

Trip Rates and Distribution

Introduction

In this section of the TMP guidelines we will describe the acceptable means to determine trip rates and trip distribution methods for use in section 1E and 1F of the MaineDOT TMP application.

ITE Edition

MaineDOT accepts the 12th Edition of the ITE Trip Generation Manual for determining trip rates of proposed developments not listed below in the ITE Exceptions section of this document. Requests to use other editions of the ITE Trip Generation Manual must be submitted to the Region Traffic Engineer with an explanation of why the deviation is proposed.

LUC Exceptions

Below is a list of LUC exceptions where MaineDOT requires applicants to use either a non-ITE traffic study or has specific instructions to determine the trip generation. See RTE for studies used to determine trip generation for the coffee shop with drive thru land use.

LUC 937 “Coffee Shop with Drive Thru”

- Dunkin Donuts
- Tim Hortons
- Starbucks
- Aroma Joes

LUC 938 “Coffee Shop with drive through and no indoor seating”

- Shall only be used when no indoor public space is provided

LUC 150-157 Warehousing

-Last Mile warehousing may be analyzed based on similar facilities with similar footprints. Maine DOT may reserve the right to require sites provide overnight parking at such facilities.

If the proposed development description does not align with an existing LUC description in the ITE Trip Generation Manual, a separate Stamped proposal may be submitted. This proposal shall detail the reasons why the ITE Trip Generation Manual is not appropriate for the development, the estimated Trip Generation and the methods for calculating the estimated Trip Generation. These proposals must be reviewed and approved by the State Traffic Engineer or their designee before the estimated Trip Generation can be applied to a development.

Section 1E: Trip Rates

Determine land use(s): Using the ITE Trip Generation Manual, determine which land use code (LUC) or codes best fit the description of the proposed development. The ITE trip generation manual provides a write up describing the types of developments that fit in each LUC. Some LUCs will have multiple ways to calculate trip generation. For example, ITE provides trip generation data for LUC 710 “General Office Building” by number of employees and by square footage of the usable floor area. If both input values are known then the trip generation would be the average of the two. Otherwise, the trip generation should be determined using the input with the highest level of confidence.

Peak Hour: Generator versus Adjacent Street: The peak hour of the generator is the weighted average vehicle trip generation rate during the hour of highest volume entering and exiting the site. The peak hour of the adjacent street is the one-hour weighted average vehicle trip generation rate at a site between 7AM and 9 AM or between 4 PM and 6 PM, when the combination of its generated traffic and the traffic on the adjacent street is the highest. When determining if a TMP is required the peak hour of the generator is used. Adjacent street trip generation rates may be used for analysis purposes when appropriate.

Trip rate versus fitted curve: The ITE Trip Generation Manual will typically provide both a fixed trip rate for a given LUC as well as a fitted curve. When the fitted curve has a R^2 value is greater than or equal to 0.8, the fitted curve should be used to determine trip rates. When the R^2 value is greater less than 0.8 the fixed trip rate is acceptable for determining trip rates.

When completing section 1E of the TMP application tables of the following trip information shall be provided.

- Existing trip generation by LUC (when applicable)
- Proposed trip generation by LUC
- A summary table for the overall trip generation
- A summary table showing trip increase

Trip information shall be broken down by entering, exiting and total trips, for both the peak hour of the generator and adjacent street. AM and PM weekday as well as Weekend peak hour trip volumes shall be summarized unless the Region Traffic Engineer specifies otherwise.

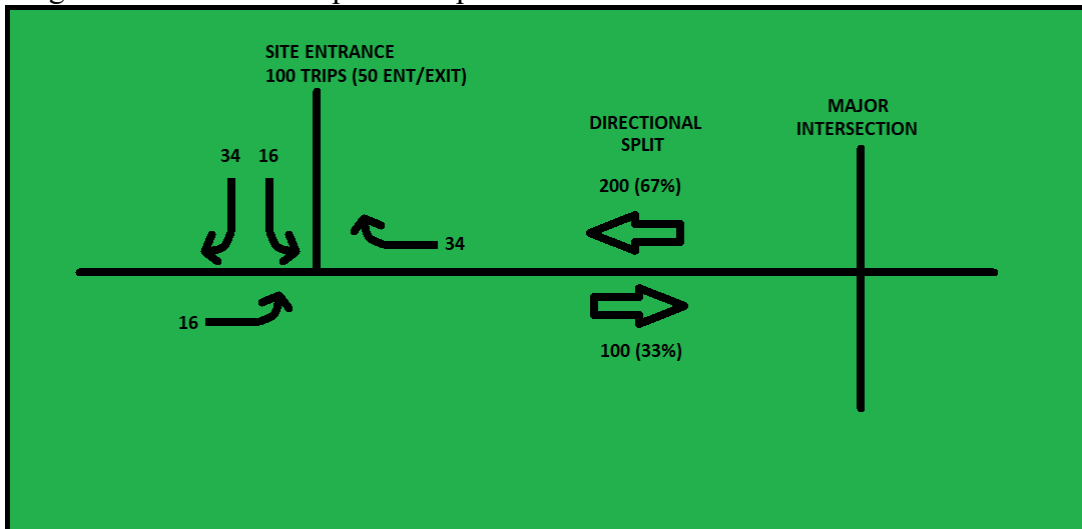
If the development contains multiple phases, a plan to develop a property in definable segments over time, the overall trip generation summary table shall be organized such that each phase shows a sub total trip generation.

Section 1F: Trip Distribution

Trip distribution diagrams show how the proposed trips generated by the project distribute throughout the study area. For 100 to 200 trip TMPs After determining the trip rates and calculating the total number of trips generated by a development, trips can be distributed using existing traffic patterns as a reference.

Plotting a trip distribution diagram starts at the site entrance. At the site entrance the entering and exiting volumes of a site, determined in section 1E, are distributed by direction using the directional split of existing traffic on the adjacent roadway for that peak hour. The directional split of traffic is the percentage of traffic traveling in one direction compare to the percentage of traffic traveling in the opposite direction. The directional split of existing traffic for a given peak hour is typically determined using a turning-movement count of the closest major intersection to the site entrance. See diagram A below for a basic example of how to determine a directional split using an intersection turning movement count.

Diagram A: Directional Split Example



For larger study areas including multiple intersections the process continues to use the existing traffic volumes/splits to distribute site traffic.

For sites with more than one entrance, located on one roadway or on multiple roadways, engineering judgement will be used to determine the volumes of site traffic using each respective entrance. For larger developments site specific uses will factor into entrance use.

Other methods of determining existing traffic patterns include but are not limited to the following:

- Permanent count stations: MaineDOT operates several permanent count stations throughout the state, primarily located on arterial highways. If this data is available near a proposed development it may be requested and used to determine directional splits.
- Traffic Model Programs: Generally used for larger developments where a site's traffic impacts may extend several miles.
- Proprietary Data (ex: Street Light or Tom Tom): Data collected from devices such as smart phones can provide additional insight on general traffic patterns for a given area.

The RTE shall be consulted when using alternative methods to establish the traffic distribution of a proposed development.

Trips shall be categorized as primary, diverted or pass-by trips, defined by ITE. A breakdown of the three trip types is provided by ITE for each LUC.

When completing section 1F of the TMP application tables of the following trip information shall be provided.

- Distribution diagram of existing traffic for the study area.
- Distribution diagram of proposed site traffic for the study area.
 - Distinguish between primary, pass-by and diverted trips.
 - Separate diagrams may be provided for each time period being analyzed.