [Section 339.63, F.S.](#), and construction plans should be developed in coordination with local governments, regional planning councils, transportation providers, and affected public agencies. Requirements for new facilities to SIS or Emerging SIS facilities are based upon FDOT's [Adopted Criteria and Thresholds](#) of January 2010. Construction of new facilities should reflect the principles of

PDF

Adopted Criteria

functional hierarchy and systems connectivity addressed in [A Policy on the Geometric Design of Streets and Highways, 6<sup>th</sup> Edition \(AASHTO, 2011\)](#).

### Add Lanes

The addition of new through lanes on existing facilities is another way of addressing the impacts resulting from new developments. However, the lane additions should be consistent with regional goals and policies for SOV travel, FDOT Topic 525-30-260 [SIS Procedure on Strategic Intermodal System](#) Highway Component Standards and Criteria, and [Adopted Criteria and Thresholds](#) for the SIS. The selection of corridors for new general use lanes should be coordinated with FDOT. Features that facilitate future transportation system management strategies, enhancements for the use of transit and future travel demand management strategies are part of this strategy.

### Alternatives to SIS Roads

Improvements made to arterial or collector roads running parallel to a SIS facility and serving common destinations may be considered as an option for mitigation of transportation impacts to SIS facilities at or near capacity. This strategy creates an opportunity to partner with appropriate transportation agencies and/or MPOs to meet mutually beneficial, cost effective transportation improvements. FDOT staff play a key role in approving relievers as SIS mitigation.

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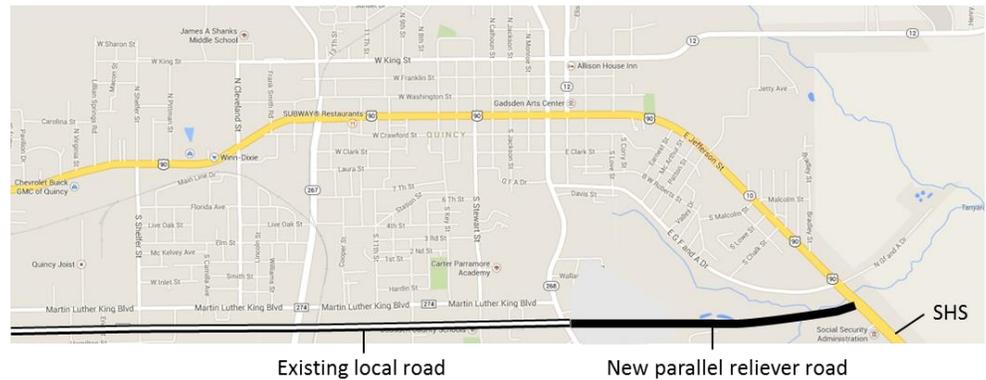
Growth  
Management  
Training



Developing these reliever roads may take the form of new road development as well as expansions to existing roads. Because of the expense and complexity associated with obtaining right of way for new roads, the designation of existing roads as a parallel reliever may be desirable where travel demand evaluations warrant such designation. Where service roads are designated as parallel relievers, opportunities exist to integrate corridor development with local street networks and enhance the ability of smaller areas to establish service roads on the state highway system. Examples of mitigation options for parallel relievers include improving access from the main facility to these reliever roads, connecting a number of existing reliever roads into one interconnected road, adding lanes to the parallel road to increase capacity, as well as improvements to signal timing, turn lanes, and medians.

## Exhibit 32

### Reliever Road Example



The opportunities for partnering between FDOT, local governments, and other transportation agencies to establish parallel reliever roads offer viable options for meeting FDOT objectives of maintaining levels of service and mobility on the SIS and SHS and local visions for mobility; however, reviewers should be aware of known design issues to ensure safety and mobility in the creation of these facilities. Continuous frontage roads, for example, are known to lead to crashes and operational problems due to unfamiliar movements and where connecting too close to a major roadway intersection. In addition, one of the lessons learned from Destin’s parallel reliever has been the need to create bicycle and pedestrian facilities in conjunction with these parallel relievers to develop a connected, multimodal environment. Close coordination between FDOT and local governments can help in ensuring that community and safety needs are met on a project by project basis.

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## 4.4 Other Mitigation Strategies: Land Use and Transportation Strategies to Enhance Mobility

In addition to the approaches referenced above, the following additional mitigation options may be considered in reducing transportation impacts. These options are long-term planning strategies that require adoption into local government comprehensive plans.

### 4.4.1 Transportation Concurrency and Alternatives (TCEAs, TCMA, and MMTDs)

Legislation in 2011 removed the state mandate for transportation concurrency in local government comprehensive plans. However, transportation concurrency remains a part of the adopted local government comprehensive plan as an optional provision until an amendment removes this provision, pursuant to Section 163.3180, F.S. This subject is discussed in more detail in [Chapter 3.8](#).

For local governments that retain transportation concurrency, there may be some cases where the strict application of transportation concurrency requirements may conflict with important area planning objectives such as urban infill, redevelopment, or the promotion of public transportation. In these cases, local governments are able to designate geographic areas into their comprehensive plans as Transportation Concurrency Exception Areas (TCEAs), Transportation Concurrency Management Areas (TCMA), and Multimodal Transportation Districts (MMTDs) in order to provide flexibility from the strict application of concurrency. TCEAs, TCMA, and MMTDs are used to implement transit system improvements and supporting pedestrian/bicycle infrastructure as a viable mitigation strategy, and proportionate share contributions may be used to fund these mitigation efforts. For example, the City of Tallahassee has implemented a multimodal transportation district for the urbanized area surrounding the downtown area and Florida State University. Land uses within this area are eligible for density and intensity bonuses to encourage infill and redevelopment. Multimodal transportation district policies also include urban design requirements for the width of sidewalks, location of parking lots and other infrastructure to promote multimodal options.

### 4.4.2 Transportation Sufficiency Plans

Under Section 163.3182, F.S., a local government has the ability to create a transportation development authority for its jurisdiction if there is an identified transportation deficiency. The area for which the transportation development authority is created for is defined as the transportation deficiency area which includes the geographic location of the identified transportation deficiency. It is

the responsibility of the transportation development authority to develop a transportation sufficiency plan for the designated transportation deficiency area in order to correct or mitigate the area's deficient transportation facilities.

Transportation sufficiency plans identify transportation facilities that do not achieve and maintain the level of service standards established in a local government's comprehensive plan, and therefore, these facilities are considered deficient. These plans include a priority listing of deficient facilities of which transportation projects and associated project funding are meant to resolve deficiencies. Projects that are identified within the plan shall be organized into a schedule with the intent to eliminate transportation deficiencies within 10 years after the adoption of the plan. Such projects shall also be included in a local government's Five-Year Schedule of Capital Improvements found within the comprehensive plan.

The adoption of the transportation sufficiency plan shall satisfy all applicable transportation concurrency requirements as established by the local government for the designated transportation deficiency area. Proportionate share mitigation shall be limited to ensure that development within the transportation deficiency area is not charged with additional costs in order to resolve any deficiencies. The transportation sufficiency plan for this area may only be removed from the comprehensive plan once all of the projects and costs associated with the transportation sufficiency plan have been taken care of pursuant to Section 163.3182(8), F.S.

FDOT reviewers should be aware of any transportation deficiency areas and sufficiency plans for local governments implementing transportation concurrency. Reviewers should make recommendations when applicable to additional mitigation actions which can be included in local transportation sufficiency plans.

#### 4.4.3 Funding of Mitigation Improvements

Transportation mitigation needs vary by project and have the potential to impact the viability of a proposed development. As a result, the funding of mitigation options can be challenging and typically requires negotiation.

The methodology for determining the developer's share of funding for mitigation improvements should be identified in the methodology phase of the development. The share is determined in relationship to the number of trips generated by the development and the capacities on an affected roadway segment or some other calculation based on impact, mobility fees or other options a local government may adopt, including multimodal improvements.

The final mitigation fee is typically negotiated among the applicant, appropriate local governments, RPC and the FDOT (if improvements to significant state facilities such as the SIS are involved) following the mitigation analysis that demonstrates the proposed improvements will be acceptable to the local government or agency for alleviating any deficiencies caused by the proposed development. This negotiation should occur before or concurrent with the drafting of the development order.

### **Optional Concurrency Mitigation (Proportionate Share)**

A 2011 provision of Section 163.3180, F.S., requires that if transportation concurrency is utilized, the local government must provide an option for mitigation, also known as proportionate share. In 2013, House Bill 319 (HB 319) updated this option. There has been much discussion across the state on the interpretation of this type of mitigation and this handbook will only provide general principles and statutory references. Some of the key statutory guidance is provided below:

*Any local government with an optional transportation concurrency system under Section 163.3180, F.S., must provide a system for development. This allows an applicant for a development-of-regional-impact, development order, a rezoning, or other land use development permit to satisfy the transportation concurrency requirements of the local comprehensive plan, the local government's concurrency management system, and Section 380.06, F.S, when applicable, if:*

*a. The applicant "in good faith offers to enter" into an agreement to pay for or construct its proportionate share of required improvements.*

*b. The proportionate-share contribution or construction is sufficient to accomplish one or more mobility improvements that will benefit a regionally significant transportation facility.*

*In addition, any local government that continues to use an optional transportation concurrency system must provide a means by which the landowner will be assessed a proportionate share of the cost of providing the transportation facilities necessary to serve the proposed development. An applicant shall not be held responsible for the additional cost of reducing or eliminating deficiencies. Under this system, when an applicant contributes or constructs its proportionate share pursuant to this subparagraph, a local government may not require payment or construction of transportation facilities whose costs would be greater than a development's proportionate share of the improvements necessary to mitigate the development's impacts.*

Deficiencies, pursuant to Section 163.3180(5)(h)4., F.S., pertain to any facility on which the adopted level-of-service standard is exceeded by the existing, committed, and vested trips, plus additional projected background trips from any source other than the development project under review, and trips that are forecast by established traffic standards. Under the proportionate share system, only facilities considered deficient with the additional traffic projected for a development project under review are considered in the proportionate share calculation for that development. The additional trips projected to impact a facility should be coincident with the particular stage of the development project. For those facilities that are identified as deficient before the establishment of the development project and will be impacted by the project, the improvements necessary to alleviate the deficiency are considered to be in place at the time of the proportionate share calculation.

The current legislation also specifies that the applicant shall receive a credit on a dollar-for-dollar basis for impact fees, mobility fees, and other transportation concurrency mitigation requirements paid or payable in the future for the project. It also states that the credit shall be reduced up to 20 percent by the percentage share that the project's traffic represents of the added capacity of the selected improvement, or by the amount specified by local ordinance, whichever yields the greater credit. Local governments that have repealed their transportation concurrency system and associated impact fees and have instituted a mobility-fee based system include counties such as Alachua and Pasco, and municipalities such as Kissimmee and St. Petersburg.

Other changes from HB 319 affecting proportionate share include:

- Allows local government to pool contributions from multiple applicants to apply toward one planned mobility improvement that will benefit a regionally significant transportation facility
- Requires local governments to provide the basis upon which landowners will be assessed a proportionate share of cost addressing the transportation impacts from a proposed development
- Clarifies when local governments are not required to approve new development

## Transportation Cost Resources

Determining accurate mitigation costs is an essential component to developing an equitable mitigation package. The FDOT maintains several cost estimating and documentation resources to assist with the determination of:

- Highway construction costs
- Right of way costs
- Bridge costs

- Transit costs
- Bicycle and Pedestrian facility costs
- Inflation factors (for converting present day costs to future years)
- Construction cost indicators

contains a full list of cost estimates and documentation resources. The on-line resource page includes several key staff contacts for cost information. In reviewing the on-line resources, it should be noted that much of the information is general. Many, if not all, of the cost factors are situation specific and will vary from District to District within the FDOT based on local circumstances. In many situations, costs will vary even within a given District. This is particularly true with right of way costs due to the price of right of way acquisition in dense urban areas.

Because of the wide cost variation, all costs and adjustment factors relating to specific transportation projects should be addressed with the District office where the project will be located and all assumptions and cost estimating methodologies should be reviewed and approved by the FDOT. It is noted that the generalized costs available from the FDOT may not be accepted for use in mitigation calculations. Where available, cost estimates based on design, Project Development and Environment, or feasibility/corridor studies should be used. Tools such as the FDOT's long-range estimating (LRE) software may also be used to determine a more location specific cost as compared to generalized costs. Because of the significant differences that can exist between a cost estimate based on generalized costs and a cost estimate based on more site specific information, the use of site specific costs in mitigation agreements is preferred by the FDOT.



## Cautionary Considerations

The funding of transportation improvement projects is often key to satisfying local government comprehensive plan and local ordinance requirements and FDOT operating standards, allowing development to move forward. Proportionate share mitigation, may be considered as a tool through which development applicants can contribute their share of the cost of improving the impacted transportation facility and thereby mitigate their impact. When properly developed and administered, this funding mechanism can effectively generate funding for future transportation improvements in an equitable manner while allowing development to continue. To be effective, it is essential that cost-sharing mitigation plans:

- Be developed based on correct application of site related traffic
- Be developed based on accurate and reliable cost estimates
- Have an applicant's or agency's commitment to deliver a funded transportation improvement adopted into the local capital improvements element

Development and administration of cost-sharing mitigation plans can be complicated by:

- Cost uncertainties such as:
  - Lack of detailed design or cost estimates for future improvements
  - Right of way acquisition costs
  - Potential for large fluctuations in construction costs due to unanticipated changes in material availability (particularly shortages), fuel costs, and other inflationary considerations
- Developments that are obligated to contribute but do not because the development is unable to move forward (no development = no contribution)
- Potential lack of consistency between a project identified for proportionate share and other adopted planning documents (that may not include the project needed)
- Funding shortfalls if insufficient funds are collected to fully pay for a given proportional share mitigation project

It should be noted that cost-sharing contributions may be in the form of funds, right of way, or the construction of improvements. The FDOT should be consulted with projects that involve the SIS in order to ensure impacts on these facilities are addressed.

#### 4.4.4 Proportionate Share (Sub-DRI) Mitigation

Proportionate share mitigation is defined by [Section 163.3180\(5\)\(h\), F.S.](#), and applies to smaller, sub-DRI level developments. As in proportionate share for DRIs, proportionate share provides options to mitigate development impacts through cooperative efforts between the public and private sector. This option provides a way for developers to satisfy transportation concurrency requirements by funding a *specific* road segment or segments falling below LOS standards set by the local government. Examples of proportionate share mitigation may include the contribution of private funds, contributions of land, and/or construction and contribution of facilities.

For a Sub-DRI level development, a developer may request a change in the calculation used for an existing funding agreement according to Section 163.3180(5)(h), F.S. The change in recalculation must be accepted by the local government.

### Impact Fees

Impact fees, one-time charges imposed on new development as a condition of approval, is another funding strategy that may be used by county and municipal governments to ensure that new development pays its proportionate share of the costs to expand transportation system capacity. The “Florida Impact Fee Act,”

[Section 163.31801, F.S.](#), permits local governments to adopt impact fee ordinances as long as these charges are consistent with the local government's land development code and comprehensive plan, and meet the minimum requirements stated in the statute.

In addition, [Section 163.2517\(3\)\(j\), F.S.](#), requires urban infill and redevelopment plans to contain a package of financial incentives, which may include strategies to lower impact fees for developments that promote the use of alternative transportation modes. These types of incentives recognize the differences in travel demand generated by different land use types, and should be considered in the impact review process. Section 163.3180(5)(f), F.S., also includes alternative techniques that may employ impact reductions for certain types of development.

## Mobility Fees



In 2009, as directed by House Bill 360, DEO and FDOT produced a report evaluating the implementation of mobility fees for local governments in the state. Following this report, later revisions to Section 163.3180, F.S., encourage the use of mobility fees as an option for local governments who decide to repeal their transportation concurrency provisions. Several local governments, such as Alachua and Pasco Counties, have implemented mobility fee ordinances and associated provisions.

The mobility fee is a charge on new development as a form of mitigation for its impact on a local government's transportation system. The revenue from the fee is used to alleviate deficiencies to the portion of the system impacted by a development project and can include internal roadway facilities, exclusive turn lanes, and other forms of improvements. Mobility fees can be used to help establish multimodal friendly land use patterns. For example, the Pasco County mobility-fee system assesses improvement costs for roadway, transit, and bicycle/pedestrian infrastructure. The system is tiered in order to focus infill and redevelopment in urbanized areas of the county.

Under Section 163.3180(5)(i), F.S., mobility fee systems may not be used to deny, time, or phase an application for development provided that the applicant has agreed to pay for the impacts of the development project through the mobility fee system. The mobility fee system implemented by a local government must also comply with the dual rational nexus test applicable to the development and associated fees. If a local government decides to repeal its transportation concurrency system and uses a system that is not mobility-fee based, the new alternative system may not be used to charge an applicant for improvements to existing deficient roadway facilities as defined under Section 163.3180(5)(h), F.S.

## Appendix A

### Glossary

Note: *Italicized words and phrases* in the Handbook are defined in this glossary.

- Access Management – The control and regulation of the spacing and design of driveways, medians, median openings, traffic signals and intersections on arterial roads to improve safe and efficient traffic flow on the road system.
- Accessibility – The dimension of *mobility* that addresses the ease in which travelers can engage in desired activities.
- Adverse Impact – When a roadway is significantly impacted and the LOS on the roadway with the development trips is below the adopted LOS standard.
- Analysis Period – The analysis period should be related to expected peaking patterns of demand on the roadway and anticipated development traffic (usually a peak-hour analysis).
- Analysis Years – The years agreed to analyze transportation impacts. They should be clearly defined in the report and agreed to during the methodology process.
- Annual average daily traffic (AADT) – The volume passing a point or segment of a roadway in both directions for 1 year divided by the number of days in the year.
- Area type – In this Handbook a general categorization of an extent of surface based primarily on the degree of urbanization.
- Arterial –
  - 1) A signalized roadway that primarily serves thru traffic with average signalized intersection spacing of 2.0 miles or less.
  - 2) A state facility that is not on *freeway*.
  - 3) A type of roadway based on FDOT functional classification.
- ARTPLAN – FDOT’s arterial planning software for calculating *level of service* and *service volume tables* for interrupted flow roadways.
- Assignment – The various trips are placed on the transportation network, including the number of trips, their origins and destinations, and travel mode.
- Auto – Same as *automobile*.
- Automobile –
  - 1) A motorized vehicle with 4 or less wheels touching the pavement during normal operation.
  - 2) In this Handbook, all motorized vehicle traffic using a roadway, except for *buses*.
- Auxiliary lane – An additional lane on a *freeway* connecting an on ramp of one interchange to the off ramp of the downstream interchange.
- Average daily traffic – The total traffic volume during a given time period (more than a day and less than a year) divided by the number of days in that time period.
- Background Traffic – The traffic that includes the expected increase from overall growth in through traffic as well as traffic from other developments in the study area.
- Base year – The model is calibrated to accurately represent the current conditions.
- Bicycle – A mode of travel with two wheels in tandem, propelled by human power.
- Bicycle lane – A portion of roadway or path for bicycles.
- Bicycle LOS Model – The *operational methodology* from which this Handbook’s bicycle quality/level of service analyses are based.
- Blended Methods – The use of model methods to determine distribution percentages of vehicles is common in combination with manual assignment processes.

- Boundaries** – In this Handbook the geographical limits associated with FDOT’s *Level of Service Target Standards* for the *State Highway System* or its MPO Administrative Manual.
- Build-Up Method** – Identifies all trips associated with vested developments in the study area, assigns those trips to the study area transportation system, and then adds the background through traffic.
- Bus** – A self-propelled, rubber-tired roadway vehicle designed to carry a substantial number of passengers and traveling on a scheduled fixed route.
- Bus stop** – An area where *bus* passengers wait for, board, alight, and transfer.
- Capacity** – The maximum number of vehicles that can pass a point in a one hour time period under prevailing roadway, traffic and control conditions.
- Capital Improvements Element (CIE)** – Adopted and updated to reflect the timing and funding of capital projects to meet and maintain adopted LOS standards for all infrastructure.
- Class** – Same as *roadway class*.
- Collector** – A roadway providing land access and traffic circulation with residential, commercial and industrial areas.
- Community** – In this Handbook outside of an urban or urbanized area, an incorporated place or a developed but unincorporated area with a population of 500 or more identified in the appropriate *local government comprehensive plan*.
- Community Capture** – Extends the application of internal capture to include potential trip interactions and reductions within the boundaries of large scale, multi-use developments.
- Community Capture Monitoring** – Detailed needs of elements such as origin and destination studies, trip generation studies, and an evaluation of land use mixes in the community and surrounding the community.
- Conceptual planning** – Same as *preliminary engineering*.
- Concurrency** – A systematic process utilized by local governments to ensure that new development does not occur unless adequate infrastructure is in place to support growth.
- Concurrency Management Areas (CMA)** – Designated in a local government comprehensive plan and must be a compact geographic area with an existing network of roads where multiple, viable alternative travel paths or modes are available for common trips.
- Concurrency Management Systems (CMS)** – Official government plan to manage and pay for growth.
- Congestion** – Condition in which traffic demand approaches or exceeds the available capacity of the transportation facility(ies).
- Context-Sensitive Solutions (CSS)** – Proactive, collaborative, interdisciplinary approach to transportation decision making, project development, and implementation, taking into account, the views of stakeholders, and the local area where a project will exist, be operated, and be maintained.
- Corridor** – A set of essentially parallel transportation facilities for moving people and goods between two points.
- CUBE Voyager FSUTMS** – The Cube Voyager Modeling software used by Florida to forecast travel demand.
- D factor** – Same as directional distribution factor.
- Daily tables** – In this Handbook, *Service Volume Tables* presented in terms of *annual average daily traffic*.
- Data Collection** – The collection, assembly, analysis and presentation of all data. Includes proposed site development characteristics, existing transportation systems data, existing traffic counts and land use and demographic data.

- Deficiency** – In general, defined under Section 163.3182, F.S., transportation deficiency “means an identified need where the existing and projected extent of traffic volume exceeds the level of service standard adopted in a local government comprehensive plan for a transportation facility”.
- For local governments which have chosen to continue implementation of transportation concurrency, “the term “transportation deficiency” means a facility or facilities on which the adopted level-of-service standard is exceeded by the existing, committed, and vested trips, plus additional projected background trips from any source other than the development project under review, and trips that are forecast by established traffic standards, including traffic modeling, consistent with the University of Florida’s Bureau of Economic and Business Research medium population projections. Additional projected background trips are to be coincident with the particular stage or phase of development under review” pursuant to Section 163.3180(5)(h)4., F.S.
- Demand** – The number of persons or vehicles desiring service on a roadway.
- Demographic Data** – Intensity, population, employment, comprehensive plan data and zoning requirements.
- Dense Urban Land Area** – Any jurisdiction, established under Section 380.06(29), Florida Statutes (F.S.), that meets the following criteria:
- A municipality that has an average of at least 1,000 people per square mile of land area and a minimum total population of at least 5,000;
  - A county, including the municipalities located therein, which has an average of at least 1,000 people per square mile of land area; or
  - A county, including the municipalities located therein, which has a population of at least 1 million. Miami-Dade and Broward Counties are the exceptions.
- Development of regional impact (DRI)** – A development which, because of its character, magnitude, or location, would substantially affect the health, safety, or welfare of citizens of more than one county in Florida, as defined in Section 380.06(1), F.S.
- Directional distribution factor (D)** – The proportion of an hour’s total *volume* occurring in the higher volume direction.
- Diverted trips** – Similar to pass-by trips, however, vehicles use a segment of the roadway system that they previously were not using.
- Divided** – As used in the *Generalized Tables*, a roadway with a *median*.
- DRI Amendments** – An amendment to a development which, because of its character, magnitude, or location, would substantially affect the health, safety, or welfare of citizens of more than one county in Florida, as defined in Section 380.06(1), F.S., implemented by Rule 73C-40, F.A.C.
- Evaluation and Appraisal Review (EAR)** – An audit of a local government’s successes and failures in implementing its comprehensive plan. The EAR is prepared every seven years to evaluate and update a LGCP (s.163.3191, FS). It is the first step in updating the comprehensive plan.
- Existing Conditions** – The analysis developed to assess current conditions and establish a basis for comparison to future conditions.
- Factor** – A value by which a given quantity is multiplied, divided, added or subtracted in order to indicate a difference in measurement.
- FDOT** – Florida Department of Transportation.
- FHWA** – Federal Highway Administration.
- Future Land Use Map (FLUM)** – Community’s visual guide to future planning.

- Freeway – A multilane, divided highway with at least 2 lanes for exclusive use of traffic in each direction and full control of ingress and egress.
- FSUTMS – Florida Standard Urban Transportation Modeling System. Florida’s software that forecasts travel demand.
- Functional classification – The assignment of roads into systems according to the character of service they provide in relation to the total road network.
- Future Conditions Analysis – Determines if the transportation system will operate acceptably with the additional site-generated trips and, if not, what mitigation may be required.
- Future Land Use Element – Includes goals, objectives and policies and a Future Land Use Map that implement the jurisdiction’s desired land use pattern.
- Future Year Conditions – The Future Background Conditions for a future horizon year that does not include the proposed development.
- General Transportation Factors – Include: Analysis periods, Trip Generation, Current traffic conditions, Future traffic conditions, current and future development, and comprehensive plans.
- Generalized planning – A broad type of planning application such as statewide analyses, initial problem identification, and future year analyses; typically performed by use of the *Generalized Tables*.
- Generalized Service Volume Tables – *Maximum service volumes* based on areawide *roadway, traffic* and *control* variables and presented in tabular form.
- Generalized Tables – Same as *Generalized Service Volume Tables*.
- Growth management concepts – The ideas necessary for use in planning for urban growth so as to responsibly balance the growth of the infrastructure required to support a community’s residential and commercial growth with the protection of its natural systems (land, air, water).
- Growth Rate/Trend Method – Uses historic trends to predict future growth.
- Guideline – Based on FDOT’s Standard Operating System (Topic No: 025-020-002-j), a recommended process intended to provide efficiency and uniformity to the implementation of policies, procedures, and standards; a guideline is intended to provide general program direction with maximum flexibility.
- HCM – ~~Same as~~ *Highway Capacity Manual*.
- Heavy vehicle – A FHWA vehicle classification of 4 or higher, essentially vehicles with more than 4 wheels touching the pavement during normal operation.
- High-occupancy vehicle (HOV) lane – A *freeway* lane reserved for the use of vehicles with a preset minimum number of occupants; such vehicles often include buses, taxis, and carpools.
- Highway – 1) A generic term meaning the same as *roadway*.  
2) A *roadway* with all the transportation elements within the right-of-way.
- Highway Capacity Manual (HCM) – The Transportation Research Board document on highway capacity and quality of service.
- Highway Capacity Software (HCS) – A software package faithfully replicating the *Highway Capacity Manual*.
- Internal Capture – The number of trips that occur inside the development and don't impact existing roads outside the development.
- Internal Circulation – Good internal circulation of a land development is designed with respect to highway access point(s) rather than the building(s).
- Land Use – Future land use classification.

- Large Scale Plan Amendment – Any change in text to the Comprehensive Plan or any change in the future land use map.
- Large Scale Transportation Model – In Florida, the FSUTMS Model is used.
- Large urbanized area – An *MPO urbanized area* greater than 1,000,000 population; in Florida these 7 areas consist of the following central cities: Ft. Lauderdale, Jacksonville, Miami, Orlando, St. Petersburg, Tampa, and West Palm Beach.
- Level of service (LOS) – A quantitative stratification of the *quality of service* to a typical traveler of a service or facility into six letter grade levels, with “A” describing the highest quality and “F” describing the lowest quality; a discrete stratification of a *quality of service* continuum.
- Level of service (LOS) analysis – A quantitative examination of traveler *quality of service* provided by a transportation facility or service.
- Level of Service Standards – Same as *Level of Service Standards for the State Highway System*.
- Level of Service Standards for the State Highway System – FDOT’s Policy Topic No. 000-525-006-a to be used in the planning and operation of the State Highway System.
- Local Government Comprehensive Plan (LGCP) – Any county or municipal plan that meets the requirements of Sections 163.3177, 163.3178, 163.3180, 163.3191, 163.3245, and 163.3248, F.S., as well as with the principles for guiding development in areas designated as areas of critical state concern and Chapter 369, Part III, F.S.
- Local Government Draft Development Order Review – FDOT’s final opportunity to ensure that mobility on SIS/SHS segments located in the project impact area has been adequately addressed. The purpose is to resolve any outstanding issues before the DO is rendered.
- LOS – Same as *level of service*.
- ~~LOSPLAN – FDOT’s LOSPLAN software which includes ARTPLAN, FREEPLAN, and HIGHPLAN preliminary engineering computer programs.~~
- LOS standards – Same as *Level of Service Standards for the State Highway System*.
- Maintain – Continuing operating conditions at a level that prevents significant degradation. In terms of transportation concurrency, this applies to local governments which have chosen to continue implementation.
- Manual Methods – Manual methods of trip distribution that provide the analyst with a basic understanding of the travel patterns associated with the development.
- Maximum service volume – The highest number of vehicles for a given *level of service*.
- Median – Areas typically at least 10 feet wide that are restrictive or non-restrictive that separate opposing-direction mid-block traffic lanes and that, on arterials, contain turn lanes that allow left turning vehicles to exit from the thru traffic lanes.
- Methodology Development – An essential component in any traffic impact analysis. It defines the data, techniques, practices, and assumptions that will be used while preparing a transportation impact analysis.
- Mitigation – Specific design commitments made during the environmental evaluation and study process that serve to moderate or lessen impacts deriving from the proposed action. These measures may include planning and development commitments, environmental measures,

- right-of-way improvements, and agreements with resource or other agencies to effect construction or post construction action.
- Mixed-Use Developments** – Same as multi-use developments. Contain a mix of land uses.
- MMTDs** – Multimodal Transportation District: An area in which secondary priority is given to vehicle mobility and primary priority is given to assuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit. Applies to local governments that have designated and implemented these areas prior to legislative changes in 2011.
- Mobility** – The movement of people and goods.
- Mode** – Particular form of transportation, such as automobile, transit, carpool, ship, and bicycle.
- Mode Split** – The travel mode percentages (automobile, transit, walking, etc.) used by site-generated trips.
- Mode Split/ Alternative Travel Forecasts** – Separating the predicted trips from each origin zone to match each destination zone into distinct travel modes (walking, biking, driving, train, bus).
- Model Method** – Involves the use of a computerized large scale travel demand model, such as FSUTMS.
- Model Volumes** – The number of vehicles, and occasionally persons, passing a point on a roadway during a specified time period, often 1 hour; a volume may be measured or estimated, either of which could be a constrained value or a hypothetical demand volume.
- MPO** – Metropolitan Planning Organization.
- Multimodal** – In this Handbook more than one highway *mode*.
- Multimodal Mobility Options** – Same as *multimodal transportation*.  
Alternatives to the single-occupant vehicle. Some alternatives include walking, cycling, carpooling, boating, paratransit, taxi, light rail and transit.
- Multimodal Transportation District** – An area in which secondary priority is given to *vehicle* mobility and primary priority is given to assuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit. Applies to local governments that have designated and implemented these areas prior to legislative changes in 2011.
- Multi-Use Developments** – Same as mixed-use developments. Contain a mix of land uses.
- Neo-Traditional Developments** – Provides a mix of land uses to serve residential needs and by providing a community design that supports walking and alternative modes of travel.
- Non-state roadway** – A roadway not on the *State Highway System*.
- NOPC** – Notice of Proposed Change: A report that is required to be submitted by the applicant to the local government when a change is proposed to a previously approved DRI.
- Off peak** – The course of the lower flow of traffic.
- OMD** – FDOT District 4 Office of Modal Development.
- Operational analysis** – A detailed analysis of a roadway’s present or future level of service, as opposed to a generalized planning analysis or preliminary engineering analysis.
- Operational Efficiency** – Occurs when the right combination of people, process, and technology come together to enhance the productivity and value of any business operation, while driving down the cost of routine operations to a desired level.
- Pass-by Trips** – Currently on the roadway system and pass directly by a generator on the way to the primary destination.

- Peak direction – The course of the higher flow of traffic.
- Peak hour – In this Handbook a 1 hour time period with high volume.
- Peak season – The 13 consecutive weeks with the highest daily volumes for an area.
- PSWADT – Peak Season Weekday Average Daily Traffic:  
The *average daily traffic* for Monday through Friday during the peak season.
- Pedestrian – An individual traveling on foot.
- Pedestrian LOS Model – The operational methodology from which the Q/LOS Handbook’s pedestrian quality/level of service analyses are based.
- Performance measure – A *qualitative* or *quantitative* factor used to evaluate a particular aspect of travel quality.
- Planning application – In this Handbook the use of default values and simplifying assumptions to an *operational model* to address a roadway’s present or future level of service.
- Pre-application Conference – Conducted to identify issues, coordinate appropriate State and local agency requirements, promote a proper and efficient review of the proposed development, and ensure that RPC staff are aware of all the issues to which reviewing agencies will require the applicant to respond.
- Primary trips – Trips made for the specific purpose of visiting the generator.
- Proportionate Share – Provides a way for developers to mitigate the impacts of proposed development on significantly impacted state and regional roadways and allows a contribution from developers to the governmental agency that has maintenance for the transportation facility in order to satisfy transportation concurrency requirements according to Section 163.3180, F.S. Examples of proportionate fair-share mitigation may include the contribution of private funds, contributions of land, and/or construction and contribution of facilities.
- QOS – Same as *quality of service*.
- Quality of service (QOS) – A user based perception of how well a service or facility is operating.
- Quality/level of service (Q/LOS) – A combination of the broad quality of service and more detailed level of service concepts.
- Rendered Development Order Review – Once the development order is rendered by the local government, it is the FDOT’s responsibility to ensure that all commitments are contained within the LGDO.
- Roadway – A general categorization of an open way for persons and vehicles to traverse; in this Handbook it encompasses streets, arterials, freeways, highways and other facilities.
- Roadway class – Categories of arterials and two-lane highways; arterials are primarily grouped by signal density or speed; two-lane highways are primarily grouped by area type.
- Route – As used in the *Transit Capacity and Quality of Service Manual*, a designated, specified path to which a bus is assigned.
- Scheduled fixed route – In this Handbook bus service provided on a repetitive, fixed-schedule basis along a specific route with buses stopping to pick up and deliver passengers to specific locations.
- Service measure – A specific performance measure used to assign a level of service to a set of operating conditions for a transportation facility or service.
- Service volume – Same as *maximum service volume*.
- Service Volume Table – *Maximum service volumes* based on roadway, traffic and control variables and presented in tabular form.
- Sidewalk – A paved walkway for pedestrians at the side of a roadway.
- Signal – A *traffic control device* regulating the flow of traffic with green, yellow and red indications.

- Significance Testing** – Determined by considering the percentage of traffic on a roadway segment that is generated by the development during the peak hour in relationship to the maximum service volume at the LOS standard for the facility during the same period.
- Site Access** – Accommodation of automobiles, buses, pedestrians, bicycles and other modes of transportation to a given site.
- Site Development Characteristics** – The location of the proposed development, site boundaries and other site related characteristics.
- Special Generator Method** – Uses a combination of ITE Trip Generation and FSUTMS. The trips in the model are adjusted to match the ITE trip generation rate.
- Special or Unusual Generator** – One that cannot be adequately described by ITE Trip Generation Report.
- Standard** – A Florida Department of Transportation formally established criterion for a specific or special activity to achieve a desired level of quality.
- Standards** – Same as Statewide Minimum Level of Service Standards for the State Highway System.
- State Highway System (SHS)** – All roadways that the Florida Department of Transportation operates and maintains; the State Highway System consists of the Florida Intrastate Highway System and other state roads.
- Statute** – A written law enacted by a duly organized and constituted legislative body.
- Strategic Intermodal System (SIS)** – Florida’s system of transportation facilities and serves of statewide and interregional significance.
- Study Area** – Same as “traffic impact area” or simply the “impact area.” The area affected by a new development.
- Study period** – An hour period on which to base quality/level of service analyses of a facility or service. A length in time including a future year of analysis.
- System** – A combination of facilities or services forming a *network*. A combination of facilities selected for analysis.
- System Capacity** – The maximum number of vehicles that can reasonably be expected to pass over a lane or a roadway during a given time period under prevailing roadway and traffic conditions. Typically, the maximum expressway capacity for automobiles is 2,000 vehicles per lane per hour.
- Traffic** – A characteristic associated with the flow of vehicles.
- Traffic Analysis Zone (TAZ)** – A geographic unit of analysis used to aggregate socioeconomic data (household and employment data).
- Traffic Attenuation** – As traffic from a specific site travels longer distances, the number of those site generated trips attenuate (drop) because more and more people reach their final destinations.
- Traffic Counts** – Annual Average Daily Traffic (AADT) counts.
- Transit Capacity and Quality of Service Manual (TCQSM)** – The document and operational methodology from which the Q/LOS Handbook’s bus quality/level of service analyses are based.
- Transit system structure** – The Transit Capacity and Quality of Service Manual’s analytical methodology of transit stops, route segments, and system.
- Transitioning** – In the text of this Handbook, the same as *transitioning area*.
- Transitioning area** – An area that exhibits characteristics between *rural* and *urbanized/urban*.

- Transitioning/urban – The grouping of transitioning areas and urban areas into one analysis category in the *Generalized Tables* and software.
- Transit-Oriented Developments – A mixed-use residential or commercial area designed to maximize access to public transport as defined under Section 163.3164(46), F.S.
- Transportation Concurrency Exception Areas (TCEA) – An urban area delineated by a local government where infill and redevelopment are encouraged, and where exceptions to the transportation concurrency requirement are made, providing that alternative modes of transportation, land use mixes, urban design, connectivity, and funding are addressed. Applies to local governments that have designated and implemented these areas prior to legislative changes in 2011.
- Transportation Concurrency Management Area (TCMA) – A geographically compact area designated in a *local government comprehensive plan* where intensive development exists, or is planned, so as to ensure adequate mobility and further the achievement of identified important state planning goals and policies, including discouraging the proliferation of urban sprawl, encouraging the revitalization of an existing downtown and any designated redevelopment area, protecting natural resources, protecting historic resources, maximizing the efficient use of existing public facilities, and promoting public transit, bicycling, walking, and other alternatives to the single-occupant automobile. Applies to local governments that have designated and implemented these areas prior to legislative changes in 2011.
- Transportation demand data – Includes current and historical traffic volumes, turning movement counts, traffic characteristics such as peaking and directional factors, ridership data, and bicycle and pedestrian activity.
- Transportation Element – Goals, objectives and policies creating the jurisdiction’s transportation system.
- Transportation System Data – Include the physical and functional characteristics of the transportation system.
- Travel time – The average time spent by vehicles traversing a roadway.
- Trip End – A single or one-direction vehicle movement with either the origin or the destination inside the study site and one origin or destination external to the land use.
- Trip Assignment – Determines the amount of traffic that will use each access point and route on the roadway network and determines the number of site-generated turning and through movements at each intersection and roadway segment of the study area network.
- Trip Distribution – Trip-making characteristics between the proposed development and off-site areas to determine trip origins and destinations.
- Trip Generation – The number and type of trips associated with site development.
- Trip Generation Equations – Trip generation fitted equations based on data collected.
- Trip Generation Rates – Weighted average trip generation rate based on one unit of independent variable.
- Trip Types – Three types of trips generated by ITE trip generation:
  - 1) Primary trips
  - 2) Pass-by trips
  - 3) Diverted trips
- Truck – In this Handbook the same as *heavy vehicle*.
- Two-way – Movement allowed in either direction.
- Undivided – As used in the *Generalized Tables*, a roadway with no *median*.
- Urban area – a) A place with a population between 5,000 and 50,000 and not in an *urbanized area*.  
b) A general characterization of places where people live and work.

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- Urban infill – A land development strategy aimed at directing higher density residential and mixed-use development to available sites in developed areas to maximize the use of adequate existing infrastructure; often considered an alternative to low density land development.
- Urbanized area – An area within an MPO’s designated urbanized area boundary. The minimum population for an urbanized area is 50,000 people.
- $v/c$  – The ratio of *demand flow rate* to *capacity* of a signalized intersection, segment or facility.
- Vehicle – A motorized mode of transportation.
- Volume – In this Handbook usually the number of vehicles, and occasionally persons, passing a point on a roadway during a specified time period, often 1 hour; a volume may be measured or estimated, either of which could be a constrained value or a hypothetical demand volume.
- ZDATA – Socioeconomic data input to FSUTMS.

## Appendix B

### FDOT Transportation Site Impact Handbook Website and Document URLs

The [FDOTTransportationImpactHandbook.com](http://FDOTTransportationImpactHandbook.com) website is maintained by the FDOT Systems Planning Office to support the Transportation Site Impact Handbook. The handbook is designed to be a work in progress that is updated as required.

The document contains many URLs to resource materials on the internet. In order to minimize the number of broken links that occur as websites change over time, many of the .pdf documents were copied to a centralized location. This appendix is a listing of the URLs to the documents. The bit.ly/ link is a shortened URL that accesses the current location of the document in the RESOURCES tab of the website. The website is organized with the following tabs:

<b>HOME</b>	The latest copy of the Transportation Site Impact Handbook is linked from the HOME page. The recommended practice is to right click, and save the document to your computer. When the document is opened in Acrobat, and a link is clicked, it will open a window in a browser. This will make navigation easy between the two windows.
<b>NOTES</b>	Previous versions of the handbook will be listed here.
<b>RESOURCES</b>	Brief descriptions and links to the documents referenced in the handbook. They are listed in different categories, as well as a complete list of documents.
<b>PRESENTATIONS</b>	Supporting audio/visual presentations that explain specific topics. As new presentations are developed, this section will be updated.
<b>TRAINING</b>	Schedule of upcoming training events.
<b>CONTACTS</b>	List of District and Central Office contacts for more information

All Statutes found within the Transportation Site Impact Handbook can be located at:	<a href="http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&amp;Submenu=1&amp;Tab=statutes&amp;CFID=158342927&amp;CFTOKEN=11600739">www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&amp;Submenu=1&amp;Tab=statutes&amp;CFID=158342927&amp;CFTOKEN=11600739</a>
All Administrative Codes found within the Transportation Site Impact Handbook:	<a href="https://www.flrules.org/notice/search.asp">https://www.flrules.org/notice/search.asp</a>

### Chapter 1

Transportation Site Impact Handbook Website:	<a href="http://FDOTTransportationImpactHandbook.com">FDOTTransportationImpactHandbook.com</a>
DEO's website:	<a href="http://www.floridajobs.org/community-planning-and-development">www.floridajobs.org/community-planning-and-development</a>
Quality/Level of Service Handbook:	<a href="http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT_QLOS_Handbook_2018.pdf">http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT_QLOS_Handbook_2018.pdf</a> <a href="http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT_QLOS_Handbook_2018.pdf">http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT_QLOS_Handbook_2018.pdf</a>
Incorporate Transit into the FDOT DRI Review Process:	<a href="https://www.cutr.usf.edu/wp-content/uploads/2012/07/Guidelines-and-Performance-Measures-to-Incorporate-Transit-and-Other-Multimodal-Considerations-into-the-FDOT-DRI-Review-Process.pdf">https://www.cutr.usf.edu/wp-content/uploads/2012/07/Guidelines-and-Performance-Measures-to-Incorporate-Transit-and-Other-Multimodal-Considerations-into-the-FDOT-DRI-Review-Process.pdf</a>
How We Shall Grow:	<a href="http://www.myregion.org/">www.myregion.org/</a>
How Shall We Grow PDF:	<a href="http://www.myregion.org/clientuploads/pdfs/HSWG_final.pdf">www.myregion.org/clientuploads/pdfs/HSWG_final.pdf</a>

Reorganization Chapter 163, Part II, F.S.: <http://www.floridajobs.org/docs/default-source/2015-community-development/community-planning/comp-plan/statutorychangestoch163.pdf?sfvrsn=2>

## Chapter 2

Mike on Traffic: [mikeontraffic.com/how-to-professionally-review-a-traffic-study/](http://mikeontraffic.com/how-to-professionally-review-a-traffic-study/)

TCQSM: <http://www.trb.org/Main/Blurbs/169437.aspx>

NCHRP Report 616: <http://www.trb.org/Main/Blurbs/160228.aspx>

2010 Highway Capacity Manual: <http://www.trb.org/Main/Blurbs/164718.aspx>

Rule 14-96, F.A.C.: <https://www.flrules.org/gateway/readFile.asp?sid=0&tid=0&cno=14-96&caid=250859&type=4&file=14-96.doc>

Rule 14-97, F.A.C.: <https://www.flrules.org/gateway/readFile.asp?sid=0&tid=0&cno=14-97&caid=250956&type=4&file=14-97.doc>

FDOT Standard K Factor: [www.dot.state.fl.us/planning/systems/programs/sm/transition/information/default.shtm](http://www.dot.state.fl.us/planning/systems/programs/sm/transition/information/default.shtm)

FDOT Project Traffic Forecasting Handbook: [www.dot.state.fl.us/planning/statistics/trafficdata/ptf.pdf](http://www.dot.state.fl.us/planning/statistics/trafficdata/ptf.pdf)

Transportation Concurrency Best Practices (DCA 2007): [https://www.cutr.usf.edu/wp-content/uploads/2012/07/DCA\\_TCBP-Guide.pdf](https://www.cutr.usf.edu/wp-content/uploads/2012/07/DCA_TCBP-Guide.pdf)

Producing a TDP: [www.dot.state.fl.us/transit/Pages/Draft\\_Guidance\\_for\\_Producing\\_a\\_TDP.doc](http://www.dot.state.fl.us/transit/Pages/Draft_Guidance_for_Producing_a_TDP.doc)

Framework for TOD: [http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Framework\\_for\\_Transit\\_Oriented\\_Development.pdf](http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Framework_for_Transit_Oriented_Development.pdf)

FTI Request Form: [www.dot.state.fl.us/planning/statistics/trafficdata/fti.shtm](http://www.dot.state.fl.us/planning/statistics/trafficdata/fti.shtm)

Florida Traffic Online: <http://www.fdot.gov/statistics/trafficdata/>

Quality/Level of Service Handbook: [http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT\\_QLOS\\_Handbook\\_2018.pdf](http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT_QLOS_Handbook_2018.pdf)  
[http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT\\_QLOS\\_Handbook\\_2018.pdf](http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/FDOT_QLOS_Handbook_2018.pdf)

Mike on Traffic: [www.mikeontraffic.com/top-9-things-to-review-with-a-field-visit/](http://www.mikeontraffic.com/top-9-things-to-review-with-a-field-visit/)

Mike on Traffic: [www.mikeontraffic.com/11-items-to-get-from-aerials-when-preparing-for-a-field-visit/](http://www.mikeontraffic.com/11-items-to-get-from-aerials-when-preparing-for-a-field-visit/)

Incorporate Transit into the FDOT DRI Review Process: <https://www.cutr.usf.edu/wp-content/uploads/2012/07/Guidelines-and-Performance-Measures-to-Incorporate-Transit-and-Other-Multimodal-Considerations-into-the-FDOT-DRI-Review-Process.pdf>

Multimodal Trade-off Analysis in Traffic Impact Studies: [http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Multimodal\\_Tradeoff.pdf](http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Multimodal_Tradeoff.pdf)

LOS Policy 000-525-006-c: [http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/LOS\\_Policy\\_April\\_2017.pdf](http://www.fdot.gov/planning/systems/programs/sm/los/pdfs/LOS_Policy_April_2017.pdf)

Interchange Access Request: [www.dot.state.fl.us/planning/systems/programs/sm/intjus/default.shtm](http://www.dot.state.fl.us/planning/systems/programs/sm/intjus/default.shtm)

ITE Trip Generation Manual: <https://www.ite.org/tripgeneration/index.asp>

Transit Oriented Development: [www.fltod.com/](http://www.fltod.com/)

Accessing Transit Handbook: [http://www.dot.state.fl.us/transit/Pages/2008\\_Transit\\_Handbook.pdf](http://www.dot.state.fl.us/transit/Pages/2008_Transit_Handbook.pdf)

FDOT Public Transit Office: [www.dot.state.fl.us/transit/](http://www.dot.state.fl.us/transit/)

Internal Capture Example (3 uses): <http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/2013Kaku.pdf>

Internal Capture Example (4 uses): <http://www.fdot.gov/planning/systems/documents/sm/default.shtm>

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FDOT Research Documents:	<a href="http://www.dot.state.fl.us/research-center/documents.shtm">www.dot.state.fl.us/research-center/documents.shtm</a>
NCHRP 684:	<a href="http://www.trb.org/Publications/Blurbs/165014.aspx">http://www.trb.org/Publications/Blurbs/165014.aspx</a>
Excel Spreadsheet NCHRP 684:	<a href="http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_684.xlsx">onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_684.xlsx</a>
Community Capture:	<a href="http://www.dot.state.fl.us/planning/systems/programs/sm/siteimp/PDFs/capturemeth.pdf">http://www.dot.state.fl.us/planning/systems/programs/sm/siteimp/PDFs/capturemeth.pdf</a>
Traffic Trends Analysis Tool:	<a href="http://www.fdot.gov/planning/systems/programs/SM/ptf/default.shtm">http://www.fdot.gov/planning/systems/programs/SM/ptf/default.shtm</a>
FHWA Travel Monitoring:	<a href="http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm">www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm</a>
FSUTMS online:	<a href="http://www.fsutmsonline.net/online_training/index.html">www.fsutmsonline.net/online_training/index.html</a>
Transit Boardings Estimation Tool:	<a href="http://www.tbest.org/">www.tbest.org/</a>
NCHRP 255	<a href="http://www.trb.org/main/blurbs/170900.aspx">http://www.trb.org/main/blurbs/170900.aspx</a>
NCHRP 255 Webinar:	<a href="http://www.trb.org/Main/Blurbs/175902.aspx">http://www.trb.org/Main/Blurbs/175902.aspx</a>
Turns 5:	<a href="http://www.fdot.gov/planning/systems/documents/sm/default.shtm">http://www.fdot.gov/planning/systems/documents/sm/default.shtm</a>
Driveway Information Guide:	<a href="http://www.dot.state.fl.us/planning/systems/programs/sm/accman/pdfs/driveway2008.pdf">www.dot.state.fl.us/planning/systems/programs/sm/accman/pdfs/driveway2008.pdf</a>
Technical Resources on Access Management:	<a href="http://www.dot.state.fl.us/planning/systems/programs/sm/accman/default.shtm">www.dot.state.fl.us/planning/systems/programs/sm/accman/default.shtm</a>
NCHRP Report 616:	<a href="http://www.trb.org/Main/Blurbs/160228.aspx">http://www.trb.org/Main/Blurbs/160228.aspx</a>
Performance Measures:	<a href="http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_PL/FDOT_BDK77_977-14_rpt.pdf">www.dot.state.fl.us/research-center/Completed_Proj/Summary_PL/FDOT_BDK77_977-14_rpt.pdf</a>
Transit Guidelines:	<a href="https://www.cutr.usf.edu/wp-content/uploads/2012/07/Guidelines-and-Performance-Measures-to-Incorporate-Transit-and-Other-Multimodal-Considerations-into-the-FDOT-DRI-Review-Process.pdf">https://www.cutr.usf.edu/wp-content/uploads/2012/07/Guidelines-and-Performance-Measures-to-Incorporate-Transit-and-Other-Multimodal-Considerations-into-the-FDOT-DRI-Review-Process.pdf</a>
Multimodal Guidelines:	<a href="http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Multimodal_Tradeoff.pdf">http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Multimodal_Tradeoff.pdf</a>
Highway Capacity Manual:	<a href="http://www.trb.org/Main/Blurbs/164718.aspx">www.trb.org/Main/Blurbs/164718.aspx</a>
FDOT Interchange Handbook:	<a href="http://www.dot.state.fl.us/planning/systems/programs/sm/intjus/default.shtm">www.dot.state.fl.us/planning/systems/programs/sm/intjus/default.shtm</a>
Accessing Transit:	<a href="http://www.dot.state.fl.us/transit/Pages/2008_Transit_Handbook.pdf">http://www.dot.state.fl.us/transit/Pages/2008_Transit_Handbook.pdf</a>
Transit Cooperative Research Program (TCRP) Report 100:	<a href="http://onlinepubs.trb.org/onlinepubs/tcrp/docs/tcrp100/Part0.pdf">http://onlinepubs.trb.org/onlinepubs/tcrp/docs/tcrp100/Part0.pdf</a>

### Chapter 3

The Community Planning Act:	<a href="http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&amp;URL=0100-0199/0163/0163PartIIContentsIndex.html&amp;StatuteYear=2017&amp;Title=-%3E2017-%3EChapter%20163-%3EPart%20II">http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&amp;URL=0100-0199/0163/0163PartIIContentsIndex.html&amp;StatuteYear=2017&amp;Title=-%3E2017-%3EChapter%20163-%3EPart%20II</a>
Florida Statutes:	<a href="http://www.leg.state.fl.us/statutes/index.cfm">www.leg.state.fl.us/statutes/index.cfm</a>
Florida Administrative Code:	<a href="https://www.flrules.org/">https://www.flrules.org/</a>
Expedited State Review Flowchart:	<a href="http://www.floridajobs.org/docs/default-source/2015-community-development/community-planning/comp-plan/expeditedstaterreviewprocessflowchart.pdf?sfvrsn=2">http://www.floridajobs.org/docs/default-source/2015-community-development/community-planning/comp-plan/expeditedstaterreviewprocessflowchart.pdf?sfvrsn=2</a>
State Coordinated Review Flowchart:	<a href="http://www.floridajobs.org/docs/default-source/2015-community-development/community-planning/comp-plan/statecoordinatedreviewprocessflowchart.pdf?sfvrsn=2">http://www.floridajobs.org/docs/default-source/2015-community-development/community-planning/comp-plan/statecoordinatedreviewprocessflowchart.pdf?sfvrsn=2</a>
Objections, Recommendations and Comments, Reports, Notices of Intent and Public School Interlocal Agreements:	<a href="http://specialdistrictreports.floridajobs.org/webreports/ORCreports/ORCindex.aspx">http://specialdistrictreports.floridajobs.org/webreports/ORCreports/ORCindex.aspx</a>
Guide to the Annual Update of the Capital Improvements Element:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/capital-improvements-element/bit.ly/1fWiRVW">www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/capital-improvements-element/bit.ly/1fWiRVW</a>
Sample Spreadsheet on Information for Concurrency Management Systems:	<a href="http://www.cutr.usf.edu/research/access_m/pdf/CMS.xls">www.cutr.usf.edu/research/access_m/pdf/CMS.xls</a>
District Review of Local Government Comprehensive Plans:	<a href="http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/525010101.pdf">www2.dot.state.fl.us/proceduraldocuments/procedures/bin/525010101.pdf</a>
Transportation Concurrency Best Practices Guide:	<a href="https://www.cutr.usf.edu/wp-content/uploads/2012/07/DCA_TCBP-Guide.pdf">https://www.cutr.usf.edu/wp-content/uploads/2012/07/DCA_TCBP-Guide.pdf</a>
Florida Administrative Code Rule 73C-40:	<a href="https://www.flrules.org/gateway/readFile.asp?sid=0&amp;tid=0&amp;cn=73C-40&amp;caid=609565&amp;type=4&amp;file=73C-40.doc">https://www.flrules.org/gateway/readFile.asp?sid=0&amp;tid=0&amp;cn=73C-40&amp;caid=609565&amp;type=4&amp;file=73C-40.doc</a>
Escambia County Example:	<a href="https://myescambia.com/docs/default-source/sharepoint-developmental-services/planning-zoning/optional-sector-plan-detailed-specific-area-plan-boundary.pdf?sfvrsn=ee7957dd_9">https://myescambia.com/docs/default-source/sharepoint-developmental-services/planning-zoning/optional-sector-plan-detailed-specific-area-plan-boundary.pdf?sfvrsn=ee7957dd_9</a>
Collier County Example:	<a href="http://www.colliergov.net/Modules/ShowDocument.aspx?documentid=30764">www.colliergov.net/Modules/ShowDocument.aspx?documentid=30764</a>
Model Regulations and Plan Amendments for Multimodal Transportation Districts Report:	<a href="https://www.cutr.usf.edu/oldpubs/MMTD_Regs_Draft.pdf">https://www.cutr.usf.edu/oldpubs/MMTD_Regs_Draft.pdf</a>
Transit Development Plan:	<a href="http://www.dot.state.fl.us/transit/Pages/Draft_Guidance_for_Producing_a_TDP.doc">www.dot.state.fl.us/transit/Pages/Draft_Guidance_for_Producing_a_TDP.doc</a>
Framework for Transit Oriented Development:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/urban-planning/transit-oriented-development">www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/urban-planning/transit-oriented-development</a>
FDOT Policy Planning resources:	<a href="http://www.fdot.gov/planning/policy/programs.shtm">http://www.fdot.gov/planning/policy/programs.shtm</a>
FDOT Q/LOS resources:	<a href="http://www.fdot.gov/planning/systems/programs/sm/los/">http://www.fdot.gov/planning/systems/programs/sm/los/</a>
TOD in Florida website	<a href="http://www.fltod.com/research_and_case_studies.htm">www.fltod.com/research_and_case_studies.htm</a>
Institute of Transportation Engineers	<a href="http://www.ite.org/">www.ite.org/</a>
SIS and Emerging SIS facilities	<a href="http://www.fdot.gov/planning/systems/programs/mspi/pdf/SIS_Handbook_2016_revised.pdf">http://www.fdot.gov/planning/systems/programs/mspi/pdf/SIS_Handbook_2016_revised.pdf</a>
Reconnecting America	<a href="http://reconnectingamerica.org/">reconnectingamerica.org/</a>
Comprehensive Plan Amendment Submittal and Processing Guidelines:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/comprehensive-planning/amendment-submittal-and-processing-guidelines">www.floridajobs.org/community-planning-and-development/programs/comprehensive-planning/amendment-submittal-and-processing-guidelines</a>

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Evaluation and Appraisal Reports- Division of Community Planning:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/evaluation-and-appraisal-of-comprehensive-plans">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/evaluation-and-appraisal-of-comprehensive-plans</a>
Capital Improvement Elements- Division of Community Planning:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/capital-improvements-element">www.floridajobs.org/community-planning-and-development/programs/technical-assistance/planning-initiatives/infrastructure-planning/capital-improvements-element</a>
Developments of Regional Impact (DRI) and Florida Quality Developments:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/general-information">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/general-information</a>
Sector Planning Program:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/sector-planning-program">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/sector-planning-program</a>
Transportation Planning:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/transportation-planning">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/transportation-planning</a>
Transit Oriented Development:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/transportation-planning">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/transportation-planning</a>
Mobility Fees:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/transportation-planning">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/transportation-planning</a>
Rural Land Stewardship Area Program:	<a href="http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/rural-land-stewardship-area-program">http://www.floridajobs.org/community-planning-and-development/programs/community-planning-table-of-contents/rural-land-stewardship-area-program</a>
DEO Community Planning:	<a href="http://www.floridajobs.org/community-planning-and-development">www.floridajobs.org/community-planning-and-development</a>

## Chapter 4

Lake Sumter MPO Roadway Constraint Policy:	<a href="http://www.lakesumtermpo.com/pdfs/policies/corridor_constraint_policy_2008.pdf">http://www.lakesumtermpo.com/pdfs/policies/corridor_constraint_policy_2008.pdf</a>
Plans Prep Manual:	<a href="http://www.dot.state.fl.us/rddesign/PPMManual/2014/Volume1/2014Volume1.pdf">www.dot.state.fl.us/rddesign/PPMManual/2014/Volume1/2014Volume1.pdf</a>
Multimodal Tradeoff Analysis in Traffic Impact Studies:	<a href="http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Multimodal_Tradeoff.pdf">http://www.fdot.gov/planning/systems/programs/SM/siteimp/PDFs/Multimodal_Tradeoff.pdf</a>
Context Sensitive Solutions:	<a href="http://www.fdot.gov/roadway/csi/default.shtm">http://www.fdot.gov/roadway/csi/default.shtm</a>
Corridor Preservation Best Practices:	<a href="https://www.cutr.usf.edu/oldpubs/BestPracticesReport.pdf">https://www.cutr.usf.edu/oldpubs/BestPracticesReport.pdf</a>
Strategies for Comprehensive Corridor Management:	<a href="http://www.fdot.gov/research/Completed_Proj/Summary_PL/FDOT_BD544_06_rpt-web.pdf">http://www.fdot.gov/research/Completed_Proj/Summary_PL/FDOT_BD544_06_rpt-web.pdf</a>
Accomplishing Alternative Access on Major Transportation Corridors:	<a href="https://www.cutr.usf.edu/wp-content/uploads/2012/08/SIS-CM-Guide-07.pdf">https://www.cutr.usf.edu/wp-content/uploads/2012/08/SIS-CM-Guide-07.pdf</a>
National TDM Clearinghouse:	<a href="http://www.commuterservices.com/research/">http://www.commuterservices.com/research/</a>
Incorporating TDM into the Land Development Process:	<a href="http://www.nctr.usf.edu/abstracts/abs576-11.htm">www.nctr.usf.edu/abstracts/abs576-11.htm</a>
Interchange Access Request User's Guide:	<a href="http://www.dot.state.fl.us/planning/systems/programs/sm/intjus/default.shtm">http://www.dot.state.fl.us/planning/systems/programs/sm/intjus/default.shtm</a>
Transit Oriented Development Design Guidance:	<a href="http://www.dot.state.fl.us/rail/PlanDevel/RSAC/Mtg3files/Delaney%20handout%202.pdf">www.dot.state.fl.us/rail/PlanDevel/RSAC/Mtg3files/Delaney%20handout%202.pdf</a>
Accessing Transit: Design Handbook for Florida Bus Passenger Facilities:	<a href="http://www.dot.state.fl.us/transit/Pages/2008_Transit_Handbook.pdf">http://www.dot.state.fl.us/transit/Pages/2008_Transit_Handbook.pdf</a>
Land Developer Participation in Providing for Bus Transit Facilities/Operations:	<a href="https://www.nctr.usf.edu/Land%20Developer.htm">https://www.nctr.usf.edu/Land%20Developer.htm</a>
FDOT's Multimodal Transportation Districts and Area-wide Quality of Service Handbook.	<a href="http://www.dot.state.fl.us/planning/systems/sm/los/pdfs/MMTDQOS.pdf">http://www.dot.state.fl.us/planning/systems/sm/los/pdfs/MMTDQOS.pdf</a>
Model Regulations and Plan Amendments for Multimodal Transportation Districts:	<a href="https://www.cutr.usf.edu/oldpubs/MMTD_Regs_Draft.pdf">https://www.cutr.usf.edu/oldpubs/MMTD_Regs_Draft.pdf</a>
Procedure on Development of the Florida Intrastate Highway System:	<a href="http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/525030250.pdf">www2.dot.state.fl.us/proceduraldocuments/procedures/bin/525030250.pdf</a>
SIS Criteria and Thresholds:	<a href="http://teachamerica.com/tih/PDF/AdoptedSISCriteria2010.pdf">teachamerica.com/tih/PDF/AdoptedSISCriteria2010.pdf</a>
Policy on the Geometric Design of Streets and Highways, (AASHTO):	<a href="https://nacto.org/docs/usdg/geometric_design_highways_and_streets_aashto.pdf">https://nacto.org/docs/usdg/geometric_design_highways_and_streets_aashto.pdf</a>
Transportation Costs:	<a href="http://www.fdot.gov/planning/Policy/To%20Delete/costs/">http://www.fdot.gov/planning/Policy/To%20Delete/costs/</a>
Transportation Concurrence Best Practices Guide:	<a href="https://www.cutr.usf.edu/wp-content/uploads/2012/07/DCA_TCBP-Guide.pdf">https://www.cutr.usf.edu/wp-content/uploads/2012/07/DCA_TCBP-Guide.pdf</a>
Mobility Fee Methodology:	<a href="https://www.cutr.usf.edu/wp-content/uploads/2012/08/2009-06FloridaMobilityFeeStudyFinal.pdf">https://www.cutr.usf.edu/wp-content/uploads/2012/08/2009-06FloridaMobilityFeeStudyFinal.pdf</a>

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