



**WisDOT Division of Transportation System Development**  
Bureau of Traffic Operations  
4822 Madison Yards Way, 5<sup>th</sup> Floor South  
Madison, WI 53705

**Governor Tony Evers**  
**Secretary Craig Thompson**  
[wisconsindot.gov](http://wisconsindot.gov)  
(608) 266-1260  
[william.mcrary@dot.wi.gov](mailto:william.mcrary@dot.wi.gov)

**Date:** January 6, 2022

**To:** Ops Chiefs  
Planning Chiefs

**From:** William R. McNary, P.E.  
State Traffic Engineer

**Subject:** ITE *Trip Generation Manual 11<sup>th</sup> Edition* – Guidance on Application

## INTRODUCTION

A traffic impact analysis (TIA) is a specialized engineering study that determines the potential traffic impacts of a proposed development. To determine what impact, if any, the proposed development may have on the surrounding roadway network, it is necessary to estimate the trip generation potential of the development. As outlined in the Wisconsin Department of Transportation (WisDOT) [Traffic Impact Analysis Guidelines](#), the most commonly accepted source for land use development trip generation data is the current version of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*.

In September 2021, ITE released the 11<sup>th</sup> Edition of the *Trip Generation Manual* (ITE TGM11). With the release of the 11<sup>th</sup> Edition of the *Trip Generation Manual*, ITE introduced several significant changes in content when compared to the 10<sup>th</sup> Edition (ITE TGM10), including the addition of new land use codes, the combination or elimination of some previous land use codes, and the renaming of other land use codes. The following sections summarize how these changes may impact trip generation calculations and provides guidance on how to apply ITE TGM11 moving forward.

## ITE TRIP GENERATION MANUAL 11<sup>TH</sup> EDITION UPDATES

Highlights of some of the major changes associated with the release of ITE TGM11 include:

### General

- Removal of all multi-variable equations
- Addition of subcategories to several land uses

### Industrial Land Uses(100s)

- Addition of a new land use for Marijuana Cultivation and Processing Facility (190)

### Residential Land Uses (200s)

- Removal of occupied dwelling units as an independent variable for all residential land uses (200s)
- Removal of occupied beds as an independent variable for group quarters land uses (254, 255, 571, 620)
- Removal of vehicles as an independent variable for Single-Family Detached Housing (210)
- Addition of new land use for Single-Family Attached Housing (215)
- Division of Off-Campus Student Apartments into 3 land uses: Low-Rise (225); Mid-Rise (226), and High-Rise (227)

- Division of Multifamily Residential with Ground-Floor Commercial (previously 1<sup>st</sup>-Floor Commercial) into 3 land uses: Low-Rise (230), Mid-Rise (231) and High-Rise (232)
- Removal of commercial gross floor area as an independent variable for Multifamily Residential with Ground-Floor Commercial (230, 231, 232)
- Combination of the Detached and Attached Senior Adult Housing into one single land use: Senior Adult Housing-Single-Family (251)

### **Recreational Land Uses (400s)**

- Combination of Movie Theater and Multiplex Movie Theater into one single land use: Movie Theater (445)
- Removal of Arena land use (450)
- Modification of the independent variable for Snow Ski Area (466) from number of slopes to number of lifts

### **Institutional Land Uses (500s)**

- Reorganization of several school land uses to provide a more logical numbering sequence

### **Office Land Uses (700s)**

- Removal of occupied gross floor area (GFA) as an independent variable for all office buildings
- Removal of Government Office Complex land use (733)

### **Retail Land Uses (800s)**

- Division of Shopping Center into 3 land uses: Shopping Center (>150k) (820), Shopping Plaza (40-150k) (821), and Strip Retail Plaza (<40k) (822)
- Combination of Discount Supermarket and Supermarket into one single land use: Supermarket (850)
- Removal of the Discount Supermarket land use (854)

### **Services Land Uses (900s)**

- Replacement of gross floor area as an independent variable with number of drive-through lanes for the following two land uses:
  - Fast-Food Restaurant with Drive-Through Window and No Indoor Seating (935)
  - Coffee/Donut Shop with Drive-Through Window and No Indoor Seating (938)
- Removal of Bread/Donut/Bagel Shop without Drive-Through Window (939) and with Drive-Through Window (940) land uses. The data from these were re-assigned to the existing Coffee/Donut Shop Without (937) and With Drive-Through Window (938) as appropriate
- Addition of new land use for Brewery Tap Room (971)
- Modification of Truck Stop land use (950) to include only truck trips and to use commercial vehicle fueling positions (VFP) rather than site gross floor area as the independent variable

## **Convenience Store (Market)/Gas Station Land Uses (945)<sup>1</sup>**

- Combination Convenience Market with Gasoline Pumps, Gasoline/Service Station with Convenience Market, and Super Convenience Market/Gas Station into a one single land use: Convenience Store/Gas Station (945)
- Addition of multiple subcategories to the Convenience Store/Gas Station (945) land use to allow for multi-variable evaluation with single-variable data pots
- Removal of Convenience Market with Gasoline Pumps (853) and Super Convenience Market/Gas Station (960) land uses

[Attachment 2](#) provides additional details on the changes made to the ITE Trip Generation Manual since the 10<sup>th</sup> Edition.

### **ACCEPTABLE APPLICATION OF ITE TRIP GENERATION MANUAL 11<sup>TH</sup> EDITION**

WisDOT's review of the updates included in the ITE *TGM11* found the modified trip generation rates for all land uses, **except for the Convenience Store (Market)/Gas Station land uses (945)**, to be acceptable for completing trip generation estimates and TIAs for developments in Wisconsin.

WisDOT is currently conducting a study to develop Wisconsin-specific trip generation rates for gas stations with convenience stores. While the Wisconsin-specific trip generation study is ongoing, developers **shall** continue to use the May 7, 2021 [Trip Generation for Convenience Market/Gas Station – Interim Guidance](#) when completing trip generation estimates and TIAs involving a convenience store (market)/gas station.

### **SUMMARY**

Until further notice, TIA preparers *should* continue to use the May 7, 2021 [Trip Generation for Convenience Market/Gas Station – Interim Guidance](#) when completing trip generation estimates and TIAs involving a convenience store (market)/gas station. WisDOT will not accept the use of the ITE *TGM11* trip generation rates for the Convenience Store/Gas Station land use (945).

For all other land uses apart from the Convenience Store/Gas Station (945), all TIAs initiated on or after **March 1, 2022** should use the ITE *Trip Generation Manual 11<sup>th</sup> Edition* in accordance with the guidance outlined in the WisDOT [Traffic Impact Analysis Guidelines](#). TIAs initiated prior to March 1, 2022 may continue to use the trip generation rates from the ITE *Trip Generation Manual 10<sup>th</sup> Edition*.

Coordinate with the WisDOT regional traffic contact to assess the applicability on the use of the ITE *TGM11*, ITE *TGM10*, or the May 7, 2021 [Trip Generation for Convenience Market/Gas Station – Interim Guidance](#). [Attachment 1](#) provides a map that shows the contact information for each regional office.

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<sup>1</sup>Until further notice, TIA preparer's shall continue to use the May 7, 2021 [Trip Generation for Convenience Market/Gas Station – Interim Guidance](#) when completing trip generation estimates and TIAs involving a convenience store (market)/gas station.

## **Attachment 1 Regional Office Traffic/TIA Contact Information**

### **Superior Office**

1701 N. 4th St.  
Superior, WI 54880  
(715) 392-7925  
FAX (715) 392-7863  
[nwr.dtsd@dot.wi.gov](mailto:nwr.dtsd@dot.wi.gov)

### **Rhinelander Office**

510 N. Hanson Lake Rd.  
Rhinelander, WI 54501  
(715) 365-3490  
FAX (715) 365-5780  
[ncr.dtsd@dot.wi.gov](mailto:ncr.dtsd@dot.wi.gov)



### **Eau Claire Office**

718 W. Clairemont Ave.  
Eau Claire, WI 54701  
(715) 836-2891  
FAX (715) 836-2807  
[nwr.dtsd@dot.wi.gov](mailto:nwr.dtsd@dot.wi.gov)

### **La Crosse Office**

3550 Mormon Coulee Rd.  
La Crosse, WI 54601  
(608) 785-9022  
FAX (608) 785-9969  
[swr.dtsd@dot.wi.gov](mailto:swr.dtsd@dot.wi.gov)

### **Madison Office**

2101 Wright St.  
Madison, WI 53704  
(608) 246-3800  
FAX (608) 246-7996  
[swr.dtsd@dot.wi.gov](mailto:swr.dtsd@dot.wi.gov)

### **Wisconsin Rapids Office**

1681 2<sup>nd</sup> Ave South  
Wisconsin Rapids, WI 54495  
(715) 421-8302  
FAX (715) 423-0334  
[ncr.dtsd@dot.wi.gov](mailto:ncr.dtsd@dot.wi.gov)

### **Green Bay Office**

944 Vanderperren Way  
Green Bay, WI 54304  
(920) 492-5643  
FAX (920) 492-5640  
[ner.dtsd@dot.wi.gov](mailto:ner.dtsd@dot.wi.gov)

### **Waukesha Office**

141 NW Barstow St.  
Waukesha, WI 53187  
(262) 548-5902  
FAX (262) 548-5662  
[ser.dtsd@dot.wi.gov](mailto:ser.dtsd@dot.wi.gov)

## **Attachment 2 Changes Since 10<sup>th</sup> Edition**

# 3 | Changes Since 10th Edition

The 11th Edition of *Trip Generation Manual* has undergone several significant changes in content when compared to the 10th Edition. New land use classifications were added and a re-examination of existing data resulted in several changes to land use codes, independent variables, and land use descriptions. The content and data plots were also reorganized to facilitate use of the 11th Edition. Significant changes are summarized in this chapter.

The first volume of *Trip Generation Manual*, 11th Edition (Desk Reference) includes the chapter content that establishes the format, framework, and content of the overall 11th Edition. Volume 2 includes the land use description pages and data plots for sites in an urban setting. Volumes 3 through 5 contain the land use description pages and data plots for sites in either a suburban or rural setting. In the 10th Edition, data plots by setting were comingled for each individual land use. Further, the 11th Edition includes over 900 additional data plots accessible through the ITETripGen web app or a secure ITE trip generation website [www.ite.org/tripgenappendices](http://www.ite.org/tripgenappendices). These supplemental plots include truck trip plots for all land uses for which data are available and individual modal trips and person trips for non-urban settings.

The ITETripGen web app menus now enable selection of the site setting immediately after selection of a land use code. By promoting this selection to earlier in the web app data plot definition process, potential errors in the mixing of urban and suburban data plots are minimized for the analyst.

The 11th Edition removes occupied dwelling units as an independent variable for all residential land uses in the 200s, occupied beds for several group quarters land uses (254, 255, 571, 620), and occupied GFA for office buildings. In all cases, the total number of units is considered a more accurate and reliable independent variable and has been retained. The 11th Edition retains occupied units as independent variables for all lodging uses (the 300s), mini-warehouse (151), campground/recreational vehicle park (416), and park-and-ride lot with bus or light rail service (090).

The 11th Edition has added subcategories to several land uses as described below. These subcategories provide, in essence, additional land uses as subsets of current land uses.

The 11th Edition removes all multi-variable equations presented in the 10th Edition. The land use subcategories offer an improved approach for estimating trip generation for those land uses.

In an effort to continually provide data that accurately reflect the composition of each land use, some data were reassigned to other land uses, corrected from previous editions, or removed from the database. Several new land uses were added as a result of the receipt of new data and reclassification of existing land uses. Several land uses were also renumbered to facilitate a more logical grouping of related land uses.

## **Industrial Land Uses (100s)**

Marijuana Cultivation and Processing Facility (Land Use 190) was added as a new land use.

## **Residential Land Uses (200s)**

The term vehicles was removed as an independent variable for Single-Family Detached Housing (Land Use 210). Dwelling units was retained as the preferred and more accurate independent variable.

A new land use for Single-Family Attached Housing (Land Use 215) was added.

The number-of-floors threshold between Multifamily Housing (Low-Rise) (Land Use 220) and Multifamily Housing (Mid-Rise) (Land Use 221) was revised; low-rise sites are now defined as having three or less floors and mid-rise sites have between four and 10 floors.

The proximity of a residential site to a rail transit station was added as a subcategory for all multifamily housing land uses (Land Uses 220, 221, and 222).

Off-Campus Student Apartments were divided into low-rise, mid-rise, and high-rise land uses (Land Uses 225, 226, and 227).

Multifamily Residential with 1st-Floor Commercial land uses (Land Uses 231 and 232) have been renamed Multifamily Residential with Ground-Floor Commercial and have been split into Low-Rise, Mid-Rise, and High-Rise (Land Uses 230, 231, and 232) using the same number-of-floors thresholds as Land Uses 220, 221, and 222.

Commercial gross floor area has been removed as an independent variable for the Multifamily Residential with Ground-Floor Commercial land uses (Land Uses 230, 231, and 232) because it is much better suited to function as a land use subcategory.

Senior Adult Housing—Detached (Land Use 251) and Senior Adult Housing—Attached (Land Use 252) have been combined into a new Senior Adult Housing—Single-Family (Land Use 251) that includes both detached and attached housing. New data have been used to create Senior Adult Housing—Multifamily (Land Use 252).

## **Recreational Land Uses (400s)**

Movie Theater (Land Use 444) and Multiplex Movie Theater (Land Use 445) were combined into a single land use Movie Theater (Land Use 445) that now contains all movie theater data.

Arena (Land Use 450) was removed as a land use after reexamination of the single study site in the database indicated the site may not conform to the land use description.

The primary independent variable for Snow Ski Area (Land Use 466) was revised from the number of slopes to the number of lifts.

Casino/Video Lottery Establishment (Land Use 473) was renamed Casino (Land Use 473) because it now includes full-service casinos as well as the smaller video lottery establishments.

## **Institutional Land Uses (500s)**

Several school land uses were reorganized to provide a more logical numbering sequence. The public school land uses were reorganized within the 520-528 range. High School (Land Use 530) was renumbered as Land Use 525 and School District Office (Land Use 538) which consists entirely of facilities for public schools was recoded as Land Use 528.

The private school land uses were reorganized within the 530-534 range. Private School (K-8) (Land Use 534) was renumbered as Land Use 530, Private School (K-12) (Land Use 536) was renumbered as Land Use 532, and Private High School (Land Use 534) was added as a new land use.

The charter school land uses were reorganized within the 536-538 range; Charter Elementary School (Land Use 537) was renumbered as Land Use 536. Charter School (K-12) (Land Use 538) was added as a new land use.

Prison (Land Use 571) was renamed Adult Detention Facility (Land Use 571) because it includes both jails and prisons.

## **Office Land Uses (700s)**

The description of a Small Office Building (Land Use 712) was changed from a single tenant office with less than or equal to 5,000 gross square feet in size to a single tenant office with less than or equal to 10,000 square feet. The description for Office Building (Land Use 710) was also adjusted accordingly.

Land use subcategories were added to the Medical-Dental Office Building (Land Use 720) sites to indicate whether the sites were stand-alone or located within or adjacent to a hospital campus.

Government Office Complex (Land Use 733) was removed because its single data point consists of a mixed-use site and not a single land use. The data is of limited value due to the uniqueness of the site.

## **Retail Land Uses (800s)**

Shopping Center (Land Use 820) was divided into three separate land use codes: Shopping Center (>150k) (Land Use Code 820) for sites with more than 150,000 square feet GLA, Shopping Plaza (40-150k) (Land Use Code 821) for sites between 40,000 and 150,000 square feet GLA, and Strip Retail Plaza (<40k) (Land Use 822) for sites with less than 40,000 square feet GLA.

Land use subcategories were added to the new land use Shopping Plaza (40-150k) (Land Use 821) to indicate whether the plaza includes a supermarket.

Convenience Market (Land Use 851) was renamed Convenience Store (Land Use 851).

The data from the existing Discount Supermarket (Land Use 854) was reclassified. The large discount supermarkets were merged into the overall Supermarket (Land Use 850). Discount Supermarket (Land Use 854) was removed as a land use.

## **Services Land Uses (900s)**

Quality Restaurant (Land Use 931) was renamed Fine Dining Restaurant (Land Use 931).

Gross Floor Area was removed as an independent variable and replaced by the number of drive-through lanes for the following two land uses:

- Fast-Food Restaurant with Drive-Through Window and No Indoor Seating (Land Use 935)
- Coffee/Donut Shop with Drive-Through Window and No Indoor Seating (Land Use 938)

Examination of the study sites that comprise Bread/Donut/Bagel Shop without Drive-Through Window (Land Use 939) and Bread/Donut/Bagel Shop with Drive-Through Window (Land Use 940) revealed that the sites included in these land uses fit the definition and trip generation characteristics of the existing coffee/donut shop land uses. Therefore, land uses 939 and 940 were removed and the study sites were re-assigned to the appropriate coffee/donut shop land uses (Land Uses 936 and 937).

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.

The trips recorded in the Truck Stop (Land Use 950) land use were modified to include only truck trips. Data plots now use the commercial VFP as the independent variable rather than site gross floor area.

Three service land uses with a focus on the consumption of alcoholic beverages were updated and are now grouped in the 970s. Winery (Land Use 970) was renamed as Wine Tasting Room (Land Use 970) to better reflect the data contained in this land use. Brewery Tap Room (Land Use 971) was added as a new land use. Drinking Place (Land Use 925) was renumbered as land use 975.

## **Technical Appendices**

The technical appendices in the 11th Edition now provide access to pass-by trip percentages (previously in the *Trip Generation Handbook*) as well as time-of-day distributions and modal trip percentages. The appendices can be accessed either through the ITETripGen web app or through the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).