Traffic Impact Study Guidelines

Gwinnett County
Department of Transportation

Version 1 • June 30, 2023

Gwinnett

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Definitions

Annual Average Daily Traffic (AADT): The total volume of vehicle traffic on a highway or road for a year divided by 365 days.

Average Daily Traffic (ADT): The volume of traffic passing a point or segment of a roadway, in both directions, during a period of time, divided by the number of days in the period and factored to represent an estimate of traffic volume for an average day of the year. For purposes of this document, this typically means the average daily volume during the Tuesday through Thursday weekday period.

Build Traffic: Also known as total traffic. This is the combination of the no-build traffic and the project traffic.

Intersection Control Evaluation (ICE): This is a Georgia Department of Transportation policy (4A-5-Intersection Control Evaluation (ICE) Policy) and process used to assess intersection control alternatives.

Level of Service (LOS): A quantitative stratification of a performance measure or measures that represents quality of service, measured on an A to F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F representing the worst during a specific time period, typically 15 minutes.

No-Build Traffic: Also known as background traffic. It is the expected increase in traffic on the network from other developments or population growth. This is traffic not associated with the proposed development. No-build traffic is usually based on existing conditions with a growth rate applied.

Peak Hour: The hour of the day in which the maximum volume occurs. The typical analysis periods for a traffic impact study include the AM peak and PM peak hours during a typical weekday. Typical weekday is defined as Tuesday, Wednesday, or Thursday. The typical weekday peak periods typically range from 7:00am to 9:00am and 4:00pm to 6:00pm.

Special Purpose Local Option Sales Tax (SPLOST): An optional one percent county sales tax used to fund capital outlay projects proposed by the county government.

Traffic Impact Study (TIS): Also known as a traffic impact analysis. Primarily used to estimate the amount of vehicular traffic that would be expected from the proposed development as compared to any previously approved plans or the land use identified on a future development plan. The TIS determines the potential impacts to the existing street network and predicts how roadway modifications could mitigate or improve the public street system.

Trip Assignment: The amount of project trips that utilize the transportation network based on the trip generation and trip distribution. This is the project traffic.

Trip Distribution: The percentages of traffic from the development that will utilize the transportation system. This is usually based on reviewing the existing traffic patterns near the development.

Trip Generation: wThe process of forecasting the number of people generated by a proposed development based on the development size, number of employees, or dwelling units according to land use type.

Traffic Impact Study Guidelines

Introduction

The Gwinnett County Department of Transportation has developed the following guidelines in accordance with Unified Development Ordinance Section 270-20.8 to aid applicants in determining Traffic Impact Studies requirements as part of the zoning process within unincorporated Gwinnett County. The purpose of these guidelines is to establish uniform criteria in developing a TIS. These guidelines are intended to facilitate communication and coordination between all parties who conduct business within Gwinnett County.

These are guidelines for developing a TIS and do not instruct professionals on preparing a TIS. The guidelines provide the following objectives:

- Uphold the Gwinnett Standard
- Ensures consistent reviews
- Identify when a TIS is required
- Establish minimum requirements for certain components within a TIS
- Standardize TIS procedures

Applicability

A TIS must be submitted concurrently with all zoning applications and land disturbance development.

Exemptions

A TIS shall not be required under the following conditions:

- Single-family detached and townhome residential development consisting of no more than seven lots or units
- New or expansion of existing commercial development under 10,000 square feet of building floor area
- Agricultural development with daily trips below 1,000 (per Institute of Transportation Engineers [ITE] *Trip Generation Manual*)
- Change in Condition (CIC) or Special Use Permit (SUP) applications for existing development with no proposed change in use
- Rezoning applications made for refinancing purposes only

The guidelines herein may be adjusted, or portions waived as determined by the department based upon information provided or submitted at the applicant's pre-submittal meeting.

Traffic Impact Study Level Thresholds

The level of analysis for a TIS is proportional to the size, scope, and trip generation of proposed development as described in this section. Site-generated trips should be calculated using the latest edition of the ITE *Trip Generation Manual*. The volume thresholds referenced in this section represent projected peak hour site-generated automobile trips.

Developments of Regional Impact

Developments that meet the criteria for a Development of Regional Impact (DRI) as set forth by the Georgia Department of Community Affairs and the Atlanta Regional Commission must coordinate with those agencies and the Gwinnett Department of Transportation regarding TIS scope and review process. These developments are considered Level 4 in Tables 1 and 2, regardless of trip generation.

Significant Development

Developments that meet at least one-half of the criteria for a DRI but do not meet or exceed the threshold for a DRI, shall require, at minimum, a Level 3 analysis per Tables 1 and 2, regardless of trip generation.

All Other Development

All development not meeting the requirements set forth in 2.1 or 2.2 must provide a TIS consisting of the components in Tables 1 and 2 as determined by the projected peak hour site-generated automobile trips of the development.

Table 1: Traffic Impact Study Scope

Traffic Impact Study (TIS) – Typical Requirements				
Projected Peak Hour Site-Generated Automobile Trips by Project (Latest Edition of the ITE *Trip Generation Manual*)	**0 – 20**	**21 – 249**	**250 – 499**	**>500** (or DRI)
Study Elements	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Location Description	X	X	X	X
Land Use – Existing and Proposed	X	X	X	X
Trip Generation Estimate	X	X	X	X

Study Elements	Level 1	Level 2	Level 3	Level 4
Access Management Review	X	X	X	X
Adjacent Access Spacing – Upstream and Downstream	X	X	X	X
Intersection Sight Distance	X	X	X	X
Connectivity and Circulation Review	X	X	X	X
Internal Site Circulation Review	All Development with Drive-Thru or Drop-off/Pick-up Lanes			
Existing Street Functional Classification	X	X	X	X
Posted Speed Limit	X	X	X	X
Existing ADT Volumes		X	X	X
Future ADT Volumes		X	X	X
Truck Volumes and Circulation (Existing and Proposed if Commercial or Industrial)		X	X	X
Summary of Existing Pedestrian and Bicycle Facilities and Connectivity		X	X	X
Current Intersection Turning Movement Peak Period Volumes		X	X	X
Existing Transit Routes and Stops		X	X	X
Crash History (Five Years)			X	X
Traffic Distribution and Assignment Assumptions		X	X	X
Trip Generation Reduction Assumptions or Pass-By Trips		X	X	X
Traffic Operation Analysis Requirements		X	X	X
Future Identified Projects (i.e. GCCTP, GDOT, SPLOST)	X	X	X	X

Table 2: Traffic Impact Study Scenarios and Operations Analyses

Traffic Operation Analysis				
Projected Peak Hour Site-Generated Automobile Trips by Project (Latest Edition of the ITE *Trip Generation Manual*)	**0 – 20**	**21 – 249**	**250 – 499**	**>500** (or DRI)
Scenario Analysis	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Existing Conditions (No Development)	X	X	X	X
Existing Conditions plus Previously Approved			X	X
Existing plus Site-Generated Traffic (Full Build Only)			X	X
Existing plus Site-Generated Traffic (Major Phases and Full Build)				X
No-Build Traffic			X	X
Build Traffic			X	X
Interrupted Flow Capacity Analysis	**Level 1**	**Level 2**	**Level 3**	**Level 4**
MUTCD Signal Warrant Analysis		As part of an ICE analysis		
Turn Lane Warrant Analysis		X	X	X
Proposed Transit Routes		X	X	X
Summary and Recommendations	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Intersection and Roadway Geometric Recommendations	X	X	X	X
Traffic Control Recommendations (Stop Sign, Signal, Roundabout, Reduced Conflict U-Turn [R-CUT], etc.)		As part of an ICE analysis		
Turn Lane Recommendations (including storage length)			X	X

Additional detail may be given for certain scenarios due to local knowledge of the area to address concerns or meet other prior planning or engineering requirements.

TIS Updates

If a proposed development land use changes during the developer's design process, the trip generation must be updated. If the cumulative changes in the trip generation results in more than an increase of 50 trips or 5 percent of the total development trip generation, whichever is greater, the entire TIS must be updated. Both the final trip generation anticipated at the development and the trip generation used for the rest of the TIS shall be shown in the TIS if they differ.

If a DRI is proposed or approved in the area prior to the approval of the rezoning or prior to the application for development permit after the rezoning is approved, then the TIS must be updated to include the traffic and improvements from that development. Similarly, if there is a major improvement such as the installation of a traffic signal or opening of a new road or interchange within the study area prior to the approval of the rezoning or prior to the application for development permit after the rezoning is approved, then the TIS must be updated to include this major improvement.

Qualifications Required to Conduct Traffic Impact Study

It is the applicant's responsibility to prepare a TIS meeting the guidelines defined within this document. The TIS is required to be signed and sealed by a Professional Engineer (PE) in the state of Georgia with relevant TIS experience prior to submittal. It is recommended that the PE also have a Professional Traffic Operations Engineer (PTOE) certification to complete a Level 3 or Level 4 TIS.

Traffic Impact Study Component Considerations

Study Area

The applicant and their engineer should determine the TIS study area based on several variables — size of development, number of driveways, roadway classification, and influence the proposed access will have on the street segment or adjacent intersections. The Gwinnett Department of Transportation may modify the study area as deemed appropriate.

Analysis Periods

TIS analysis should address the peak commuter periods at a minimum. The peak periods depend on both the street network peak volume conditions as well as the peaking characteristic for the development type. Typical analysis periods include the AM and PM peak hours during a typical weekday when Gwinnett County Public Schools are in session. Certain land uses may require additional analysis during other weekday periods or over specific weekend periods, including possible holiday weekends. The Gwinnett Department of Transportation may modify the analysis periods or recommend additional ones based on traffic patterns or the influence of special generators, e.g., sport facilities.

Build-Out Analysis

The TIS will analyze the opening year of the development. Level 3 and 4 studies will analyze 20 years in the future. For significantly large or long-duration build projects, additional development periods may be required to account for build years or phased projects.

Future Volume Development Method

Future year background traffic volumes should be developed using a growth rate approved by the Gwinnett Department of Transportation. The growth rate should be developed based on a review of available historic traffic volumes and comparing them to future volumes available in special study areas.

Trip Generation

Anticipated traffic for the project should be estimated using trip generation methods and procedures defined in the latest edition of the ITE *Trip Generation Manual*. If the *Trip Generation Manual* recommends local data to be collected, prior approval from the Gwinnett Department of Transportation is required to use any values other than locally collected data. The department may also approve alternative trip generation calculations upon conclusion of a pre-submittal meeting.

A table that summarizes the trip generation for the project should be included. The table should include the land use code, unit used (i.e., square feet, number of dwelling units, rooms, etc.), quantity, projected ADT, peak hour trips including directionality, and a summary of project phases for larger developments.

Trip generation shall be calculated for the development analysis periods. Trip generation tables for the peak hour of the adjacent street should typically be used. For conditions during non-typical peak periods, ITE *Trip Generation Manual* "Peak Hour of Generator" rates may be used for those conditions.

Trip generation for redevelopments, mixed-use development, larger developments, and certain types of land uses may choose to use some of these more advanced tools when determining the number of trips a site generates.

Trip Distribution and Assignment

Trip distribution rates should be developed by reviewing the existing traffic patterns near the development and the respective location of the site within the county. The trip distribution percentages should be documented in a figure to visually represent the origins and destinations for the site-generated traffic.

Estimated vehicle-trips will be assigned to the existing and proposed street networking using the trip distribution rates. Traffic assignment should be completed using judgment for the best routes to/from the development site for the identified analysis periods (i.e., AM and PM peak hours). Site generated traffic volumes should be documented in a figure. The proposed development volume scenario figures should include the total traffic with the site-generated traffic included in a parenthesis.

Traffic Signal Warrant Analysis

Project access points or existing unsignalized intersection(s) that have volumes anticipated to meet one or more traffic signal warrants will require a traffic signal warrant analysis to be completed.

Traffic signal warrant analysis should be completed using Manual on Uniform Traffic Control Devices (MUTCD) methodologies to determine which signal warrants may be met, if any. Signal warrant analysis should be included in the TIS and a recommendation with justifications should be provided. Note that Warrant 3, Peak Hour Warrant should be applied only in unusual cases as described in the MUTCD. Meeting only Warrant 3 may be insufficient evidence to justify the installation of a signal. It is ultimately the decision of the agency maintaining the subject roadway to determine if/when a signal will be constructed at any given location.

Turn Lane Analysis

The applicants and their engineers shall follow the requirements for installation of turn lanes as set forth by Gwinnett County's Unified Development Ordinance (UDO) for County-maintained roads. The Gwinnett Department of Transportation may also request the installation of turn lanes through the zoning process upon review of a turn lane analysis. This analysis should include an evaluation of intersection capacity, individual movement capacity, driver expectations based upon the type of roadway, speed, turning volume, overall peak hour through volume, effects on pedestrian facilities and bicycle facilities, adjacent land use, intersection and stopping sight distance as appropriate, right-of-way and utility impacts, and long-term maintenance considerations.

Modifications to Existing Signalized Intersections

Determinations about whether to provide either left or right turn lanes for individual movements at signalized or future signalized intersections should be based on an evaluation of level of service with goals to provide an acceptable level of service, or in cases where this is not feasible for existing intersections, to maintain an appropriate level of service.

Intersection Control Evaluation (ICE)

The Georgia Department of Transportation adopted an Intersection Control Evaluation (ICE) policy in 2017 to provide traceability, transparency, consistency, and accountability when identifying and selecting an intersection control solution that meets the project purpose and reflects the overall best value for performance-based criteria. (*GDOT Policy 4A-5*) GDOT's Intersection Control Evaluation policy applies to any intersection improvement (e.g., a new intersection, an intersection modification, widening/reconstruction or corridor project, or work accomplished through a driveway or encroachment permit that affects an intersection) where one or both of the following conditions are met:

- The intersection includes at least one roadway designated as a state route (state highway system) or as part of the National Highway System
- The intersection will be designed or constructed using state or federal funding

For rezoning or other development accessing a state road, the TIS should include an Intersection Control Evaluation analysis.