

## Transportation Impact Study #14



## Introduction

Transportation Impact Studies (TIS) are comprehensive evaluations conducted to assess the impact proposed land use development will have on the transportation system. These studies involve a thorough analysis of various aspects of how a new development and its associated traffic could impact traffic flow, pedestrian and cyclist accessibility, and safety of all road users. The objective of these studies is to help the developer make critical land use site-planning decisions and to determine the need for any required improvements to the adjacent and nearby transportation system. The results of these studies are used to help the decision-making process and project design, ultimately contributing to the creation of safe and sustainable transportation infrastructure in Pennsylvania.

PennDOT's Bureau of Operations has developed a 12-step process for conducting a TIS. From defining the study area to collecting data to assessing impacts and identifying mitigation measures, PennDOT's step-by-step guidelines can help municipalities execute a well-conducted TIS, which is essential for determining the effects of a proposed development and ensuring the transportation network can handle the expected increase in traffic and meet the needs of the local community.

- 1 Scoping Meeting:** The first step in preparing a TIS is to conduct a scoping meeting with the relevant parties. This meeting, if deemed necessary, must be held as early as possible, as it is essential in determining the scope and objectives of the study, as well as identifying the other stakeholders and their respective roles. The scoping meeting is also a good opportunity to discuss any potential roadblocks or challenges that may arise during the TIS process. In this step, you will define the study area, determining its boundaries and the transportation elements that will need to be evaluated, including roadways and intersections.
- 2 Data Collection:** Data collection is an essential part of the TIS process and is solely the responsibility of the applicant. This includes gathering data on the existing transportation network, such as traffic volumes, land use context, crash data, and other relevant data. The data collected will be used to establish the existing conditions scenario and to analyze the potential future transportation impacts for the study area.
- 3 Existing Conditions Scenario:** The existing conditions scenario is a snapshot of the current transportation network and its associated traffic volumes. This scenario is critical in understanding the baseline transportation operation conditions of the study area. In addition, this section shall discuss multimodal transportation such as cyclists, pedestrians, and transit and describe existing facilities or lack thereof.



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**4 Background Traffic:** Background traffic refers to an estimate of future traffic within the vicinity of the proposed development, without the site development traffic but with existing traffic adjusted for expected growth, and the addition of traffic from major vested projects. This traffic is added to the existing traffic volumes to complete the analysis of future year conditions. Other planned and permitted developments in the area also need to be taken into consideration and added to existing traffic volumes, if appropriate.

**5 Trip Generation:** Trip generation is the amount of traffic to be generated by the proposed development, which will be estimated in this step. In suburban and rural areas, this will be mainly vehicular traffic, while urban sites may also incorporate transit, cycle and foot traffic. This information is essential in predicting the future traffic demand on the surrounding transportation network.

**6 Modal Splits:** This section recognizes the potential for non-vehicular trips and offers “standard assumptions” for the modal split of alternative trips, provided that pedestrian, cycle and/or transit-friendly characteristics are present. Modal splits refer to the process of dividing the total trips generated by the proposed development into various modes of travel to reduce the predicted number of vehicle trips.

**7 Trip Distribution:** The trip distribution step of the process involves determining where the trips generated by the proposed development will originate and where they will end. Estimating arrival and departure patterns in traffic is critical in determining the proposed development’s impact to the transportation network.

**8 Traffic Assignment:** The traffic assignment step of the process involves determining the amount of traffic that will use certain routes on the transportation network. In the TIS, the applicant must provide a brief description of the proposed project, including access with proposed, permissible movements and distance to nearby intersections. The purpose is to estimate traffic flows on the network links and analyze travel patterns.

**9 Future Analysis:** The analysis is conducted on future traffic volumes to compare anticipated traffic operations of the study area with and without the proposed development. This information is essential in determining the long-term impact of the proposed development on the transportation network.



**10 Level of Service Requirements:** Level of Service (LOS) is a qualitative measure describing the operational conditions within a section of roadway or at an intersection. This section compares the operating LOS and delay for the future design year both with and without the development. In a TIS, the LOS requirements are established to ensure that the transportation network can handle the expected increase in traffic.

**11 Mitigation Analysis:** If the LOS requirements cannot be maintained, the applicant must construct improvements that will mitigate the LOS drop. In the mitigation analysis, the applicant must identify and evaluate measures that can be implemented to minimize the negative impacts of the development project on the transportation network, such as adding turn lanes, adding a median, traffic signal installations or alterations, converting an intersection into a roundabout, and/or other transportation improvements.

**12 Submission to PennDOT and Review Process:** After the results of the study are compiled into a comprehensive report that includes the study’s findings, conclusions and recommendations, it must be submitted to PennDOT for review. This review process by PennDOT is critical in ensuring that the TIS results meet the required capacity and safety standards.

Preparing a TIS is a comprehensive process that requires a thorough understanding of the transportation network, traffic demand and other relevant factors, and must be performed by a qualified engineer. By following the 12 steps outlined above, transportation planners can ensure that the TIS is comprehensive, is accurate, and meets the needs of the local community.