

**GUIDELINES FOR**

# **TRAFFIC IMPACT ANALYSIS (TIA)**

**FOR REZONING APPLICATIONS AND OTHER  
DEVELOPMENT APPROVALS REQUIRING  
TRANSPORTATION IMPACT ANALYSIS  
IN SUMTER COUNTY, FLORIDA**

**July 17, 2007**

## PURPOSE AND APPLICABILITY

The purpose of the traffic impact study (TIS) is to identify the potential traffic impacts of new development on the transportation system and to develop mitigation strategies to offset the impact according to the methodologies and provisions as described herein. Guidelines apply to all rezoning applications (including Euclidean rezoning and rezoning within a Development of Regional Impact [DRI]<sup>1</sup>) and new or expired preliminary plans or preliminary site plans that do not have a TIS submitted to the County with a request for development approval within the last five years<sup>2</sup>, or have changed the build-out date or land-use assumptions in the TIS for the project. Unless otherwise required by the Development Review Committee (DRC)<sup>3</sup> or the Board of County Commissioners (Board), a TIS as it relates to the substandard section shall not be required for any single development generating less than **50** driveway daily trips. The following thresholds will determine the level of study that will need to be performed depending on the number of trips a development produces:

- a. The following evaluation will be required for developments generating less than 50 average daily trips, according to the Institute of Transportation Engineers, *Trip Generation*, current edition:
  1. Determination of adequate capacity will be made for projects which do not access any segment identified on the Concurrency Determination Network.
  2. If traffic generated by the proposed development is expected to travel on the Concurrency Determination Network, a determination of adequate capacity will be made for the project if the Directly Accessed Segment(s) resulting level of service meets the adopted level of service standard.
  3. If the Directly Accessed Segment for the proposed development does not meet the adopted level of service standard, the planning director will notify the applicant that evaluation of future roadway operating conditions must be undertaken pursuant to a Minor Land Development Traffic Assessment (LDTA) acceptable operating conditions.
- b. Applicants proposing developments which generate 50 but less than or equal to 1,000 average daily trips, according to the Institute of Transportation Engineers, *Trip Generation*, current edition, must perform a Minor Land Development Traffic Assessment (LDTA) for concurrency determination.
- c. A Major LDTA shall be required for all proposed developments generating more than 1,000 average daily trips, according to the Institute of Transportation Engineers, *Trip Generation*, current edition.
- d. A Comprehensive Plan Amendment Traffic Study will be required for all land use plan amendments that consider 10 acres or more of land or small scale plan amendments that are projected to generate over 1,000 daily trips.

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<sup>1</sup> Rezoning within a DRI shall be required to complete only the substandard road portion of the TIS.

<sup>2</sup> Measured from the Board of County Commissioners approval date of these guidelines. Submission of TIS within the last five years shall not exempt any request for with development approval from the substandard road portion of the TIS.

<sup>3</sup> In the event the DRC ceases to exist, the decision-making authority and duties set forth in these guidelines shall revert to the County Administrator; however, the County Administrator may refer any such authority or duties to the Board.

For purposes of this section, a "single development" shall include any development, parcel of land, lot, and tract, and contiguous or nearby developments, parcels, lots, or tracts that are 1) developed by the same or a related development or landowner or 2) developed as part of the same zoning plan, preliminary plan, preliminary site plan, plat, or other unified or common plan of development, as determined by the County Administrator or his designee consistent with the purpose and intent of these guidelines. These guidelines are in addition to the requirements of the access management regulations and in the event of any conflict between these guidelines and such regulations, the more stringent requirements shall apply.

## **1. METHODOLOGY STATEMENT**

Prior to conducting any study, a methodology statement shall be prepared by the applicant and submitted for review and approval by the County<sup>4</sup>. The purpose of the methodology statement is to establish agreed upon methodologies and assumptions prior to the start of the study. A methodology statement shall be prepared using the guidelines provided in the following paragraphs. The methodology statement will be first reviewed by a County representative, if necessary, through a methodology meeting with the applicant's consultant. The applicant's consultant will then revise the statement based upon agreed upon methodologies. The applicant shall ensure the consultant does not prepare a traffic study without an approved methodology statement signed by the appropriate County representative.

## **2. IMPACTED ROADWAYS/INTERSECTIONS**

The following procedures shall be used to determine the extent of the road network to be studied:

- a. Traffic attributable to the proposed development shall be assigned on all segments on the Concurrency Determination Network that are impacted by the total site traffic to a level equal to or greater than 3 percent of the Level of Service C Peak Hour Generalized Planning Capacity and according to the following criteria:
  - i. For a Minor LDTA, impacted segments include segments within ½ mile of the project site and segments outside of a ½ mile of the project site where the project consumes greater than 3 percent of the Generalized Peak Hour Two-Way Maximum Service Volume or more than 70 peak hour two way trips.
  - ii. For a Major LDTA, impacted segments include segments within 1 mile of the project site and segments outside of 1 mile of the project site where the project consumes greater than 3 percent of the Generalized Peak Hour Two-Way Maximum Service Volume or more than 70 peak hour two way trips.
  - iii. For a Comprehensive Plan Amendment Traffic Study, impacted segments include segments within 1 mile of the access connection to the project site and segments outside of 1 mile of the access connection to the project site where the project consumes 5 percent or more of the Generalized Peak Hour Two-Way Maximum Service Volume or more than 120 peak hour two way trips.

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<sup>4</sup> Any reference to the "County" in these guidelines shall mean the County or its consultants, contractors, or employees, as applicable.

- b. The project's total site traffic shall be used to determine the impacted segments including all prior phases of the same development or adjacent development under common ownership. The total site traffic will be the sum of traffic generated by:
  - i. The existing development on the site;
  - ii. The specific development for which concurrency approval is being requested; and
  - iii. Future phases of development for which approval may be requested.
- c. For the purposes of concurrency determination, only traffic from the specific development for which concurrency approval is being requested shall be evaluated on the impacted segments.
- d. Additional impacted segments may be added to the study network by the planning director in order to maintain the adopted level of service standards.
- e. The impact of the proposed development's traffic on all Directly Accessed Roadway Segments shall be evaluated for ensuring the maintenance of the adopted level of service standard on those roadways.
- f. For the purposes of an LDTA, the impacted segments due to a proposed development's traffic shall consist of only those roadways and future roadways:
  - i. Shown on the Concurrency Determination Network;
  - ii. Proposed for inclusion as part of the Concurrency Determination Network and scheduled for initiation of construction within the first year of the Florida Department of Transportation, Sumter County, or other responsible jurisdiction's current adopted Five-Year Work Program, CIE and/or the Lake-Sumter MPO TIP; or
  - iii. Other roadways, as required by the planning director, scheduled for completion prior to the initial date of proposed development's impact on the roadway, if such roadway or improvement is to be completed within one year pursuant to a local government Development Agreement or binding contract and proposed for inclusion as part of the Concurrency Determination Network.

**AND/OR**

- a. Major intersections (all signalized intersections and/or unsignalized intersections of major roadways) that are part of the impacted roadways, major intersections that are within 1,000 feet of the site access, and all site-access intersections are considered impacted.
- b. With the Traffic Study Report, the applicant, on a separate page, shall provide a list and number of the intersections studied for the purpose of establishing the review fee.

### 3. ANALYSIS SCENARIOS

- a. Existing scenario is defined as the analysis of existing traffic on the existing, plus committed network.
- b. Future scenario is defined as the analysis of existing traffic, plus background traffic, plus the project's traffic on the E+C (existing plus committed) network. The E+C network is defined as all the existing roads, plus all the improvements that are funded for construction within the first **three** years of the local government's or the FDOT's adopted Transportation Improvement Programs.
- c. Base scenario is defined as the analysis of existing traffic, plus background traffic on the E+C network.

This scenario will not be required if no mitigation is required as the result of the future scenario analysis.

- d. Future scenario with mitigation is defined as analysis of existing traffic, plus background traffic, plus project traffic on the E+C network with the inclusion of any improvements that are required for mitigation.

This scenario will not be required if no mitigation is required as the result of the future scenario analysis.

### 4. GENERAL ANALYSIS REQUIREMENTS AND SOFTWARE

- a. Level of Service (LOS) and turn-lane length analysis (in accordance with the County's access management standards) are required for all site-access intersections and the first major impacted intersection from the site-access driveways not exceeding one mile along the major road.
- b. For analysis of roadway segments outside of the area as described in Paragraph 4.a, the use of the FDOT's generalized tables is permitted. No existing analysis scenario as described in Paragraph 3(a) is required for roads or intersections outside of the area as described in Paragraph 4.a. unless the roadway segment is greater than 3 percent of the Generalized Peak Hour Two-Way Maximum Service Volume or more than 70 peak hour two way trips.
- c. Road analysis sections shall be developed based on acceptable engineering/planning practices. The operating LOS will be evaluated on the basis of the entire Analysis Sections.
- d. All analysis shall be done for conditions during the highest 100<sup>th</sup> hour of the year. Other time periods or a.m. analysis may be requested in conjunction with the first sufficiency review at the latest.
- e. Use of the analysis software is allowed in accordance with the following:
  - i. The latest version of Highway Capacity Software (HCS) is the preferred software for analyzing the delay and the LOS at unsignalized intersections.

- ii. For all signalized intersections, the latest version of Synchro Software using the percentile delay methodology is required.
- iii. For road segment analysis, the preferred software is the latest version of Synchro and the latest version of High plan (uninterrupted roads, more than three-mile signal spacing).
- iv. The electronic copy of the analysis files shall be provided. The hard copy of the summary sheets shall be provided unless otherwise requested by the County.
- v. Other analysis software may be used if requested and approved by the County.
- vi. If any analysis software is used as an alternative to the FDOT's generalized tables, a detailed intersection analysis shall be required.
- vii. The input data to the software shall be field verified and provided in the report including, but not limited to:
  - 1. Geometry, including lane widths and turn-lane lengths.
  - 2. Heavy vehicle factor or two percent if data is not available.
  - 3. Directional factor (D Factor).
  - 4. Peak-hour factor (PHF).
  - 5. Existing signal timing and phasing (can be obtained from the County). The existing signal timing, including its maximum and minimum settings, shall not be changed. Any timing change outside of the minimum and maximum setting may be presented for County approval as part of the mitigation strategy.
  - 6. Segment lengths.
- viii. If the FDOT's generalized tables are used, the following information shall be provided in a separate table.
  - 1. Class of roadway (interrupted or uninterrupted).
  - 2. County or State maintained.
  - 3. (c) Area type.
  - 4. Signal density.
  - 5. Class of roadway (interrupted or uninterrupted).
  - 6. LOS standard.
- ix. Other parameters that govern the roadway/intersection capacity analysis shall be based on the parameters described in the latest version of the *Highway Capacity Manual*.

## 5. STUDY FORMAT

The general Traffic Study format shall follow the outline below unless approved otherwise by the planning director:

- a. Letter of transmittal;
- b. Title page;
- c. Table of contents to include, sections, list of figures, list of tables, and list of appendices;
- d. Provide page numbers for the entire report, including the appendices;

- e. Introduction which includes description and location of the proposed development, current and proposed zoning, size of the project and summary of the methodologies agreed to in the pre-application conference;
- f. Description of existing level of service conditions for the peak hour which includes existing traffic volumes and roadway characteristics for all segments within the study area;
- g. Description of future conditions for the peak hour which includes the following information:
  - i. Background Traffic Growth and Future Traffic shall be based on the following:
    - 1. The calculation of background traffic will be done using the adopted 3 year or 5 year growth rates in the current Annual Concurrency Report or other County provided growth rates for the respective roadways as determined at the pre-application conference.
    - 2. The concurrency test will be the existing traffic volumes plus the background growth traffic for 3 or 5 years plus the project traffic. If this volume is less than or equal to 90% of the Peak Hour Two-Way Maximum Service Volume at the adopted level of service standard, concurrency is satisfied. If this volume is greater than 90% of the Peak Hour Two-Way Maximum Service Volume at the adopted level of service standard, a facility level of service analysis will be required.
    - 3. The analysis will be documented and provided to the County in both hard copy and electronic format as prescribed by the County.
    - 4. Traffic analyses shall be reviewed for reasonableness and consistency with the agreed upon methodology by the applicant prior to submittal.
  - ii. Trip generation estimate (from the *Institute of Transportation Engineers, Trip Generation*, current edition) or an alternative method approved or provided by the planning director;
  - iii. Percent new trips and internal capture estimates;
  - iv. Traffic distribution and assignment methodology;
  - v. Area of influence (determination of road segments to be included in the study network);
  - vi. Impacted segments traffic volumes (peak and off-peak directions);
  - vii. All analysis shall evaluate conditions during the peak hour (highest 100<sup>th</sup> hour of the year). Other time periods or AM analysis may be requested in conjunction with the first sufficiency review;
  - viii. Intersection analysis (required when the approach links are operating at 90% or more of the Level of Service C Peak Hour Two-Way Generalized Maximum Service Volume) or more than 70 peak hour two way trips; and
  - ix. Facility analysis (required if the total traffic on an impacted roadway segment consumes 90 percent or more of the Level of Service C Peak Hour Generalized Planning Capacity or if the project traffic consumes equal to or greater than 3 percent of the LOS "C" Peak

Hour Two-Way Generalized Maximum Service Volume or more than 70 peak hour two way trips;

- h. Roadway needs (identification of proposed improvements and cost);
- i. Internal site circulation and access needs; and
- j. An appendix which includes:
  - i. Traffic count data;
  - ii. Trip generation with internal and adjacent street capture worksheets;
  - iii. Trip distribution and assignment worksheets;
  - iv. Intersection capacity analysis worksheets;
  - v. Link capacity analysis worksheets;
  - vi. Computerized modeling documentation; and
  - vii. Any other relevant analysis worksheets.

## **6. STUDY SUBMITTAL**

The following files shall be submitted electronically, in addition to hardcopies, unless specified by the planning director:

- a. Report Content
  - i. Complete Traffic Impact Analysis Report in pdf format
  - ii. Complete TIA Report in text format (Provide Word, Word Perfect, etc.)
  - iii. Study area (map)
  - iv. Description of proposed land uses
  - v. Site Location relative to surrounding roadway network (map)
  - vi. Proposed build out schedule
- b. Model Forecasts
  - i. Alternatives (Label all alternative model forecasts)
- c. Worksheets
  - i. Trip Generation (Excel file)
  - ii. Trip Distribution and Assignment (Excel file)
  - iii. Tier I Table (Excel file)
- d. Raw Data
  - i. Count Data
  - ii. Turning Movement Count Data
  - iii. Signal Timing Data
  - iv. Signal Warrant Data
  - v. Summary Tables
- e. Level of Service Data
  - i. ArtPlan files
  - ii. Highway Capacity Software (HCS) files
  - iii. Synchro files
  - iv. Other data

## **7. TRIP GENERATION**

The trips from/to the site shall be estimated using the latest Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or other rates as requested and approved by the County.

## **8. INTERNAL CAPTURE**

Internal capture is allowed per the ITE acceptable methodologies. However, in no case will an internal capture of more than **20%** be acceptable, unless the County accepts a higher internal-capture percentage based on verifiable documentation.

## **9. PASSERBY CAPTURE**

The total gross external trips of the project traffic may be reduced by a passerby factor to account for the project traffic that is already traveling on the adjacent roadway. The total passerby trips shall not exceed **20%** of the total background traffic on the adjacent roadway. Passerby estimation shall be based on the ITE methodologies or other methodologies that may be approved by Sumter County. In analysis of the site-access intersections with major roads, the passerby trips shall be included and separately identified.

## **10. DISTRIBUTION/ ASSIGNMENT**

The latest, adopted, Sumter County Standard Model (Lake-Sumter County Model) is acceptable in determining the trip distribution percentages and trip assignments. The results of the model will be reviewed by Sumter County for reasonableness to ensure the existing and future travel patterns are correctly simulated. Manual trip distribution and assignment may also be acceptable as long as it is reviewed and accepted by Sumter County Engineer at pre-application conference and logically replicates the existing and future travel patterns.

## **11. TRAFFIC COUNTS**

All counts shall be conducted based on acceptable engineering standards. Raw-turning, movement counts and daily, tube counts (maximum 48 hours) shall be provided for all the intersections and road segments that are being analyzed. The raw counts shall be converted to the 100<sup>th</sup> highest hour of the year based on the FDOT's peak-season adjustment factors and minimum K100<sup>th</sup> factors. Prior to approval of the methodology statement, other peak-season adjustment factors or adjustment methodologies that may result in different peak-season adjustment factors may be requested at the discretion of the County. For saturated intersections, the FDOT's methodology shall be followed to estimate the turning, movement counts by multiplying the average annual daily traffic (AADT) tube count at appropriate locations by field verified "D" and minimum K100<sup>th</sup> factors and by applying the percentage turns obtained from the field, turning-movement counts. In no event, however, shall the estimated, turning-movement counts be less than the existing field counts. Tube counts at appropriate locations shall be provided for segment analysis using the FDOT procedures. The segment tube counts at mid-blocks shall be checked against turning-movement counts at near intersections. In general, the mid-block counts and turning-movement counts shall not be significantly different unless the difference can logically be explained. Approved FDOT or

County-maintained counts may be used if they are less than one year old in the high growth areas. New counts will be requested if there are recent improvements to the transportation system that may cause significant traffic diversions. Counts more than one year old will not be acceptable unless otherwise approved by Sumter County. The counts should be done no earlier than noon on Mondays and no later than noon on Fridays.

## **12. BACKGROUND TRAFFIC GROWTH/FUTURE TRAFFIC**

The existing traffic counts shall be increased by a growth factor up to the project's build-out date (shall be reasonably specified) to account for increases in existing traffic due to other approved developments. The estimation of the background traffic-growth rate and background traffic shall be based on the following:

- a. Historical growth rates using the Tier I Spreadsheet found in the Annual Concurrency Report (based on three and five years of growth) shall be used. The planning director may allow alternative methods for developing background growth including:
  - i. The growth/future traffic on committed roads that do not currently exist shall be based on the latest, adopted model.
  - ii. If the County Model is used, the traffic growth rate for existing roads shall be based on the growth rate as determined by comparing the most recent, validated year, model volume to the future model volume. The future model volume is determined by applying the project's build-out year, socioeconomic data to the committed network. The build-out year, socioeconomic data may be obtained by interpolating between MPO's or the County's adopted validated year and the adopted interim or future year, socioeconomic data.
  - iii. The socioeconomic data of the model shall reasonably represent, if appropriate, the recently approved developments in the vicinity of the project as approved by the County during the methodology process.
  - iv. Under no circumstances is a negative growth rate allowed. Minimum, annual growth rates in all cases shall be 1 percent, unless otherwise approved by the County.
  - v. The assumed growth rate for each impacted roadway segment shall be presented in a table.

## **13. LOS STANDARDS**

The LOS standards for all major road segments shall be consistent with the letter standards per the County's latest adopted, concurrency tables in the Comprehensive Plan. No growth multiplier or adjusted service capacities shall be allowed. The adopted LOS standards for all types of roadways are included in the "Traffic Circulation" element of the Comprehensive Plan.

## **14. INVENTORY OF THE EXISTING AND FUTURE CONDITIONS**

At minimum, the following additional information shall be provided:

- a. Build-out date of the project (must be a reasonable date based on the size of the project, but not less than two years from the date the TIS is submitted).

- b. The geometry, speed limit, and the LOS standard of all the existing roadways and intersections and committed intersection and roadway improvement projects within and in close proximity of the study area.
- c. Existing vehicle counts and its classification.
- d. Graphic presentation of the project's proposed access locations, types, and internal roads with connections to the County's vision/build-out or long-range plan of roadways. The graphic shall also cover the area beyond the boundary of the project to include all the external, major roadways and existing or future, access points and types of developments surrounding the project.
- e. Pavement marking plans/concept plans of roadways that provide direct access to the project and have completed or are undergoing design or route study phase, if available.
- f. Graphic presentation of project, traffic-percent distribution and total background and project traffic assignments.
- g. Inventory of existing or committed, traffic-control devices.

## **15. PHASED DEVELOPMENTS**

The traffic-generation estimate shall consider the total traffic generation of the accumulative development (including traffic from previously developed or approved phases) for purposes of study network identification. For purposes of evaluating mitigation needs, only the impacts of the traffic above and beyond the traffic from the previously developed uses or prior approved phases (where mitigation is already accomplished in accordance with the TIS guidelines) need to be mitigated.

## **16. SUBSTANDARD ROADS**

Sumter County acknowledges that County maintained local roadways (of lesser current classification than arterial or collector) that were not originally constructed nor design to standards that will accommodate historic or future (substantially increased) traffic volumes which will be generated from a planned development(s) (i.e. residential subdivisions, commercial, industrial, etc.). In studying the impact of such developments on the local roadway infrastructure, it has been concluded that such roadways must be evaluated (pavement width/condition, construction, available right-of-way, shoulders, side slopes, drainage, pavement markings, signage, traffic signal, side slopes and clear zone etc.) by a professional engineer to determine if the roadway designated to provide ingress and egress to the planned development can accommodate the future traffic, and if necessary be improved to assure that the physical conditions of the roadway meet standards detailed in the Florida Department of Transportation "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways" a.k.a. "The Green Book".

The minimum pavement design structural numbers (SN) to be utilized for this analysis are as follows: Local Roadways SN = 2.36; Subdivision Collector SN = 2.58; Collector SN = 3.00; Arterial SN = 4.00. Improvements deemed necessary to bring County maintained roadway(s) to the appropriate minimum conditions shall be the responsibility of the developer. These improvements are required to protect the health, safety, and welfare of the public and are in addition to other permitting and

concurrency requirements.

## 17. PROPORTIONATE FAIR SHARE MITIGATION

If the developer submits evidence acceptable to the County Commission that the required mitigation is not cost feasible in relation to the development proposal, the developer may propose a proportionate-share payment as mitigation, which must be approved by the County Commission.

The proportionate share payment shall be calculated as follows:

- a) Identify all the needed improvements to bring all deficient locations in the study network back to the LOS standard,
- b) Submit an engineer-certified cost estimate of the required improvements as approved by the County,
- c) Calculate the proportionate-share cost of those improvements per the following formulae:

For road segments:

**Proportionate share cost** = Total cost of improvement x  
Project traffic / Increase in capacity created by the improvement,

For signalized and unsignalized intersections:

**Proportionate share cost** = Total cost of improvement x  
Project traffic / Increase in capacity created by the improvement,

Where: Project traffic is the development traffic in all movements at the intersection and Increase in capacity is the sum of the changes in physical capacity of all of the movements at the intersection

For installation of signals at unsignalized locations:

**Proportionate share cost** = Total cost of improvement x  
Project traffic / Increase in capacity created by the improvement,

Where: Project traffic is the development traffic in all movements at the intersection and Increase in capacity is the sum of the changes in physical capacity for the minor-street movements only at the intersection

If other unforeseen situations arise, they will be dealt with on a case-by-case basis.

- d) The above values shall be in units of peak hour, two-way values. Cost values shall include design, right-of-way, construction, and construction observation/ administration costs. However, costs of major utility upgrades or the costs of other activities that are

advantageous to accomplish with the road construction but that do not relate to providing transportation capacity or services should not be included.

Circumstances where the County is required to accept proportionate share mitigation include:

- a) Where improvements to maintain the adopted level of service on all roadway locations impacted by the proposed development are in the first three years of the current capital improvement element of the Comprehensive Plan (F.S. 163.3180 (16)(b)1.)

Generally, the proportionate share funds from a development will be used by the developer to implement an improvement that is agreed upon by Sumter County and agencies responsible for the road to be improved and other impacted roadways, to be of substantial benefit to the impacted roadway network. If needed improvements are scheduled in the CIE, then the County will accept payment of the proportionate share.

## **18. REVIEW FEE**

The applicant shall pay all costs for outside consultant review of the TIS by the County. If no outside consultant is retained by the County for review of the TIS, then the applicant's fee paid for the rezoning or development approval shall be the only fee paid.

## **19. DEVIATION FROM GUIDELINES**

Except where the foregoing guidelines specifically allow for deviation or variance by the County, the DRC, the Land Development Code, or the Board, the foregoing guidelines may only be varied in accordance with approval by the County Administrator or his designee.