pennsylvania
DEPARTMENT OF TRANSPORTATION

**494-24-02**

**DATE:** June 24, 2024

**SUBJECT:** Publication 282 updates regarding warehouse trip generation best practices

**TO:** District Executives

**FROM:** Steve Gault, P.E., PTOE, Acting Director
Bureau of Operations

for Doug Tomlinson P.E.

This Strike-off-Letter (SOL) is time and resource neutral and updates portions of Publication 282, Highway Occupancy Permit (HOP) Operations Manual, to include additional guidance for selecting an appropriate land use code for warehouse facilities. Attachment G in Appendix A has been renamed to "Attachment "G" Series: Special Land Use Considerations and Guidance." Information regarding convenience markets with gasoline pumps is now Attachment G1 and the new warehouse facility guidance is Attachment G2.

This SOL is effective immediately for all HOP applications that have not yet received trip generation concurrence from the Department.

This update will be incorporated into the next release of Publication 282. It was discussed during the January and February 2024 monthly statewide HOP Managers meetings (attended by Engineering Districts, Central Office, and Office of Chief Counsel personnel). A Step 1 External Clearance Transmittal (T-24-006) was also distributed in February with all comments received being resolved.

Should you have any questions or require additional information, please contact Michael Dzurko, Manager, HOP Program, at 717.783.6080.

Attachments

4943/MD/acp

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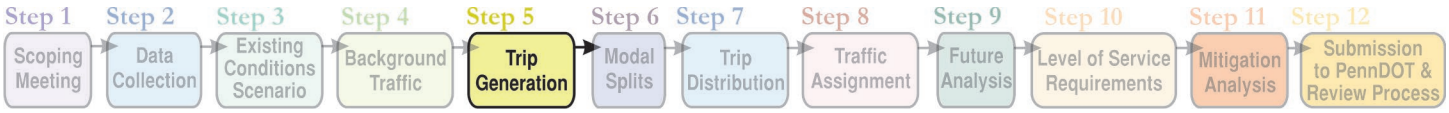
MWR Read File
DPF Read File




## STEP 5: TRIP GENERATION

Trip Generation

Trip generation is defined as the total number of trips going to and from a particular land use on a specific site during a specific time period. For sites in suburban and rural contexts, and for many sites in urban contexts, vehicular trips will typically account for the large majority of trips. Trips by public transit, bicycles, or by foot may be important components of trip generation in urban contexts, sites that have regular access to transit routes or other multi-modal facilities, or for special traffic generators.

*The traffic characteristics of a proposed development are estimates of the following transportation attributes:*

- *Trip Generation: How much traffic the site will add to the surrounding transportation network.*
- *Trip Distribution: Where the trips arriving at the site originate from.*
- *Modal Split: What mode(s) of transportation is used to reach/depart the site.*
- *Trip Assignment: What route(s) are used to reach/depart the site?*

The Department has accepted the most current ITE "Trip Generation Handbook" and its updates for the development of trip generation. Instructions on the use of the data and step by step methodologies for estimating vehicular trips are described in the publication. The Trip Generation Handbook also provides guidance for the conversion of vehicular trips to person trips so that internal capture, walking trips, bicycle trips, and transit trips can all be accounted for before reaching a vehicular trip generation if the situation dictates.

As part of the scoping meeting, applicants are required to receive Department concurrence and approval on the land use codes and trip generation methodology used for the proposed site. applicants should be prepared to describe the site's characteristics (urban, infill, etc.), identify transit and multi-modal accommodations or deficiencies, and justify the reason for selection of the analysis approach.

Refer to Attachment G for additional trip generation considerations and guidance on warehouse facilities and convenience markets with gasoline pumps.

Figure 3.1 from ITE's " Trip Generation Handbook", 3rd Edition is recreated below for reference. This analysis approach determines if traditional trip generation methodology simply using ITE's generation rates or equations is acceptable, or if the more in-depth methodology converting to person trips is required. The following items may trigger the need for the enhanced methodology:

- The site is located in an urban area or classified as infill

# ATTACHMENT "G" SERIES: SPECIAL LAND USE CONSIDERATIONS AND GUIDANCE

## ATTACHMENT G1 - CONVENIENCE MARKET WITH GASOLINE PUMPS

The following guidance should be followed when completing studies for various sized convenience markets with gasoline pumps:

Trip Generation

ITE states, "Convenience Market with Gasoline Pumps (Land Use 853), Gasoline/Service Station with Convenience Market (Land Use 945) and Super Convenience Market/Gas Station (Land Use 960) were re-assigned to a single new land use Convenience Store/Gas Station (Land Use 945). Multiple subcategories were added to this land use to allow for multi-variable evaluation with single-variable data plots. Convenience Market with Gasoline Pumps (Land Use 853) and Super Convenience Market/Gas Station (Land Use 960) were removed as land uses."

Existing Facilities: For existing facilities that are being rebuilt or being relocated within the same municipality, traffic counts shall be completed at the existing site driveways and local trip generation rates established for each analysis period. The engineer should then determine whether the local trip generation rates or the ITE rates should be used based on the proposed location, size and adjacent traffic conditions.

Local Trip Generation: Although a proposed development might correspond to the ITE land use code with adequate data points, the applicant may request or the Department may require the use of data collected at comparable sites if there is reason to believe that site trip generation will vary from ITE rates.

Pass-by Trips

1) Weekday A.M. Peak Period and Weekday P.M. Peak Period: Use the pass-by and non-pass-by trip tables in the ITE *Trip Generation Handbook* to determine the appropriate land use pass-by trips.

2) Saturday Midday Peak Period: Use ten percent less than the Weekday P.M. Peak Period average pass-by trip percentage provided in the *ITE Trip Generation Handbook* for applicable land use.

3) According to ITE's *Transportation Impact Analyses for Site Development*, adjustments should be made to the number of pass-by trips if the results do not appear to be logical or reasonable given the characteristics of the road system and trip distribution. For example, ITE's *Transportation Impact Analyses for Site Development* states that pass-by trips diverted from a thoroughfare should be rechecked if they represent more than 15 percent of the traffic volume on that street.

Driveway Design

The study should identify the driveway classification (low volume, medium volume, or high volume), as defined in PA Code Title 67, Chapter 441.1, for each driveway serving the proposed development. If the design standards provided in PA Code Title 67, Chapter 441.9 for the driveway classification cannot be met (i.e., driveway throat length), justification must be provided. Queue analyses should be completed for the driveway egress to justify driveway throat lengths that are less than those shown in the standards. The site should also be designed to ensure that site traffic circulation (e.g., the location of the gasoline pumps and parking spaces) will not negatively impact the driveway operation. For sites being designed to accommodate trucks, the location of on-site trucking facilities and the impact on site circulation and driveway operation should also be considered.

Access Management

The study should evaluate the need to restrict turning movements at the proposed driveway(s). If a driveway is proposed within the functional area or corner clearance of an intersection as described in TRB's *Access Management Manual*, consideration to restrict turning movements should be analyzed based on but not limited to the site design, the adjacent street lane configurations, traffic volumes, traffic speeds, type of highway being accessed, and alternative access points. Additional restrictions may also be required such as the complete elimination of the proposed access.

## ATTACHMENT G2 - WAREHOUSE FACILITIES

Based on the findings from a Department study, the following best practices guidance was developed for Districts to consider when permitting speculative warehouse facilities:

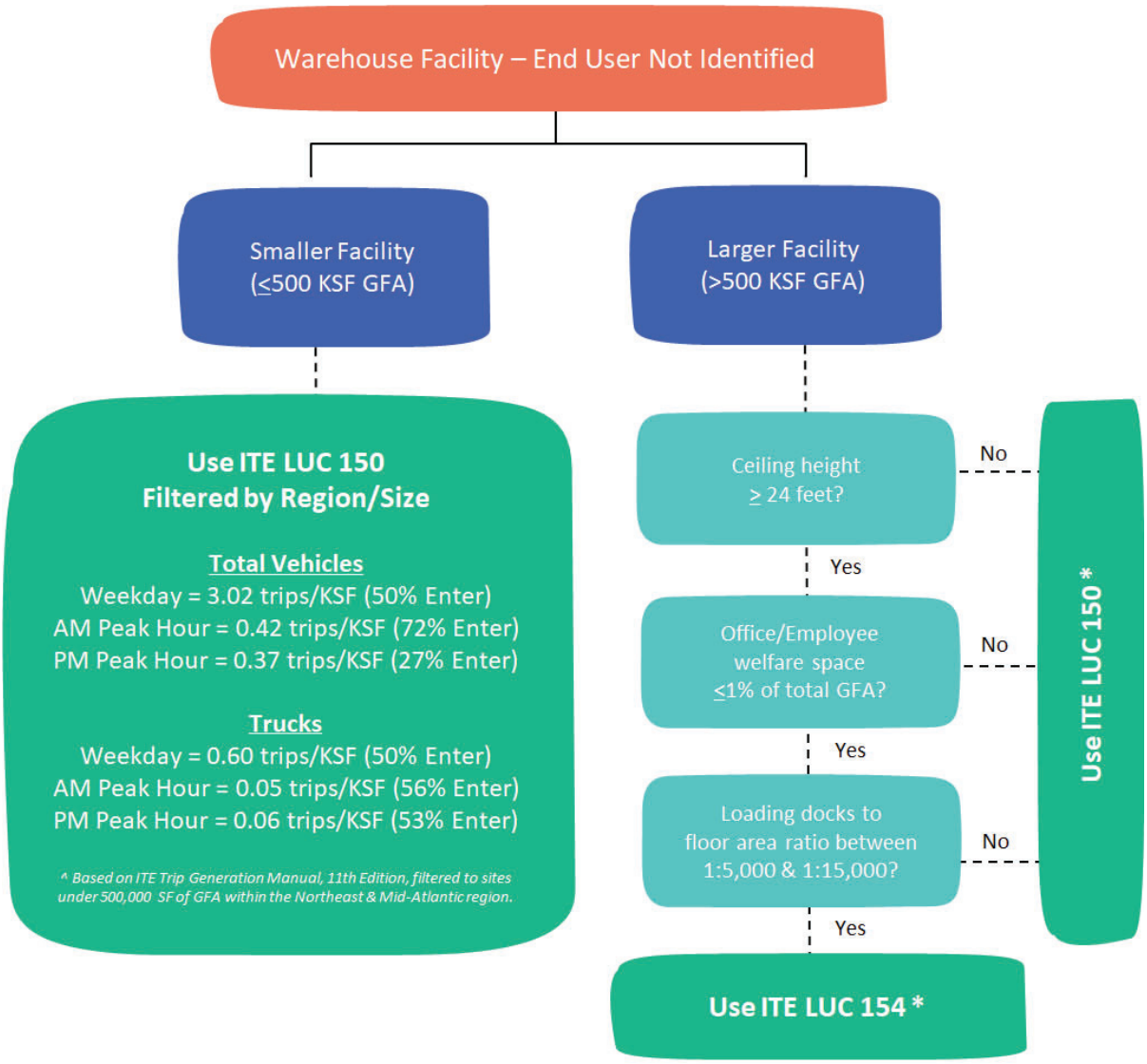
- Understand the use in the land use: The amount of traffic associated with a warehouse facility can vary greatly depending on the function and logistics designation. As part of the scoping meeting, applicants should document the characteristics of the warehouse use.
    - Cross docks may signify major distribution centers or large fulfillment centers.
    - Building height greater than 40 feet may signify cold storage facilities.
    - Large parking fields may signify larger employee count for the facility indicative of fulfillment centers.
    - Parking fields that accommodate various vehicle types may signify a last-mile fulfillment center.
    - Facilities with very high truck parking ratios to dock positions may signify a parcel hub.

- Utilize data subsets in ITE TripGen web app: The ITE digital trip generation database can be filtered to provide a better estimation of trips for smaller facilities. If employed, consider the use of ITE Land Use Code 150 warehouse trip data filtered by size (under 500 KSF) and region (Northeast & Mid-Atlantic) for smaller facilities.

- Apply permit conditions to limit potential end users: If the characteristics are not satisfactorily provided or the development is considered speculative with no end user identified, consider applying permit conditions to the highway occupancy permit that provide the Department the ability to re-evaluate traffic impacts once an end user is identified. See permit condition codes #391 and 392.

- Specify Land Use Code 150 permits are not inclusive: Understanding trip characteristics vary based on the function and logistics of a warehouse facility, consider clearly specifying that highway occupancy permits classified under Land Use 150 are not inclusive of other warehouse-type facility, including but not limited to cold storage, last-mile fulfillment centers, and parcel hubs. If tenancy changes occur in the future, applicants should be required to supplement the existing permit with additional information so the Department can determine if additional traffic mitigations are warranted.

- A step-by-step procedure (flow chart) is provided below for the Department to consider in determining how best to estimate trip generation for future speculative warehouse facilities until such time that a new version of ITE's Trip Generation Manual is published.




** Follow ITE Trip Generation Handbook guidance for selecting average rate or equation in Trip Generation Manual Data*

Note: The Department's Warehouse Trip Generation Study can be found in the Department's P:\permits shared folder.