

**TOWN OF BARGERSVILLE  
DEPARTMENT OF  
DEVELOPMENT**

**TRAFFIC STUDY GUIDELINES**



**Town of Bargersville  
Department of Development  
24 North Main Street, P.O. Box 420  
Bargersville, Indiana 46106**

Adopted by the Bargersville Town Council on January 30, 2018

## Traffic Study Guidelines

This Guideline is to explain the procedures to be followed in the process of preparing a traffic study for the Town of Bargersville in connection with applications for zoning change or land development approvals.

The Town of Bargersville will require a traffic study for all but the smallest development proposals. The study will be used for the purpose of planning to maintain a suitable network of safe thoroughfares that maintain access to all residents and businesses in Bargersville. The study will be used to determine in advance if roadway improvements are needed so that changes in traffic patterns that result from a development do not result in traffic congestion or safety hazards. The Town of Bargersville may require some developments to construct or contribute to the construction of needed improvements.

If a project is proposed to have access to a state highway, a Johnson County Highway maintained roadway, or if any part of it is outside the limits of the Town of Bargersville, or if the project is large or complex, the applicant is directed to consult with INDOT, Johnson County, or other adjacent agency, as well as the Town of Bargersville. Traffic impact studies should generally comply with the “Applicant’s Guide to Traffic Impact Studies” of the Indiana Department of Transportation (INDOT). Not all elements are required for all studies.

### **Initial Meeting**

The applicant shall meet with the Town of Bargersville Department of Development staff or a Bargersville designated representative to discuss the issues that will be important to the study and to obtain agreement on the study area boundaries, location and number of intersections to analyze, other local issues to address, etc. The size and scope of the proposed development will determine the scope of the study. The Initial Meeting Checklist, given in Appendix “A”, shall be completed to the greatest extent possible by the developer and brought to the Initial Meeting for discussion.

Depending on the findings of the study, new questions may arise that trigger an expansion of the study investigative work.

It may be appropriate in some circumstances, to revisit the discussion of the scope of study after traffic counts are collected.

## **Project Size**

A project will be considered to be small if it is projected to generate less than 150 new trips in the peak traffic hour and the proposed land use is in accord with the Bargersville Comprehensive Plan. If the project is projected to generate fewer than 50 new trips in the peak hour, then no further traffic analysis will be required. A Traffic Operations Analysis (TOA) will likely be adequate for small projects. A project will be considered large if it is projected to generate 500 or more trips in the peak traffic hour. Large projects will be required to prepare a Traffic Impact Study (TIS). For projects in between 150 and 500 new trips in the peak traffic hour, considerable flexibility is available to determine the appropriate scope of the needed study. The Initial Meeting will be used to develop a scope for these projects.

## **Extent of Study Area**

The extent of the locations to be investigated will vary and should be tailored to the proposed development. In general, all intersections within a quarter-mile of proposed access points shall be examined, as well as the nearest major intersections where the project will contribute significant traffic. For these purposes, a “significant” contribution is ten percent (10%) of the traffic in any movement. Large developments should include, as a minimum, analysis of all public street intersections within a mile of proposed access points, and signalized intersections within two miles of the site. More extensive analysis may be required, depending on circumstances related to the project size and location.

## **Future Year**

The design horizon year for the Traffic Impact Study should be discussed and agreed upon at the Initial Meeting. Small projects will generally be required to consider the effects of the proposed project in a timeframe projected three to five years into the future, or to the opening of the final phase of the development, whichever is further out. Projects that are projecting peak hour trips in the range between 150 and 500 trips per hour will be required to project to five years in the future, but may be required to use a horizon year of up to ten years in the future. Large projects will be required to project out to ten years in the future. Very large projects may be required to adopt a future horizon year that matches the current Long Range Transportation Plan of the Indianapolis Metropolitan Planning Organization (MPO).

## Study References and Methods

Key references are the “industry standard” works for traffic analysis:

- *Trip Generation*, published by the Institute of Transportation Engineers (ITE)
- *Highway Capacity Manual*, published by the Transportation Research Board (TRB)

Both ITE and TRB have additional works that may be needed in the course of a study. Additional relevant materials are available from INDOT and the Federal Highway Administration (FHWA).

Software should primarily be the Highway Capacity Software. This is an industry standard that was originally promulgated by the FHWA and is now owned by the McTrans Center at the University of Florida. Other programs for analysis are available and should be discussed in the Initial Meeting.

References to local and regional planning issues should be included. If there is any variance proposed from the Bargersville Comprehensive Plan, this should be noted in the text. If the Long Range Transportation Plan of Johnson County or the Long Range Transportation Plan of the MPO feature an element within the study area, this should be cited.

Links:

Town of Bargersville

<http://www.townofbargersville.org/departments/planning-and-zoning/>

File (.pdf) of the Bargersville Comprehensive Plan, 2013:

[http://www.townofbargersville.org/wp-content/uploads/2015/09/2013-03-15\\_Bargersville\\_Comprehensive\\_Plan\\_Final.pdf](http://www.townofbargersville.org/wp-content/uploads/2015/09/2013-03-15_Bargersville_Comprehensive_Plan_Final.pdf)

Johnson County

<http://co.johnson.in.us/government/administrative/department-of-planning-zoning/>

Johnson County Comprehensive Plan, 2011: [http://co.johnson.in.us/wp-content/uploads/2012/05/JC\\_Comprehensive\\_Plan\\_032811.pdf](http://co.johnson.in.us/wp-content/uploads/2012/05/JC_Comprehensive_Plan_032811.pdf)

Indianapolis Metropolitan Planning Organization

<http://www.indympo.org/>

Long Range Transportation Plan <http://www.indympo.org/whats-completed/regional-plans/lrtp-2035>

L RTP update page: <http://www.indympo.org/whats-underway/lrtp-2045>

## Study Process

Typical elements required for completing a thorough traffic impact study will vary in scope primarily based on the number of intersections to be included in the analysis. A Traffic Impact Study will cover a greater area than a Traffic Operations Analysis.

For additional information, see the INDOT “Applicant’s Guide.” A sample outline is provided in Appendix C of the “Applicant’s Guide”, and a sample report is available upon request. These are the chief elements of a traffic study, followed by additional remarks on the study process:

- A. Existing Condition Analysis
- B. Background Condition Analysis
- C. Trip Generation
- D. Trip Distribution/Assignment
- E. Future Condition Analysis
- F. Auxiliary Turn Lane Analysis
- G. Traffic Signal Warrant Analysis
- H. Site Distance Analysis
- I. Other
- J. Findings

### A. Existing Condition Analysis

Intersections should be analyzed for proposed access locations with public streets, and for the intersections identified in the Initial Meeting. Levels of Service should be reported by approach or by movement, as appropriate, and presented in tables for convenient review.

If there are any sight distance limitations on the proposed access locations these should be identified and discussed, with potential mitigation measures addressed.

### B. Background Condition Analysis – including growth rate methodology

The future year of the analysis should be determined at the Initial Meeting. Small projects may be expected to only project traffic out to three to five years in the future, or the projected opening day of the completed project. Background traffic projections should be consistent with the travel forecasts of the appropriate planning documents referenced above in the section Long Range

Transportation Plan. The method used for developing estimates of future traffic , including traffic growth rates, should be explained, with supporting documentation provided. Large projects should project anticipated travel demand further out into future years.

Background future conditions are expected to reflect what may be called “No-build Conditions,” so they should include other approved projects that are in progress in nearby areas and which are expected to increase traffic within the project study area. Information from the traffic studies from these projects will be made available for this application.

C. Trip Generation

The standard reference for the estimation of trips is *Trip Generation*, published by the Institute of Transportation Engineers. This report contains a number of land use codes, and the codes that are used to prepare the estimates of trips should be reported in the section of the report that provides the estimates. *Trip Generation* also provides a methodology for adjustments to trip generation for such activities as pass-by trips. These adjustments will be accepted, but should be discussed at the Initial Meeting.

In some instances the data base of *Trip Generation* is limited or aged, and some potential land uses are just not addressed. It will be the responsibility of the proposer to provide justification for estimates of trips that are not based on estimates that are presented in *Trip Generation*.

D. Trip Distribution/ Assignment

Directional distributions of estimated trips should be discussed in general at the Initial Meeting. The preference is that the estimated distribution of trips should be taken from marketing studies prepared by the proposer. If no marketing information is available, then commuting patterns from nearby intersections may be used to develop distributions.

E. Future Condition Analysis

The purpose of the analysis is to identify locations where traffic congestion may be anticipated, and to establish a baseline so that the relative contribution of the proposed development can be discerned. Trip generations for all approved development projects are to be combined with a future year traffic forecast for analysis of what may be called “No-build” conditions. Copies of relevant traffic

operations analyses and Traffic Impact Studies will be supplied for this purpose. The preparer will need to consider the forecasts that are available from Bargersville Department of Development, previous studies, INDOT and the Indianapolis Metropolitan Planning Organization. If there is a reason to depart from these forecasts, there must be documentation for the departure and alternate sources must be approved in the Initial Meeting.

F. Auxiliary Turn Lane Analysis

It is expected that when Level of Service D, E or F is anticipated, the study will investigate the most straightforward improvements that would be likely to relieve anticipated congestion. Frequently, the most basic improvements to an intersection would involve the installation of auxiliary turn lanes and passing blisters in accordance with the Town's Construction Standard details. When turn lanes are investigated, the estimated future storage volume should be provided in the discussion of the lane or in a summary table. If it appears that improvements to existing traffic signals would be appropriate, these shall also be discussed with the agency that owns the signals.

G. Traffic Signal Warrant Analysis and other warrants

Warrants for traffic signals are provided in the *Indiana Manual on Uniform Traffic Control Devices* and are discussed in the "Applicant's Guide to Traffic Impact Studies."

Warrants for auxiliary turn lanes are discussed in the *Indiana Design Manual* (IDM) chapter on intersections. The *Indiana Design Manual* (IDM) chapter on intersections also includes a discussion of passing blisters that may apply to many intersections.

H. Site Distance Analysis

Intersection sight distances are to be checked for proposed access locations, generally following the discussed method in the INDOT IDM. Intersection sight distances should also be checked in the field.

I. Other

Many issues will be unique to a particular site or land use. These should be discussed in the Initial Meeting. Examples include cornering issues if a proposed project is likely to generate a large number of truck trips, or internal queue

issues if queues cannot be contained on-site. Typical land uses that generate queues that should be analyzed are schools and any facility with drive-in windows.

Large retail developments of over 200,000 square feet of leasable area should include a Saturday peak hour analysis. A single hour, typically during midday, should be identified based on the experience of the largest tenants expected for the center.

If the study is to be a Traffic Impact Study, it may need to include study topics aside from traffic operations analysis. The most likely issue would be crashes, particularly if one of the intersections to be analyzed is already on INDOT's list of high crash locations.

#### J. Findings

Report findings should be summarized. The summary may be placed at the beginning of the report for convenience. The summary of findings should observe on points of anticipated traffic congestion and the relative contribution of the proposed project to expected levels of congestion. Appropriate parameters should be referenced as well as Levels of Service. (Delay, control delay, traffic density, length of queue, or other parameters should be selected for relevance to project issues.)

If safety issues have been identified, these should be noted in the summary.

Town of Bargersville  
**Traffic Study Guidelines**

**Appendix A**

**Initial Meeting Checklist**

Attached is the Initial Meeting Checklist to be used to set up a traffic study for the Town of Bargersville. This Checklist is intended to be used in tandem with the Indiana Department of Transportation's "Applicant's Guide to Traffic Impact Studies." Both the Traffic Study Guidelines and this Initial Meeting Checklist contain references to the Applicant's Guide.

**INITIAL MEETING CHECKLIST**

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Location: \_\_\_\_\_

People Attending: (name, title, affiliation, address, phone number, email)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Study Preparer:

(name, job title, organization, address, telephone number, email, registration number)

\_\_\_\_\_

Reviewer(s):

(name & title: organization & telephone number, email)

\_\_\_\_\_  
\_\_\_\_\_

Applicant:

(name & title: organization & telephone number, email)

\_\_\_\_\_

Proposed Development

Name: \_\_\_\_\_

Location: \_\_\_\_\_

Agencies/jurisdictions affected: \_\_\_\_\_

\_\_\_\_\_

Location within area

CBD       Urban (Non CBD)       Suburban       (Non-CBD) Suburban CBD  
 Rural       Freeway interchange       Other

ITE Land Use Code(s):# \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_

Proposed number of development units: \_\_\_\_\_

Zoning Existing: \_\_\_\_\_

Comprehensive plan recommendation: \_\_\_\_\_

Requested: \_\_\_\_\_

Findings of the Preliminary Study: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Study Type Needed:  
\_\_\_ Complete Study \_\_\_ Traffic Operations \_\_\_ None

Study Area Boundaries: \_\_\_\_\_  
Additional intersections to be analyzed: \_\_\_\_\_  
\_\_\_\_\_

Horizon Year(s): \_\_\_\_\_  
Analysis Time Period(s): \_\_\_\_\_  
\_\_\_\_\_

Future Off-Site Developments: \_\_\_\_\_  
\_\_\_\_\_

Source of Trip Generation Rates: \_\_\_\_\_  
\_\_\_\_\_

**Reduction in Trip Generation Rates**

\_\_\_ None  
Pass-by trips: \_\_\_\_\_  
Internal trips (mixed-used developments): \_\_\_\_\_  
Transit use: \_\_\_\_\_  
Other: \_\_\_\_\_

Horizon Year Roadway Network Improvements: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Methodology & Assumptions**

Non-site traffic estimates: \_\_\_\_\_  
Site trip generation: \_\_\_\_\_  
Trip distribution method: \_\_\_\_\_  
Traffic assignment method: \_\_\_\_\_  
Traffic growth rate: \_\_\_\_\_  
Accident locations: \_\_\_\_\_  
Sight distance: \_\_\_\_\_  
Queueing: \_\_\_\_\_  
Access location & configuration : \_\_\_\_\_  
Traffic control: \_\_\_\_\_  
Signal system location & progression needs: \_\_\_\_\_

On-site parking needs: \_\_\_\_\_

Data Sources: \_\_\_\_\_

Base maps: \_\_\_\_\_

Prior Study reports: \_\_\_\_\_

Access policy and jurisdiction: \_\_\_\_\_

Review Process: \_\_\_\_\_

Requirements: \_\_\_\_\_

Miscellaneous: \_\_\_\_\_

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#### Application of Flow Diagram in Figure 3.1 of “Applicant's Guide”

1. Does proposed development meet preliminary warrants? (See Chapter 4) Was the preliminary notification included? Include complete site plan, with the site's requested access points in relation to existing access points nearby. Show nearest signalized intersection in each direction. Include market study (if applicable).

2. Are warrants for Traffic Impact Study met? (See Table 4.1).

Define boundaries of Study Area (See Table 5.1). Other jurisdictions to contact?

Agree on Horizon Year, Non-Site Traffic Forecasts Site Trip Generation method and data sources  
Reductions in trip rates: pass-by trips, internal trips, transit use Trip distribution method (and software) to be used Traffic assignment method (and software) to be used.

3. Are warrants for Traffic Operations Analysis met? (See Chapter 7.) Crash locations Factors affecting Traffic Operations: Access locations, geometrics, intersection design (including innovative designs), traffic control devices, etc. Data Sources.

Traffic Impact Study Report Contents - See Appendix C of the “Applicant’s Guide.”

Contact information and signatures for Study Preparer(s) Reviewer(s)

