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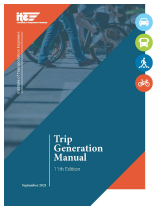
Trip Generation 11th Edition - Print Edition



ITE Trip Generation 11th Edition - Print Edition

This new edition of the Trip Generation Manual enhances the 10th edition's modernized content and data set - making it an invaluable resource.

The 11th edition is a five (5) volume printed set that includes a Desk Reference and four volumes of data plots:

-All the latest multimodal trip generation data for urban, suburban and rural applications,
-Reclassified land uses to better meet user needs,
-Copies of all land use definitions, plots and supporting materials.

By ordering this print edition, you will only receive the print version of TripGen11 and no access to the digital version. There are combined digital and printed options available at a discount. For more details, go here: https://www.ite.org/technical-resources/topics/trip-and-parking-generation/

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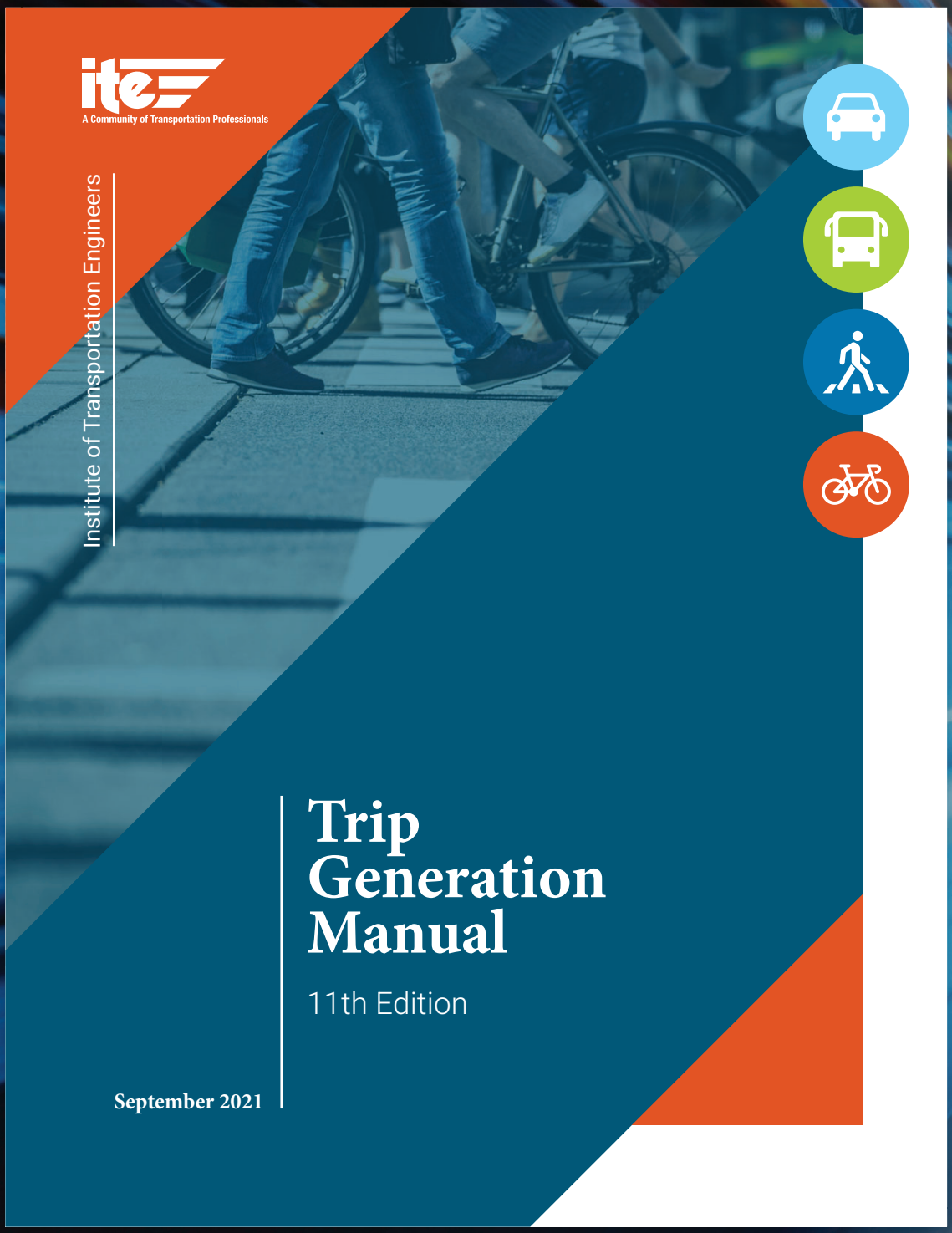

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Updates to the Trip Generation Manual, 11th Edition

In September 2021, ITE released the 11th Edition of the transportation profession's leading source of trip generation information—*Trip Generation Manual* (TGM). This new edition updates and enhances the 10th Edition by providing the latest multimodal trip generation data for urban, suburban, and rural locations.

Trip Generation Manual contains text, tables, data plots, and statistics that describe current state-of-the-practice understanding of the relationship between walk, bicycle, transit, motor vehicle, and truck trip generation and characteristics associated with an individual development site or land use. TGM also presents land use descriptions and data plots for combinations of available land uses, time periods, independent variables, and settings contained in the ITE database.

The 11th Edition of TGM has undergone numerous changes in content and format when compared to the 10th Edition. The significant improvements described in this article are due largely to the efforts, attention, and diligence of the Trip Generation Review Panel.

TGM Format and Organization Changes

The primary means for accessing the 11th Edition is through the ITETripGen web app. The web app provides immediate access to integrated digital copies of all related land use definitions, plots, and supporting materials (including the desk reference, pass-by trip generation information, *Trip Generation Handbook*, truck trip generation, hourly distribution data, and supplemental plots). The entire PDF version of the 11th Edition is now accessible through the web app.

Trip Generation Manual, 11th Edition is also offered in five hard copy volumes. The first volume (Desk Reference) includes the chapter content that establishes the format, framework, and content of the overall 11th Edition (same as for the 10th Edition).

Volume 2 includes the land use description pages and data plots for the 43 land uses with sites in either a dense multi-use urban setting or center city core setting. If data are available, plots are provided for vehicle, person, walk, bicycle, transit, and walk+bicycle+transit trips.

Volumes 3 through 5 contain the land use description pages and data plots for the 177 land uses with sites in either a suburban or rural setting. Data plots are provided for vehicle and walk+bicycle+transit trips.

Further, the 11th Edition includes over 900 supplemental data plots accessible through the ITETripGen web app or through access to a protected ITE website for hard copy users. These supplemental plots include truck trip plots for all land uses for which data are available and individual modal and person trip plots for suburban and rural settings.

ITETripGen Web App Updates

The menu order on the ITETripGen Graph Look Up page has been changed to allow selection of the site setting immediately after selection of a land use code. The default site setting is General Urban/Suburban. By promoting this selection to earlier in the web app data plot definition process, the analyst can see what independent variable and time period combinations have data plots available in their site setting. This early definition also minimizes potential errors in the mixing of urban and suburban data plots.

For the 10th Edition, upon selection of a land use, the app provided a "Click for more details" link that pulled up a PDF of the

Land Use Description page for the specified land use. For the 11th Edition, the link pulls up a PDF of the Land Use Description page plus all data plots associated with that land use. The PDF format enables the analyst/user to print individual pages or to copy/paste selected data plots into reports as desired.

The Technical Support button on the left banner of the Graph Look Up page has been expanded by adding three buttons:

- TGM Desk Reference–includes all nine chapters of the 11th Edition Desk Reference (e.g., definitions of terms, list of data sources)
- TGM Appendices–includes tables with time-of-day distributions, tables with pass-by trips (previously available only in *Trip Generation Handbook*), modal data plots for sites in suburban settings, truck data plots for all land uses, and modal and truck percentages for all land uses
- Supporting Trip Generation Documents–includes *Trip Generation Handbook* 3rd Edition and other ITE resources that also reside on the ITE Trip Generation Resource Page

Trip Generation Land Use Description/Data Updates

Industrial Land Uses (100s)

The 10th Edition Supplement introduced the use of land use subcategories for High-Cube Fulfillment Center Warehouse (Land Use 155) with sort and non-sort subcategories. These subcategories provide, in essence, additional land uses as subsets of the current Land Use 155.

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

Residential Land Uses (200s)

Single-Family Attached Housing (Land Use 215) has been added as a new land use. Sites included in this land use are any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space. The database includes duplexes, townhouses, and row houses.

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

The proximity of a residential site to a rail transit station has been added as a factor to consider when using any of the multifamily housing land uses (Land Uses 220, 221, and 222). The default land use subcategory selection in the web app (and the initial set of data plots in the PDF and hard-copy versions) is that the site is not located close to a rail transit station. If the study site is located within a half-mile walk of a rail transit station, the land use subcategory "Close to Rail Transit" is the appropriate selection.

The 10th Edition Supplement introduced the use of land use subcategories for Affordable Housing (Land Use 223) with Income Limits and Senior as its two land use subcategories. The 11th Edition has added a third subcategory for affordable housing for special needs residents (which can include persons with physical and mental impairments, single mothers, recovering addicts, and others).

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

The proximity of an off-campus student apartment to a college campus was added with the 10th Edition Supplement as a factor to consider when using any of the off-campus student apartment land uses (Land Uses 225, 226, and 227). The default land use subcategory selection in the web app (and the initial set of data plots in the PDF and hard copy versions) is named/titled "Adjacent to Campus." If the study site is located more than a half-mile walk of the college campus, the land use subcategory "Over 1/2 Mile from Campus" is the appropriate selection.

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.

For the Multifamily Residential with Ground-Floor Commercial land uses (230, 231, and 232), the amount of gross floor area (GFA) designated for commercial use is used as a factor when estimating site trip generation. The default land use subcategory selection in the web app (and the initial set of data plots in the PDF and hard copy versions) is named/titled "GFA (1-25k)" which indicates the commercial GFA is between 1,000 and 25,000 square feet. The other commercial GFA choice provided is "GFA (25-65k)."

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 a new land use, Senior Adult Housing–Multifamily (Land Use 252).

The 11th Edition removes occupied dwelling units as an independent variable for the residential land uses in the 200s: (Land Uses 210 through 223, 230 through 252, and 260 through 270). The total number of dwelling units is considered a more accurate and reliable independent variable and has been retained.

The 11th Edition removes occupied beds as an independent variable for land uses that include at least some elements of group quarters living: Affordable Housing (Land Use 223), Assisted Living (Land Use 254), and Congregate Care Retirement Community (Land Use 255). The total number of beds is considered a more accurate and reliable independent variable and has been retained.

Recreational Land Uses (400s)

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

Arena (Land Use 450) has been 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) has been changed to the number of lifts.

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

Institutional Land Uses (500s)

Primary and secondary school land uses have been reorganized to provide a more logical numbering sequence.

- Public school land uses are now assigned within the 520-528 range–Elementary School (Land Use 520), Middle/Junior High School (Land Use 522), and High School (renumbered as Land Use 525). Because School District Office consists entirely of facilities for public schools, it has been recoded as Land Use 528.
- Private school land uses are now assigned within the 530-534 range–Private School (K-8) (renumbered as Land Use 530), Private School (K-12) (renumbered as Land Use 532), and Private High School (added as Land Use 534).
- Charter school land uses are now assigned within the 536-538 range–Charter Elementary School (renumbered as Land Use 536) and Charter School (K-12) (added as Land Use 538).

Prison (Land Use 571) has been renamed Adult Detention Facility because the database includes both jails and prisons.

The 11th Edition removes occupied beds as an independent variable for Adult Detention Facility (Land Use 571). The total number of beds is considered a more accurate and reliable independent variable and has been retained.

Medical Land Uses (600s)

The 11th Edition removes occupied beds as an independent variable for Nursing Home (Land Use 620). The total number of beds is considered a more accurate and reliable independent variable and has been retained.

Office Land Uses (700s)

The description of a Small Office Building (Land Use 712) has been changed to be a single-tenant office with less than or equal to 10,000 square feet of GFA. The description for General Office Building (Land Use 710) has been adjusted accordingly.

Trip Generation Manual, 11th Edition, Review Panel

Justin Barrett (M), JCB Engineering
Paul Basha (M), Summit Land Management
Gina Bonyani, FDOT
Chris Brehmer (M), Kittelson & Associates
Kenneth Cram (F), Bayside Engineering
Debbie Dantin (M), Dantin Consulting
Brian Dempsey (F), Provident Design Engineering
Alison Felix, Metropolitan Area Planning Council
John Gard (M), Fehr & Peers
Wes Guckert (F), The Traffic Group
Dan Hardy (M), Renaissance Planning Group
Randy McCourt (F), ITE Past President Retired
Nadereh Moini (M), New Jersey Sports and Exposition Authority
Cole Piechotta (M), City of Calgary
Fede Puscar (M), Bunt & Associates
Lisa Schletzbaum (M), MassDOT
Peter Terry (F), Benchmark Civil Engineering
Eric Tripi (M), GHD
Paul Villaluz (F), Westwood Professional Services
Tony Voigt (M), Voigt Associates
Mike Workosky (M), Wells and Associates
Brad Yarger, Yarger Engineering, Inc.
Darlene Danehy Yellowhair (M), Psomas
Diane Zimmerman (M), Zimmerman Traffic Engineering

The proximity of a Medical-Dental Office Building to a hospital has been added as a factor to consider for Land Use 720. The default land use subcategory selection in the web app (and the initial set of data plots in the PDF and hard copy versions) is that the site is stand-alone and is not adjacent to or within a hospital campus. If the study site is located within or near a hospital campus, the land use subcategory "Within/Near Hospital Campus" is the appropriate selection.

Government Office Complex (Land Use 733) has been 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.

The 11th Edition removes occupied GFA as an independent variable for all office land uses. Total GFA is considered a more accurate and reliable independent variable and has been retained.

Retail Land Uses (800s)

Shopping Center (Land Use 820) has been divided into three separate land use codes:

- Shopping Center (>150k) (Land Use Code 820) for sites with more than 150,000 square feet of gross leasable area (GLA)
- Shopping Plaza (40-150k) (Land Use Code 821) for sites between 40,000 and 150,000 square feet GLA
- Strip Retail Plaza (<40k) (Land Use 822) for sites with less than 40,000 square feet GLA

Whether or not a Shopping Plaza includes a supermarket has been added as a factor to consider for Land Use 821. The default land use subcategory selection in the web app (and the initial set of data plots in the PDF and hard copy versions) is that the shopping plaza includes a supermarket. If the study site does not include a supermarket, the land use subcategory "Supermarket - No" is the appropriate selection.

Convenience Market (Land Use 851) has been renamed Convenience Store (Land Use 851).

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

Services Land Uses (900s)

Quality Restaurant (Land Use 931) has been renamed Fine Dining Restaurant (Land Use 931).

Gross floor area (GFA) has been removed as an independent variable and replaced by the number of drive-through lanes for 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 have been removed and the study sites reassigned 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) have been reassigned to a single new land use Convenience Store/Gas Station (Land Use 945). Land Uses 853 and 960 have been removed.

Multiple land use subcategories have been added to Land Use 945 to allow for a multi-variable evaluation of sites with single-variable data plots. All study sites are assigned to one of three subcategories, based on the number of vehicle fueling positions (VFP) at the site:

- Between 2 and 8 VFP
- Between 9 and 15 VFP, and
- Between 16 and 24 VFP

For each VFP range subcategory, Land Use 945 data plots are presented with GFA as the independent variable for all available time periods and trip types. The use of both GFA and VFP (as the independent variable and land use subcategory, respectively) provides a significant improvement in the reliability of a trip generation estimate when compared to the single-variable data plots in prior editions of *Trip Generation Manual*. Further, the study sites are also assigned to one of three other subcategories, based on the convenience store GFA at the site:

- Between 2,000 and 4,000 square feet
- Between 4,000 and 5,500 square feet, and
- Between 5,500 and 10,000 square feet

For each GFA subcategory range, Land Use 945 data plots are presented with VFP as the independent variable for all available time periods and trip types. The use of both VFP and GFA (as the independent variable and land use subcategory, respectively) provides a significant improvement in the reliability of a trip generation estimate. Each combination of GFA and VFP values for a convenience store/gas station, the two sets of data plots produce two estimates of site-generated trips.

The trips recorded for Truck Stop (Land Use 950) have been modified to include only truck trips. Data plots now use the commercial VFP as the independent variable rather than general use VFP or site GFA.

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

Long-Term Effects of COVID Pandemic on Trip Generation

The COVID-19 pandemic has had immediate and significant impacts on the North American economy and on many elements of personal and business trip-making. Some of these effects, still ongoing as of this writing, are expected to be long lasting. The extent to which these impacts will have long-term impacts on ITE Trip Generation rates remains unknown.

All data plots and statistics presented in *Trip Generation Manual* (TGM) are based on data collected prior to the pandemic. ITE recognizes that some TGM data plots and statistics may need to be updated once post-pandemic conditions stabilize. ITE does not know with certainty which data plots and statistics will need to be updated until future study site data are collected and analyzed. Nevertheless, *Trip Generation Manual* identifies and discusses several land uses for which measurable changes in trip generation characteristics may occur. **itej**

Resources

For additional guidance on impacts of COVID-19 on travel demand, ITE has developed a COVID-19 resource web page that presents a wide variety of technical resource material to help provide an understanding of anticipated short- and longer-term impacts of COVID-19 on the transportation system and trip making characteristics.

See **www.ite.org/about-ite/covid-19-resources** for more information. Of particular relevance is the ITE report titled "What a Transportation Professional Needs to Know about Counts and Studies during a Pandemic." The report can be accessed through the ITE website: **https://ecommerce.ite.org/IMIS/ItemDetail?iProductCode=IR-148-E.**

Resources

Trip and Parking Generation Resources

The following is a listing of the most recent publications for this topic.

PUBLICATION TITLE

Updates to the Trip Generation Manual, 11th Edition
In September 2021, ITE released the 11th Edition of the transportation profession's leading source of trip generation information--Trip Generation Manual (TGM). This new edition updates and enhances the 10th Edition by providing the latest multimodal trip generation data for urban, suburban, and rural locations.
Oct 1, 2021

Parking Requirements for Limited-Service Hotels
An empirical study of five limited-service hotels ("hotels") located in South Florida, USA was performed to measure actual parking demand. This study is based on 35 total field-data-collection observations, seven different observations for each hotel, one for each day of the week, all performed at or near the 1 a.m. peak hour of occupancy for hotel guest rooms (all times are Eastern Standard Time). Following is a summary of key findings and conclusions.
Feb 1, 2021

Trip Generation 10th Edition Supplement - Hard Copy
The Trip Generation, 10th Edition Supplement offers significantly expanded multimodal data, including walk, transit, bicycle, and truck data. In addition, new land uses are available (high-cube fulfillment center warehouse, high-cube parcel hub warehouse and affordable housing has been as a new land use).
Feb 3, 2020

Trip Generation 10th Edition Supplement - Electronic
The Trip Generation, 10th Edition Supplement offers significantly expanded multimodal data, including walk, transit, bicycle, and truck data. In addition, new land uses are available (high-cube fulfillment center warehouse, high-cube parcel hub warehouse and affordable housing has been as a new land use).
Feb 3, 2020

Trip Generation Web-Based App
Trip Generation Web-Based App
Nov 4, 2019

ITEParkGen: Your Companion to the ITE Parking Generation Manual 5th Edition
ITEParkGen: Your Companion to the ITE Parking Generation Manual 5th Edition
Oct 24, 2019

Decision Support Methodologies for Parking Management on University Campuses
What's New in Trip and Parking Generation
Jul 23, 2019

Fulfillment Center Trip Generation
A large commercial development, spanning 700 acres, within a city in western San Joaquin County, CA, USA was approved after completion of the Environmental Impact Report in 2013. The development adjoins a number of collector distributor roads, and is in close proximity to two Interstate freeways 580 and 205, both running east to west at this location. International Parkway, a major collector road--slated to be improved to a major arterial--runs north to south between the two interstate freeways.
Jul 1, 2019

Parking Generation Manual, 5th Edition - FAQs
Parking Generation Manual, 5th Edition - FAQs
Mar 22, 2019

PUBLICATION TITLE

Features of the New ITE Parking Generation Manual
Latest Edition of the ITE Parking Generation Manual: What's Included • 60 percent new data than previous versions • Additional analysis capabilities (e.g., day of the week variations, seasonal variations) • Presents information for 121 land uses--including 19 new uses • Available in both hardcopy and electronic formats • Web-based app ITEParkGen allows convenient electronic access to entire data set
Feb 1, 2019

Parking Generation, 5th Edition - Printed Copy, Electronic, & App
This updated manual follows the lead of the modernized, updated, and expanded Trip Generation Manual, 10th Edition. The analyses in Parking Generation will differentiate the levels of parking demand observed at rural, general urban/suburban, dense multi-use urban, and center city core sites.
Jan 31, 2019

Parking Generation, 5th Edition - All Electronic (PDF + App)
This updated manual follows the lead of the modernized, updated, and expanded Trip Generation Manual, 10th Edition. The analyses in Parking Generation will differentiate the levels of parking demand observed at rural, general urban/suburban, dense multi-use urban, and center city core sites.
Jan 31, 2019

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use
Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use
Aug 17, 2018

Time of Day Distribution
Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use
Aug 17, 2018

Parking Generation Data Submission Form
Parking Generation Data Submission Form
Jul 11, 2018

Trip Generation Handbook Spreadsheet
Trip Generation Handbook Spreadsheet
Jul 11, 2018

Parking Generation, 4th Edition - Errata
Parking Generation, 4th Edition - Errata
May 14, 2018

Parking Generation, 3rd Edition - Errata
Parking Generation, 3rd Edition - Errata
May 14, 2018

Trip Generation, 9th Edition - Errata
Trip Generation, 9th Edition - Errata
May 14, 2018

Trip Generation, 8th Edition - Errata
Trip Generation, 8th Edition - Errata
May 14, 2018

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