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To: City of Tustin
Site: Enderle Center Rezone Project
EPD Project Number 23-069
Subject: Vehicle Miles Traveled (VMT) Analysis



This technical study evaluates the potential vehicle miles traveled (VMT) for the proposed Enderle Center Rezone Project (Project).

The Project is located at the southeast corner of 17th St and Carroll Way-Yorba St South. The Project site is designated Site 17 (Enderle Center) in the City's General Plan Housing Element and consists of approximately 11.62 acres. Of the site area, 7 acres have been identified suitable for housing development. The site is zoned as Planned Community Commercial (PC COM). PCCOM use is limited to nonresidential land uses. Currently the site supports a commercial center. Under the proposed overlay zone, a maximum of 413 housing units and 118,470 square feet (SF) of commercial use could be added to the existing land uses on site. The Project location is shown in Figure 1.

The VMT analysis presented in this document evaluates the VMT impacts of both the residential and commercial portions of the Project within the Enderle Center Housing Overlay Zone. Please note that this VMT analysis is based on the requirements of the *City of Tustin Vehicle Miles Traveled Analysis Guidelines*.

Project Trip Generation

The Project trip generation was calculated using trip rates from the Institute of Transportation Engineers, *Trip Generation 11th Edition*, 2021. Existing conditions (Baseline) were assessed using trip rates for Land Use Code 932 (High-Turnover Sit-Down Restaurant), 821 (Retail), and 710 (Office). Based on the density of the proposed housing, trip rates for Land Use Code 221 (Multifamily Housing (Mid-Rise)) were used. The ITE rates used for the trip generation can be found in *Appendix A*. As shown in *Table 1*, the Project would generate approximately 11,470 daily trips including 757 trips during the AM peak hour and 1,041 trips during the PM peak hour.

Table 1: Project Trip Generation

	Land Use	ITE Code ²	Unit ³	ITE Daily Trip Rate/Unit	Project Size	Project ADTs	ITE AM Trip Rate/Unit	Project AM Trips	ITE PM Trip Rate/Unit	Project PM Trips
Existing Conditions (Baseline)	High-Turnover (Sit-Down) Restaurant	932	KSF	107.20	28.75	3,082	9.57	275	9.05	260
	Retail	821	KSF	94.49	39.96	3,776	3.53	141	9.03	361
	Office	710	KSF	10.84	18.426	200	1.52	28	1.44	27
Existing Conditions (Baseline) TOTAL TRIPS						7,058		444		648
Proposed Housing Units + Remaining Buildout Capacity (Project)	Proposed Multi-Family Housing	221	DU	4.54	413	1,875	0.37	153	0.39	161
	¹ Future High-Turnover (Sit-Down) Restaurant	932	KSF	107.20	39.09	4,190	9.57	374	9.05	354
	¹ Future Retail	821	KSF	94.49	54.33	5,133	3.53	192	9.03	491
	¹ Future Office	710	KSF	10.84	25.051	272	1.52	38	1.44	36
Proposed Project TOTAL TRIPS						11,470		757		1,041
Existing Conditions + Proposed Housing Units + Remaining Buildout Capacity (Total)	Proposed Multi-Family Housing	221	DU	4.54	413	1,875	0.37	153	0.39	161
	High-Turnover (Sit-Down) Restaurant	932	KSF	107.20	67.84	7,272	9.57	649	9.05	614
	Retail	821	KSF	94.49	94.29	8,909	3.53	333	9.03	851
	Office	710	KSF	10.84	43.48	471	1.52	66	1.44	63
Existing Conditions + Proposed Housing Units + Remaining Buildout Capacity (Total) TOTAL TRIPS						18,528		1,201		1,689

¹Future Commercial Buildout was calculated using the 0.4 FAR as stated in the General Plan, and then deducting existing landuse area from the maximum buildout

²Trip rates from the Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition, 2021.

³KSF=Thousand Square Feet, DU=Dwelling Units

Background

Senate Bill (SB) 743 was signed by Governor Brown in 2013 and required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to replace Level of Service (LOS) as the appropriate method for evaluating transportation impacts under CEQA. SB 743 specified that the new criteria should promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. The bill also specified that delay-based LOS could no longer be considered an indicator of a significant impact on the environment under CEQA. In response, the Natural Resources Agency amended the CEQA Guidelines to include new Section 15064.3 - Determining the Significance of Transportation Impacts. The section states that Vehicle Miles Traveled (VMT) is the most appropriate measure of a project's transportation impacts and provides lead agencies with the discretion to choose the most appropriate methodology and thresholds for evaluating VMT. Section 15064.3(c) states that the provisions of the section shall apply statewide beginning on July 1, 2020.

City of Tustin VMT Screening Criteria

The project is located in the City of Tustin (City). The City's Guidelines provide the following screening thresholds to assess whether further VMT analysis is required. If a project meets one of the following criteria, then the VMT impact of the project would be considered less-than-significant and no further analysis of VMT would be required:

1. The project consists of 100% affordable housing.
2. The project is located within one half (1/2) mile of qualifying transit.
3. The project type has been identified as local serving land use.
4. The project is in a low VMT area.
5. The project generates less than 500 daily vehicle trips.

The applicability of each criterion to both portions of the Project is discussed below:

Screening Criteria 1 – Affordable Housing Screening: As per the City's guidelines, projects which consist of 100% affordable housing will have a less than significant impact on VMT.

The Project does not consist of 100% affordable housing and therefore would not satisfy the requirements of Screening criteria 1 - Affordable Housing Screening.

Screening Criteria 2 – High Quality Transit Screening: As per the City's guidelines, projects located within one half (1/2) mile of qualifying transit may be presumed to have a less than significant impact. Qualifying transit is defined as follows:

- **Major transit stop** means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods. (Pub. Resources Code, § 21064.3)
- **High-quality transit corridor** means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. (Pub. Resources Code, § 21155).

The High-Quality Transit Area from the City's Guideline is shown in Figure 2. As shown in Figure 2, the Project is located approximately 4 miles away from qualifying transit, therefore, the project would not satisfy the requirements of Screening Criteria 2 – High Quality Transit screening.

Screening Criteria 3 - Project Type Screening: As per the City's guidelines, projects which propose local serving retail (retail projects less than 50,000 square feet) or other local serving uses would have a less than significant impact on VMT. The types of projects considered local serving include K-12 schools, local parks, day care centers, gas stations, libraries, fire stations, and other local serving civic uses.

This screening criteria would be discussed separately for the residential and commercial portion of the Project in the sections below.

Screening Criteria 4 - Low VMT Area Screening: The City's guidelines include a screening threshold for projects located in a low VMT generating area. Low VMT generating area is defined as traffic analysis zones (TAZs) with a total daily VMT per capita or VMT per employee that is less than the base level for the city.

This screening criteria would be discussed separately for the residential and commercial portion of the Project in the sections below.

Screening Criteria 5 - Generating less than 500 daily vehicle trips: As per the City's guidelines, projects which generate less than 500 daily vehicle trips would have a less than significant impact on VMT.

As shown in Table 1, the Project is forecasted to generate 11,470 daily trips, which is more than 500 daily vehicle trips. Therefore, the Project would not meet Screening Criteria 5.

The City of Tustin VMT screening form for the Project can be found in *Appendix B*.

Residential VMT Screening

Screening Criteria 3 - Project Type Screening:

Screening Criteria 3 would not apply to the residential portion of the Project.

Screening Criteria 4 - Low VMT Area Screening:

The Map of Low VMT Generating Area for VMT per capita from the City's Guideline is shown in Figure 3. As shown in Figure 3, the Project is located in a low VMT area. Therefore, the residential portion of the Project would satisfy the requirements of Screening Criteria 4 – Low-VMT Area Screening.

The residential portion of the Project would meet Screening Criteria 4 – Low-VMT Area Screening, and therefore the residential portion of the Project's impact on VMT would be considered less-than-significant. However, a complete VMT analysis was conducted at the request of the City (included below).

Commercial VMT Screening

Screening Criteria 3 - Project Type Screening:

The project proposes retail use with an area of 118,470 SF, which is more than 50,000 square feet. Therefore, it would not satisfy the requirements of Screening Criteria 3 - Project Type Screening.

Screening Criteria 4 - Low VMT Area Screening:

The Map of Low VMT Generating Area for VMT per employee from the City's Guideline is shown in Figure 4. As shown in Figure 4, the Project is not located in a low VMT area. Therefore, the commercial portion of the Project would not satisfy the requirements of Screening Criteria 4 – Low-VMT Area Screening.

Because the commercial portion of the Project would not meet any of the City's screening criteria, the commercial portion of the Project's impact on VMT would not be considered less-than-significant and an analysis of VMT would be required.

VMT Analysis Methodology

The City's guidelines require use of the Orange County Transportation Analysis Model 5.0 v.6.22.23 (OCTAM) for preparation of VMT analysis. The Project is located within one Model Traffic Analysis Zone (TAZ), TAZ 1103. The total population and employed population of the Project was calculated using the current household average in nearby TAZs. The Project total households and population was entered into TAZ 1103. Employment growth in TAZ 1103 was already accounted for by the model.

The Model includes validated scenarios for 2016 and 2045. These scenarios have been validated using existing traffic counts. Data for years between 2016 and 2045 can be extrapolated using linear interpolation between the 2016 and 2045 Model output. The Model was run for the base year (2016) and future year (2045) without and with-project conditions (i.e. four full Model runs). As noted below under the discussion of significance thresholds, the City's significance threshold for residential projects is based on the project's home-based VMT (HB VMT) per capita; City's significance threshold for non-residential projects is based on the project's employment VMT (HBW VMT) per employee.

Residential VMT Significance Threshold

The significance criteria from the City's guidelines are as follows:

The City of Tustin VMT Guidelines have relied upon the recommendations provided by OPR and modeling data provided by OCTA to establish the following VMT thresholds of significance for residential land use projects:

Residential Projects: A significant transportation impact occurs if:

1. The project's base year home-based VMT per capita exceeds the OCTAM base model year citywide average VMT per capita for the City of Tustin.
2. The project's future year home-based VMT per capita exceeds the OCTAM base model year citywide average VMT per capita for the City of Tustin.

The metric utilized as the residential VMT threshold of significance for City of Tustin is the average city-wide VMT under 2016 Base Model Year, which has been calculated to be 15.0 HB VMT per capita. The OPR Technical Advisory recommends that a fifteen percent reduction in VMT below that of existing development may be a reasonable threshold. However, given that the City of Tustin is primarily located within a suburban setting, the amount of VMT reduction from an individual land use project is limited, and it is likely infeasible to achieve a 15% reduction below the citywide average for many areas in the City. However, by ensuring

that land use development projects result in no net increase in VMT over the current base year citywide VMT averages, a sustained reduction in citywide VMT and GHG emissions will occur, the Project's impact on VMT would be considered less-than-significant.

Project Residential VMT Evaluation

The total HB VMT of TAZ 1103 was evaluated using the OCTAM VMT post-processor. To determine the Project's HB VMT per capita, the total HB VMT of TAZ 1103 is divided by the total residents of TAZ 1103. Tustin Citywide HB VMT per capita was obtained from the OCTAM base year model following a similar process. The VMT analysis results per the City's significance criteria are shown in Table 2.

As shown in the tables, the Project's HB VMT per capita would be lower than the OCTAM base model year citywide average HB VMT per capita for the City of Tustin under both base and future year conditions. The Project's HB VMT per capita would be 19.7% below the City's threshold under base conditions and 18.7% below the City's threshold under future conditions; therefore, the residential portion of the Project would result in a less than significant VMT impact.

Commercial VMT Significance Threshold

The significance criteria from the City's guidelines are as follows:

The City of Tustin VMT Guidelines have relied upon the recommendations provided by OPR and modeling data provided by OCTA to establish the following VMT thresholds of significance for residential land use projects:

Non-residential Projects: A significant transportation impact occurs if:

1. The project's base year employment VMT per employee exceeds the OCTAM base model year citywide average VMT per employee for the City of Tustin.
2. The project's future year employment VMT per employee exceeds the OCTAM base model year citywide average VMT per employee for the City of Tustin.

The metric utilized as the employment VMT per employee VMT threshold of significance for City of Tustin is the average city-wide VMT under 2016 Base Model Year, which has been calculated to be 25.1 HBW VMT per employee. The OPR Technical Advisory recommends that a fifteen percent reduction in VMT below that of existing development may be a reasonable threshold. However, given that the City of Tustin is primarily located within a suburban setting, the amount of VMT reduction from an individual land use project is limited, and it is likely infeasible to achieve a 15% reduction below the citywide average for many areas in the City. However, by ensuring that land use development projects result in no net increase in VMT over the current base year citywide VMT averages, a sustained reduction in citywide VMT and GHG emissions will occur, the Project's impact on VMT would be considered less-than-significant.

Project Commercial VMT Evaluation

The total HBW VMT of TAZ 1103 was evaluated using the OCTAM VMT post-processor. To determine the Project's HBW VMT per employee, the total HBW VMT of TAZ 1103 is divided by the total employees of TAZ 1103. Tustin Citywide HBW VMT per employee was obtained from the OCTAM base year model following a similar process. The VMT analysis results per the City's significance criteria are shown in Table 3.

As shown in Table 3, the Project's HBW VMT per employee would be lower than the OCTAM base model year citywide average HBW VMT per employee for the City of Tustin under both base and future year conditions. The Project's HBW VMT per employee would be 5.5% below the City's threshold under base

conditions and 3.7% below the City's threshold under future conditions; therefore, the commercial portion of the Project would result in a less than significant VMT impact.

Overall, the entire Project can be assumed to have a less than significant VMT impact.

If you have any questions, please feel free to contact me at techservices@epdsolutions.com or at (949) 794-1180.

Table 2: VMT Analysis of Residential of Project Impact per City Guidelines

	Base Year 2016	Future Year 2045
Project TAZ 1103 Zone Total Home-based VMT	47,899	48,954
TAZ 1103 Total Residents	3,991	4,029
Project 1103 HB VMT per capita	12.0	12.2
City of Tustin Baseline Home-based VMT	1,356,977	1,356,977
City of Tustin Baseline Total Residents	90,762	90,762
City of Tustin Baseline HB VMT per capita	15.0	15.0
% Above/Below Threshold	-19.7%	-18.7%
Impact?	No	No

Table 3: VMT Analysis of Commercial Part of Project Impact per City Guidelines

	Base Year 2016	Future Year 2045
Project TAZ 1103 Zone Total Home-based Work VMT	261,211	273,166
TAZ 1103 Total Employees	11,012	11,303
Project 1103 HBW VMT per employee	23.7	24.2
City of Tustin Baseline Home-based Work VMT	1,475,341	1,475,341
City of Tustin Baseline Total Employees	58,774	58,774
City of Tustin Baseline HBW VMT per employee	25.1	25.1
% Above/Below Threshold	-5.5%	-3.7%
Impact?	No	No

Figure 1: Project Site Location

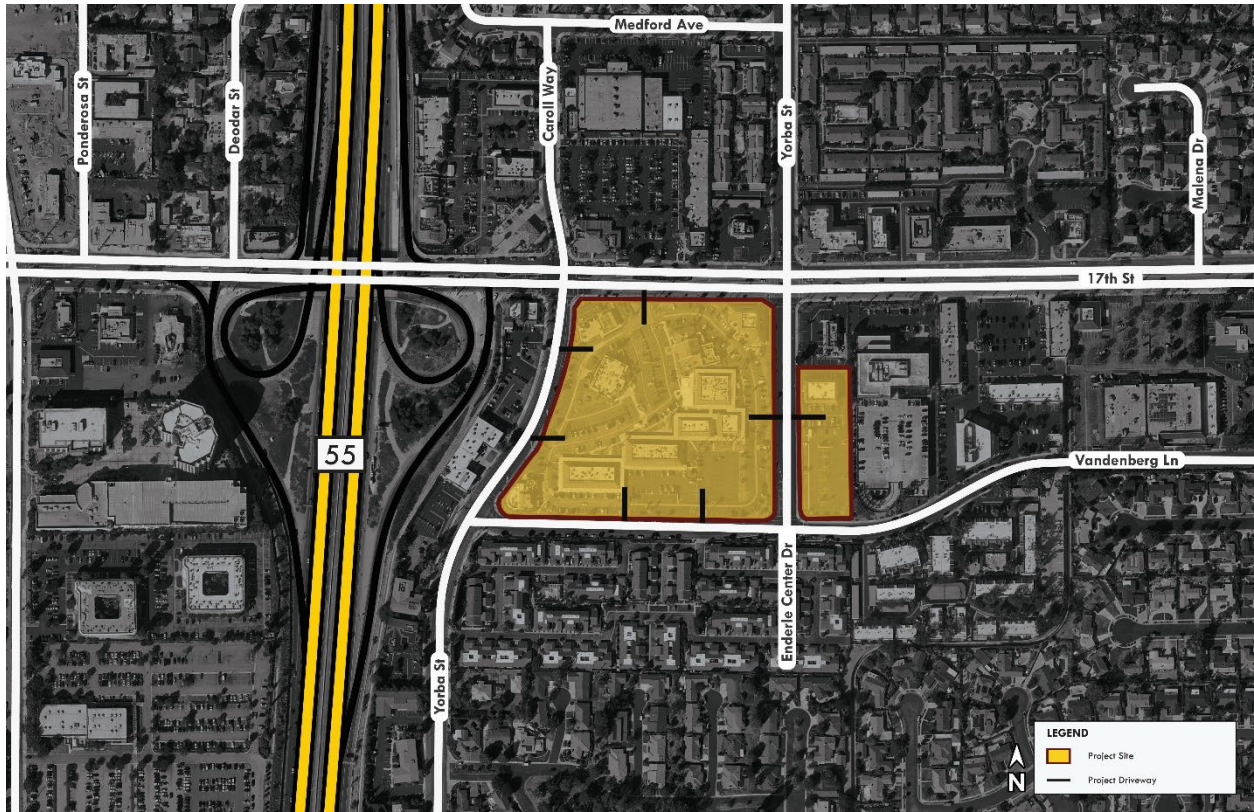
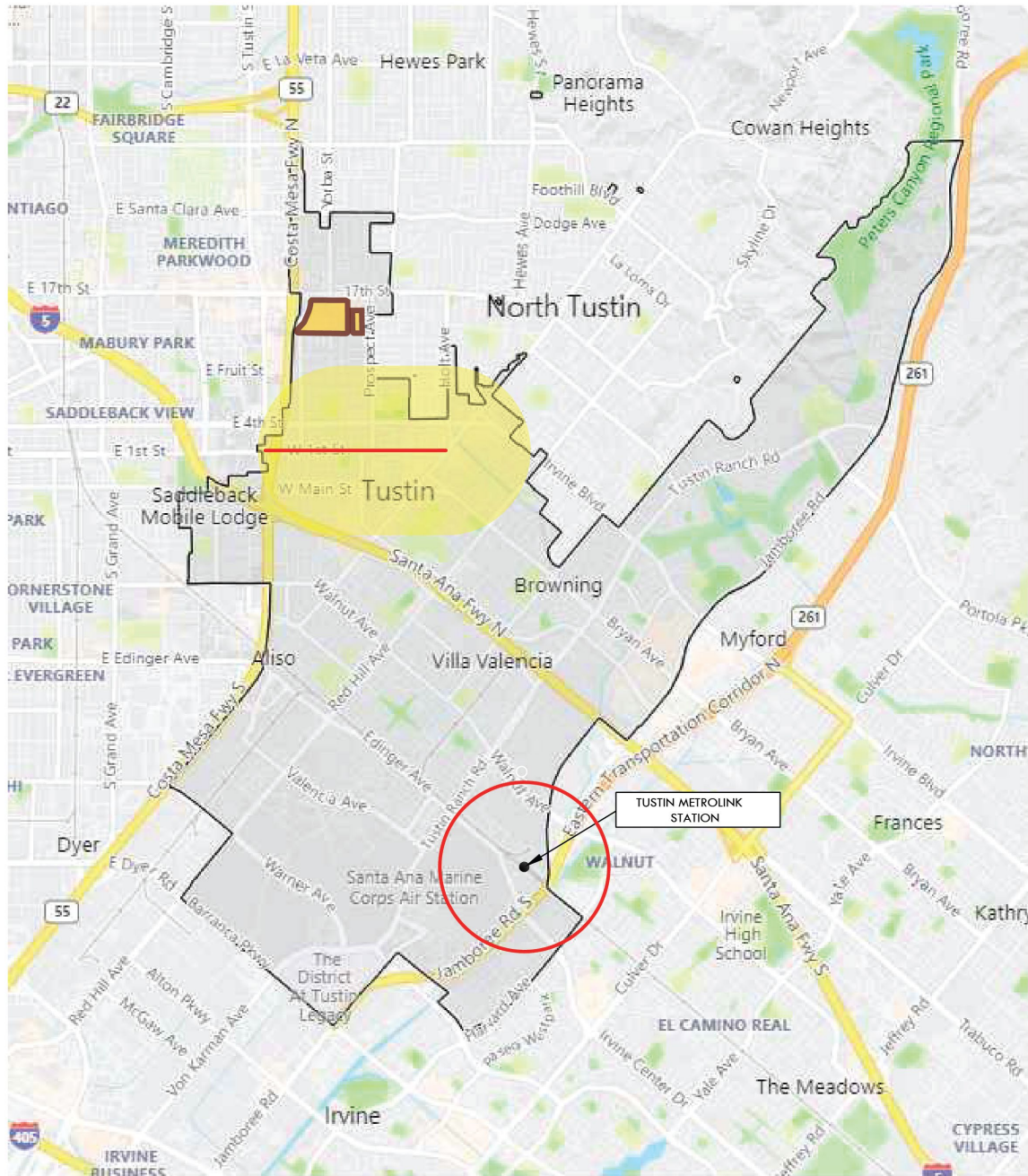


Figure 2: High-Quality Transit Area

Exhibit B

City of Tustin Transit Priority Areas



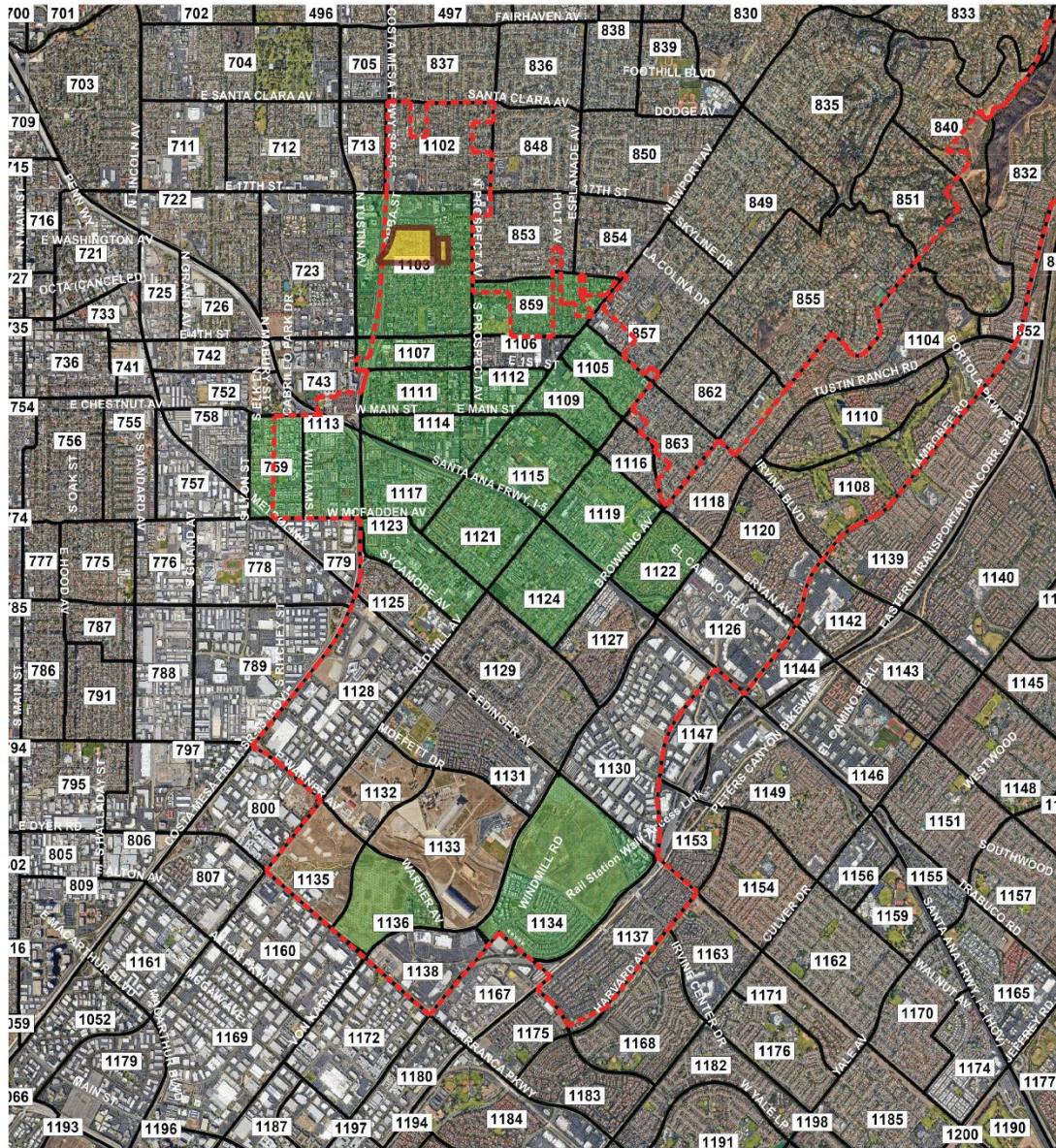
CITY OF TUSTIN VMT ANALYSIS GUIDELINES



Figure 3: Low VMT Generating Area - VMT per capita

Exhibit D

Low VMT Areas - VMT Per Capita



Legend:




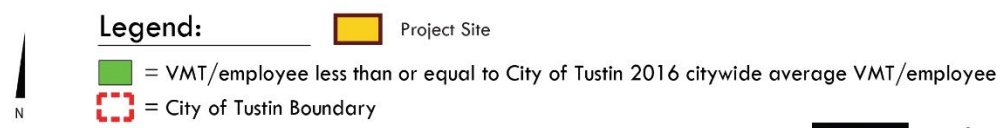
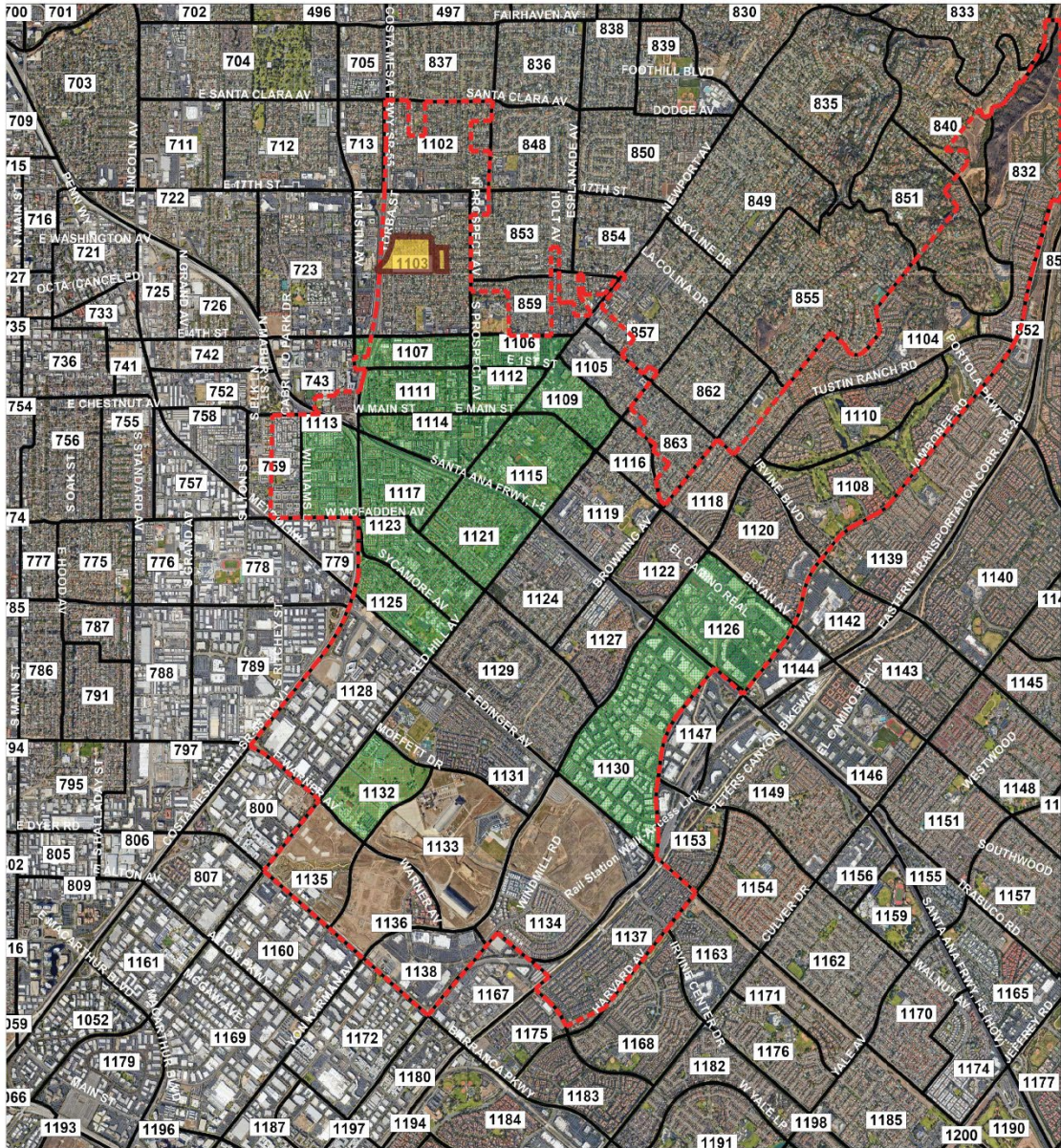
-  Project Site
-  = VMT/capita less than or equal to City of Tustin 2016 citywide average VMT/capita
-  = City of Tustin Boundary



Figure 4: Low VMT Generating Area - VMT per employee

Exhibit E

Low VMT Areas - VMT Per Employee



APPENDIX A – ITE Trip Generation Rates

Land Use: 221

Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments and condominiums located in a building that has between four and 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevator, and a set of hallways.

Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (mid-rise) (Land Use 226), and mid-rise residential with ground-floor commercial (Land Use 231) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.5 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, Montana, New Jersey, New York, Ontario (CAN), Oregon, Utah, and Virginia.

Source Numbers

168, 188, 204, 305, 306, 321, 818, 857, 862, 866, 901, 904, 910, 949, 951, 959, 963, 964, 966, 967, 969, 970, 1004, 1014, 1022, 1023, 1025, 1031, 1032, 1035, 1047, 1056, 1057, 1058, 1071, 1076

Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 11

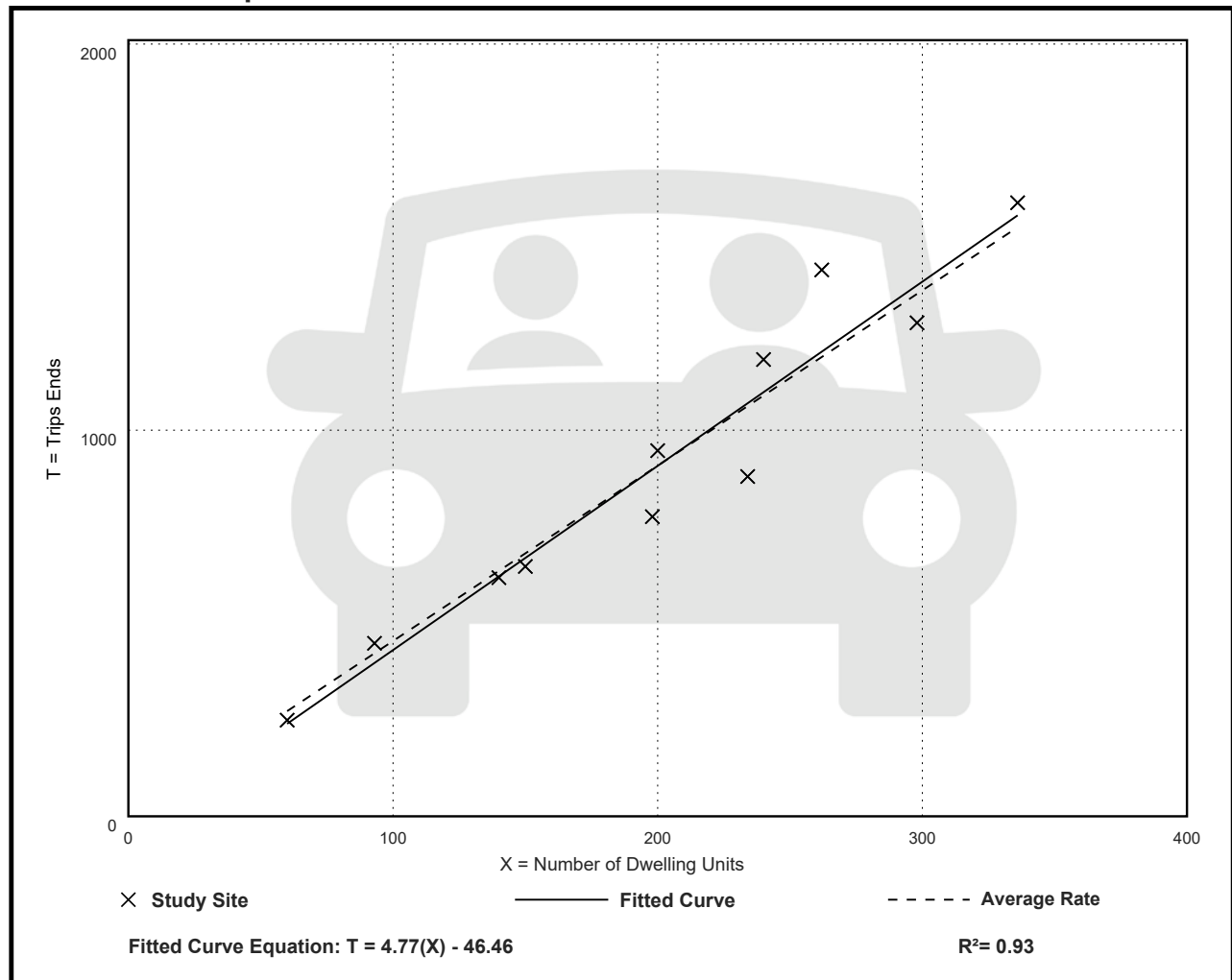
Avg. Num. of Dwelling Units: 201

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 30

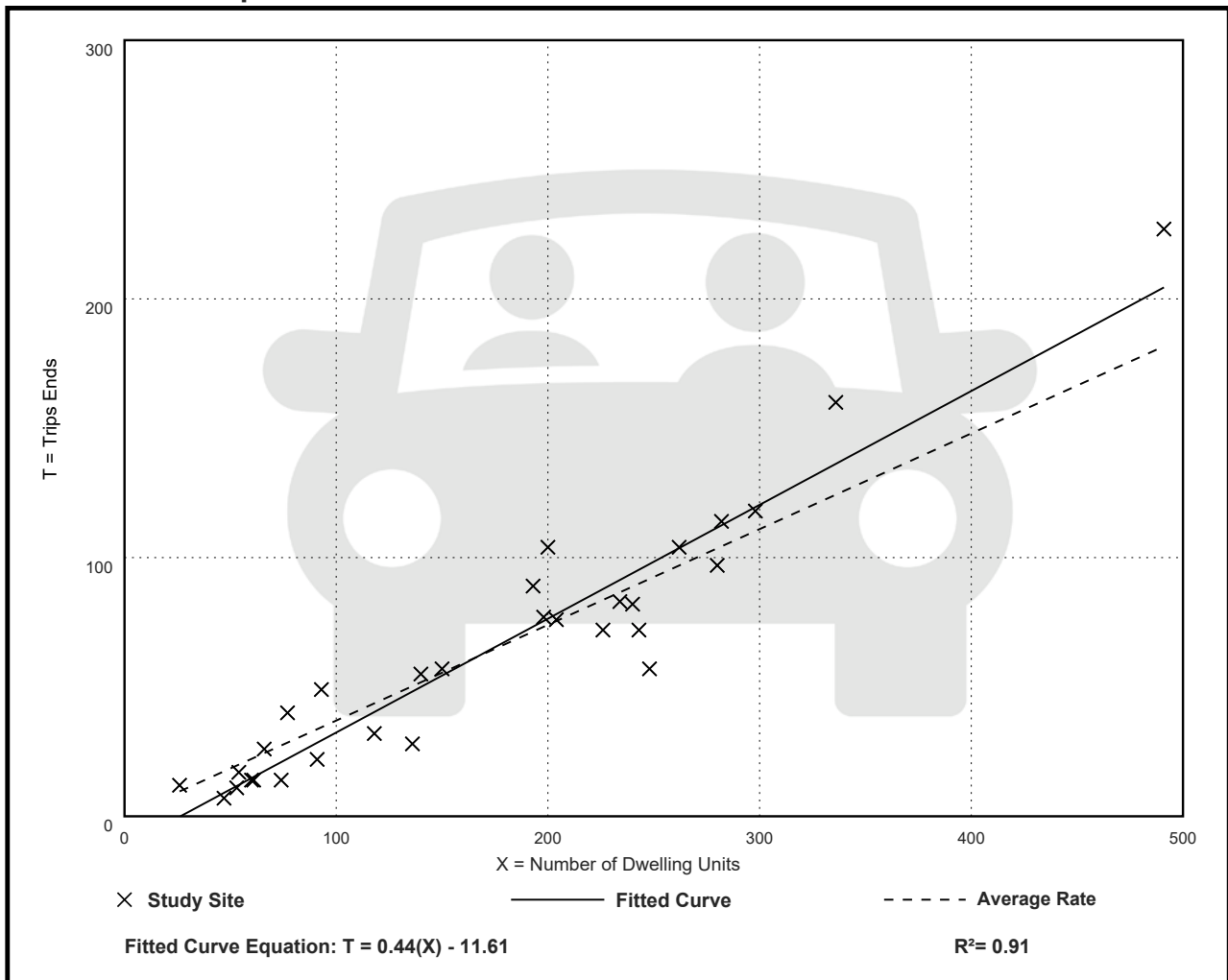
Avg. Num. of Dwelling Units: 173

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 31

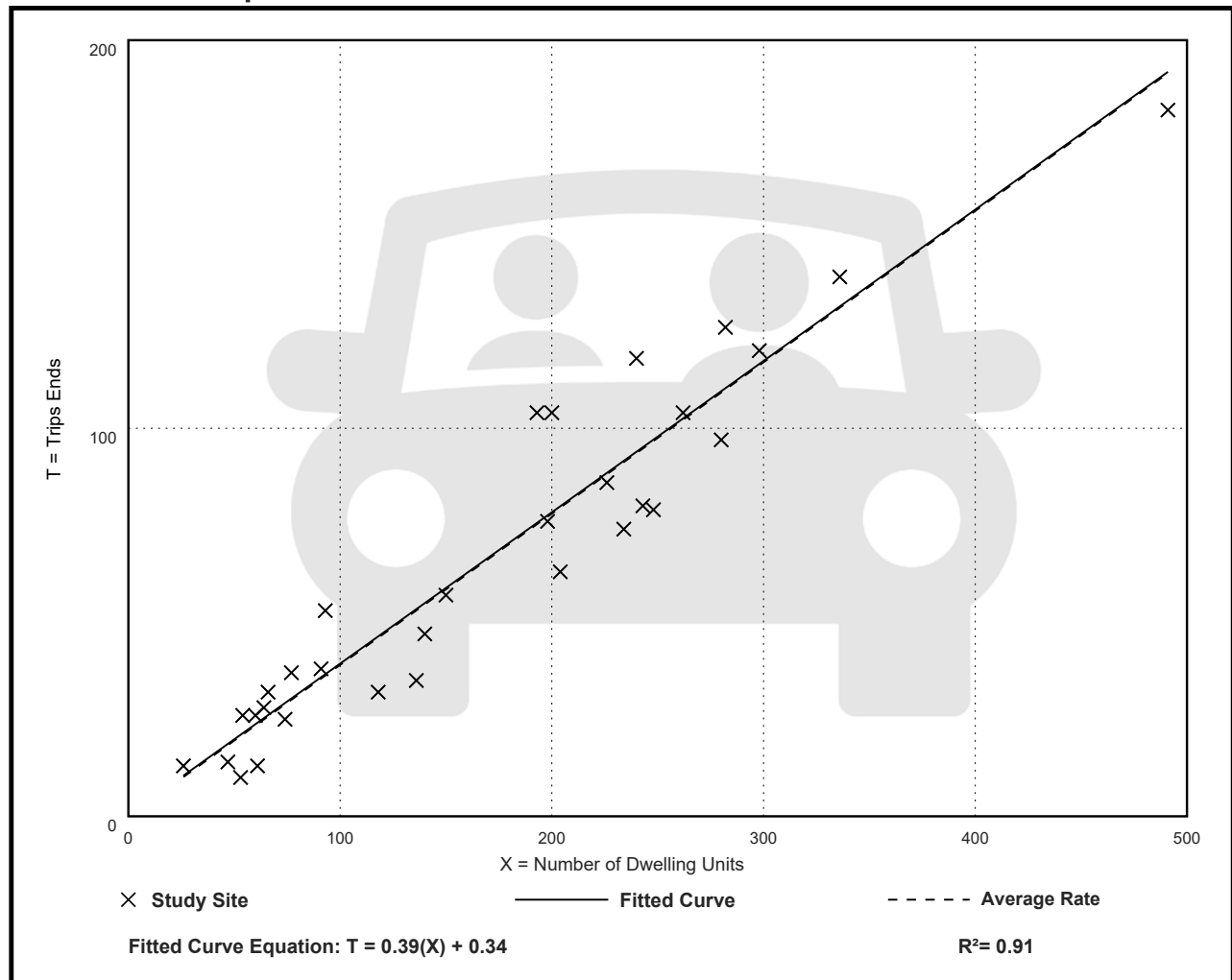
Avg. Num. of Dwelling Units: 169

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Land Use: 710

General Office Building

Description

A general office building is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building houses multiple tenants that can include, as examples, professional services, insurance companies, investment brokers, a banking institution, a restaurant, or other service retailers. A general office building with a gross floor area of 10,000 square feet or less is classified as a small office building (Land Use 712). Corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), medical-dental office building (Land Use 720), office park (Land Use 750), research and development center (Land Use 760), and business park (Land Use 770) are additional related uses.

Additional Data

If two or more general office buildings are in close physical proximity (within a close walk) and function as a unit (perhaps with a shared parking facility and common or complementary tenants), the total gross floor area or employment of the paired office buildings can be used for calculating the site trip generation. If the individual buildings are isolated or not functionally related to one another, trip generation should be calculated for each building separately.

For study sites with reported gross floor area and employees, an average employee density of 3.3 employees per 1,000 square feet GFA (or roughly 300 square feet per employee) has been consistent through the 1980s, 1990s, and 2000s. No sites counted in the 2010s reported both GFA and employees.

The average building occupancy varies considerably within the studies for which occupancy data were provided. The reported occupied gross floor area was 88 percent for general urban/suburban sites and 96 percent for the center city core and dense multi-use urban sites.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The average numbers of person trips per vehicle trip at the eight center city core sites at which both person trip and vehicle trip data were collected are as follows:

- 2.8 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 2.9 during Weekday, AM Peak Hour of Generator
- 2.9 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 3.0 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 18 dense multi-use urban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.5 during Weekday, AM Peak Hour of Generator
- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.5 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 23 general urban/suburban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.3 during Weekday, AM Peak Hour of Generator
- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.4 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Ontario (CAN) Pennsylvania, Texas, Utah, Virginia, and Washington.

Source Numbers

161, 175, 183, 184, 185, 207, 212, 217, 247, 253, 257, 260, 262, 273, 279, 297, 298, 300, 301, 302, 303, 304, 321, 322, 323, 324, 327, 404, 407, 408, 419, 423, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 940, 944, 946, 964, 965, 972, 1009, 1030, 1058, 1061

General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 59

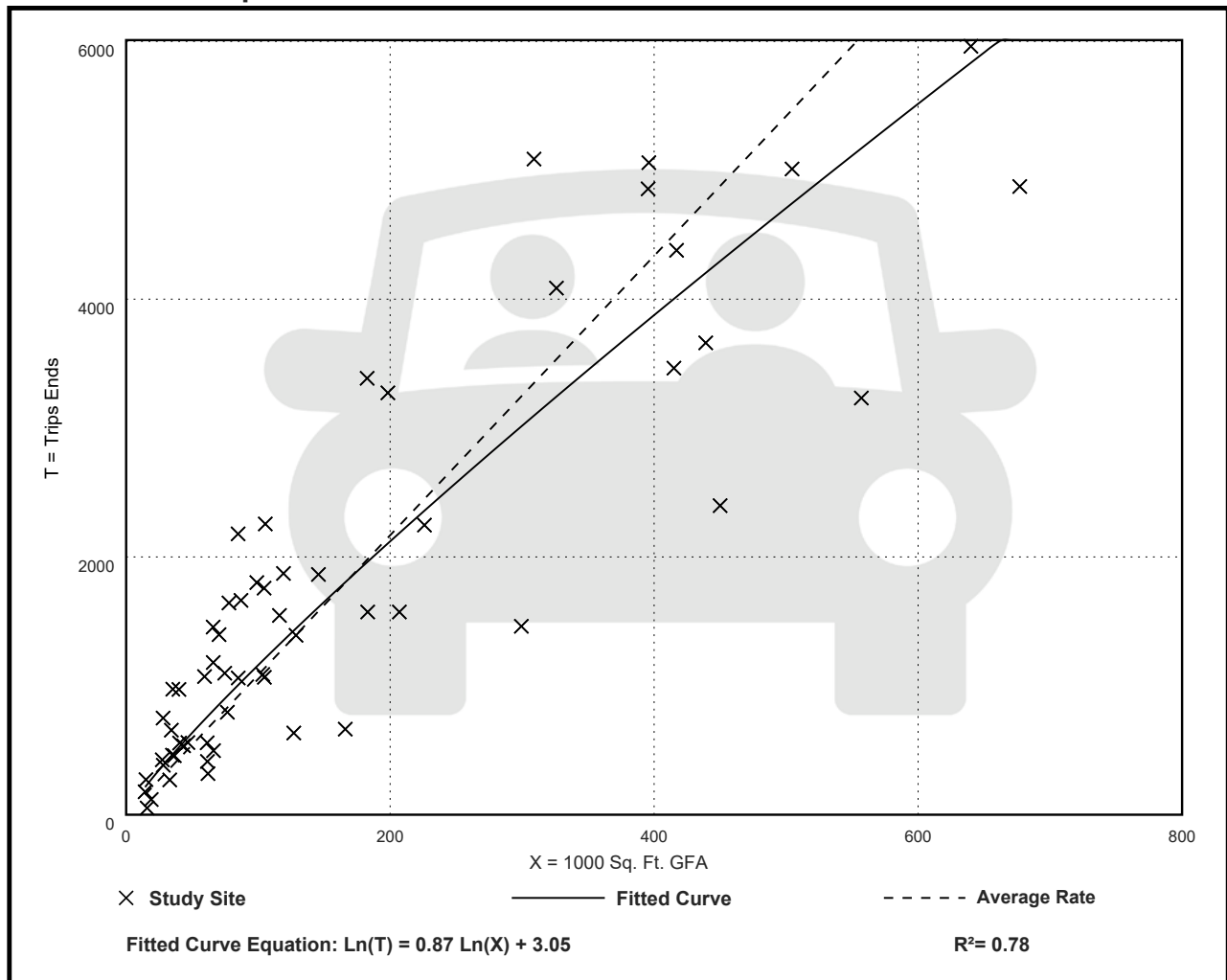
Avg. 1000 Sq. Ft. GFA: 163

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
10.84	3.27 - 27.56	4.76

Data Plot and Equation



General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 221

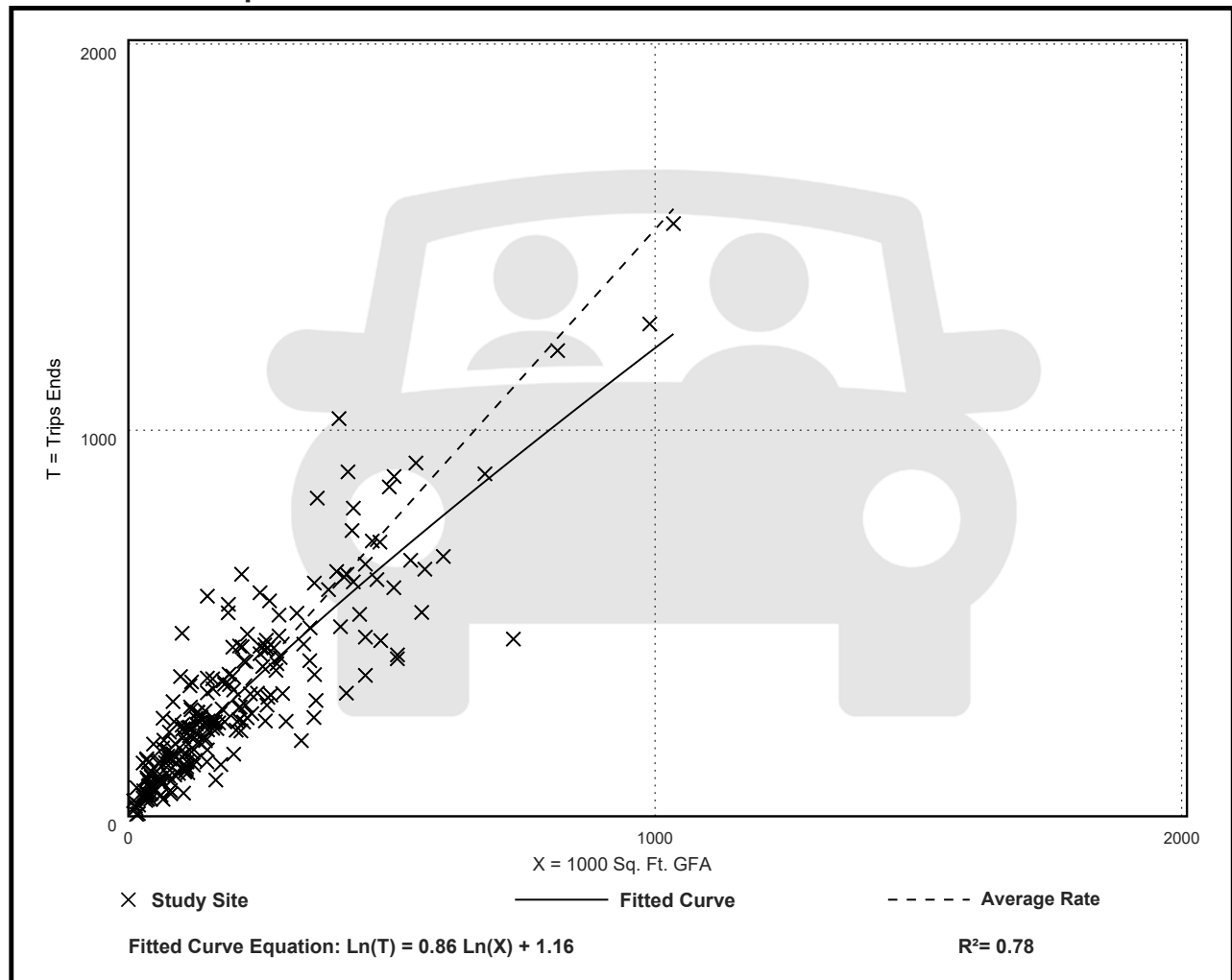
Avg. 1000 Sq. Ft. GFA: 201

Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.52	0.32 - 4.93	0.58

Data Plot and Equation



General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 232

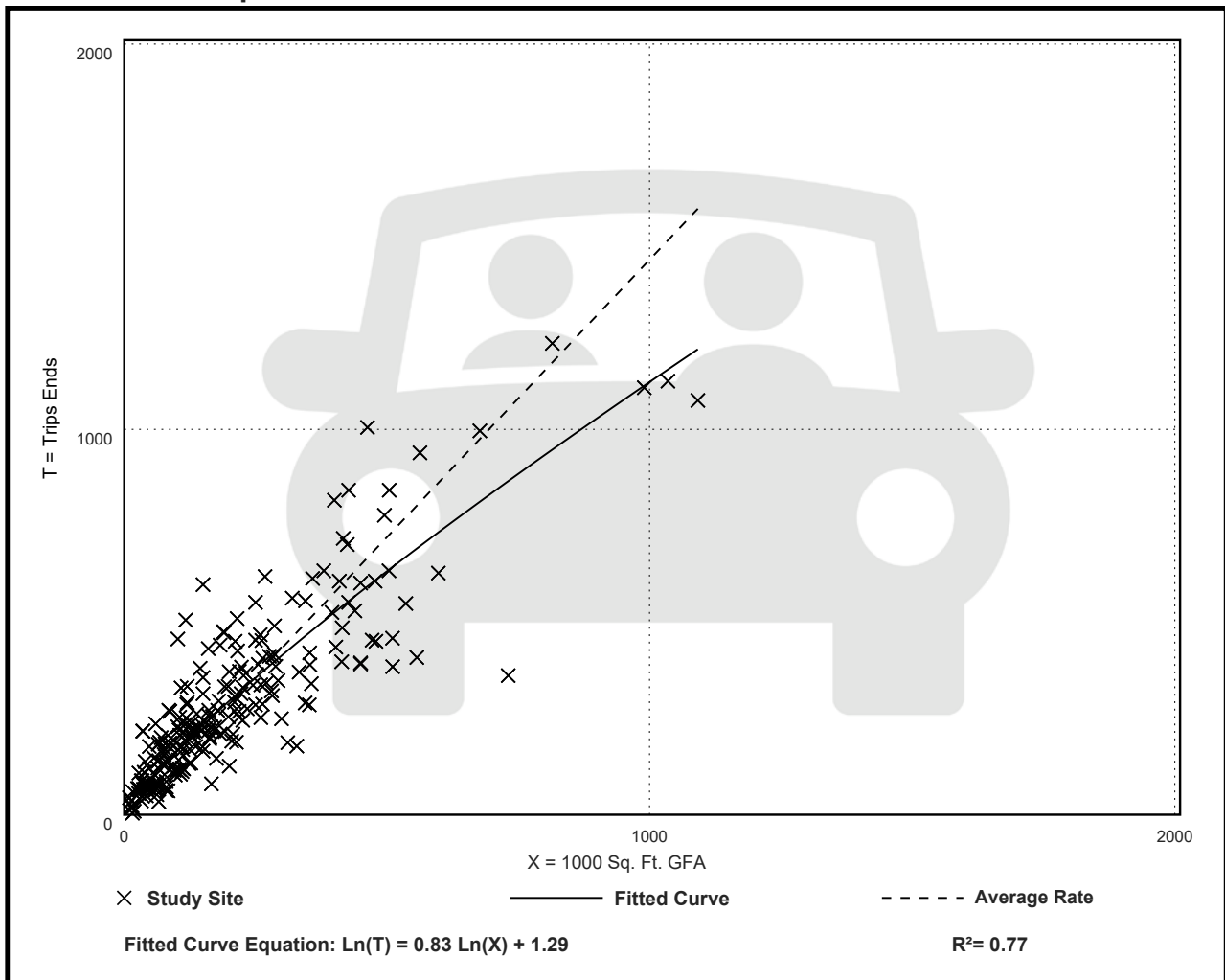
Avg. 1000 Sq. Ft. GFA: 199

Directional Distribution: 17% entering, 83% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.44	0.26 - 6.20	0.60

Data Plot and Equation



Land Use: 821

Shopping Plaza (40-150k)

Description

A shopping plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has between 40,000 and 150,000 square feet of gross leasable area (GLA). The term “plaza” in the land use name rather than “center” is simply a means of distinction between the different shopping center size ranges. Various other names are commonly used to categorize a shopping plaza within this size range, depending on its specific size and tenants, such as neighborhood center, community center, and fashion center.

Its major tenant is often a supermarket but many sites are anchored by home improvement, discount, or other stores. A shopping plaza typically contains more than retail merchandising facilities. Office space, a movie theater, restaurants, a post office, banks, a health club, and recreational facilities are common tenants. A shopping plaza is almost always open-air and the GLA is the same as the gross floor area of the building.

The 150,000 square feet GLA threshold value between shopping plaza and shopping center (Land Use 820) is based on an examination of trip generation data. For a shopping plaza that is smaller than the threshold value, the presence or absence of a supermarket within the plaza has a measurable effect on site trip generation. For a shopping center that is larger than the threshold value, the trips generated by its other major tenants mask any effects of the presence or absence of an on-site supermarket.

The 40,000 square feet GFA threshold between shopping plaza and strip retail plaza (Land Use 822) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land Use 820), strip retail plaza (<40k) (Land Use 822), and factory outlet center (Land Use 823) are related uses.

Land Use Subcategory

The presence or absence of a supermarket in a shopping plaza has been determined to have a measurable effect on site trip generation. Therefore, data are presented for two subcategories for this land use: sites with a supermarket anchor and sites without a supermarket.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New York, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Texas, Vermont, Virginia, Washington, and Wisconsin.

Source Numbers

105, 110, 156, 159, 186, 198, 204, 211, 213, 239, 259, 260, 295, 301, 304, 305, 307, 317, 319, 358, 376, 390, 400, 404, 437, 444, 446, 507, 580, 598, 658, 728, 908, 926, 944, 946, 960, 973, 974, 1004, 1009, 1025, 1069

Shopping Plaza (40-150k) - Supermarket - Yes (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 17

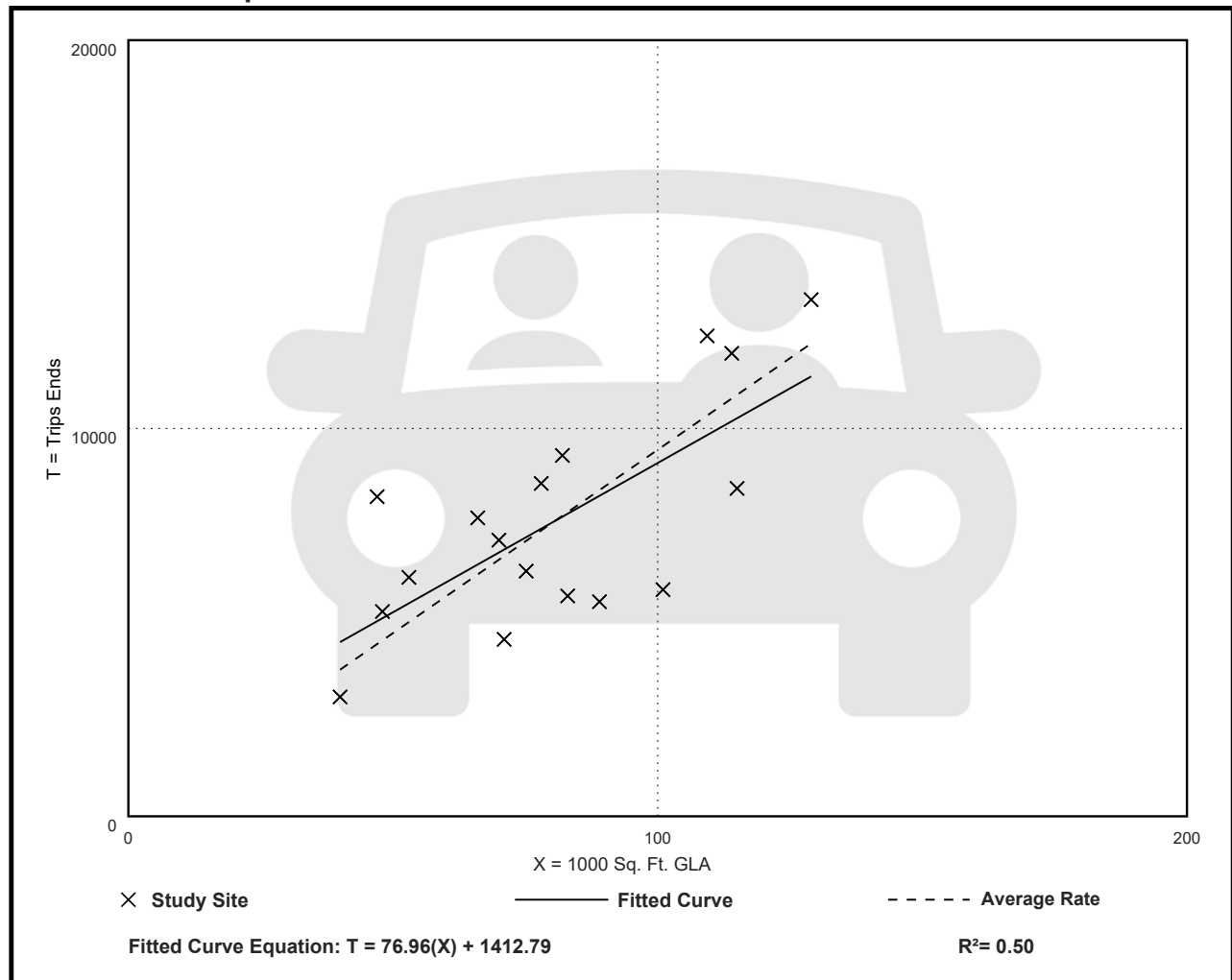
Avg. 1000 Sq. Ft. GLA: 81

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
94.49	57.86 - 175.32	26.55

Data Plot and Equation



Shopping Plaza (40-150k) - Supermarket - Yes (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 16

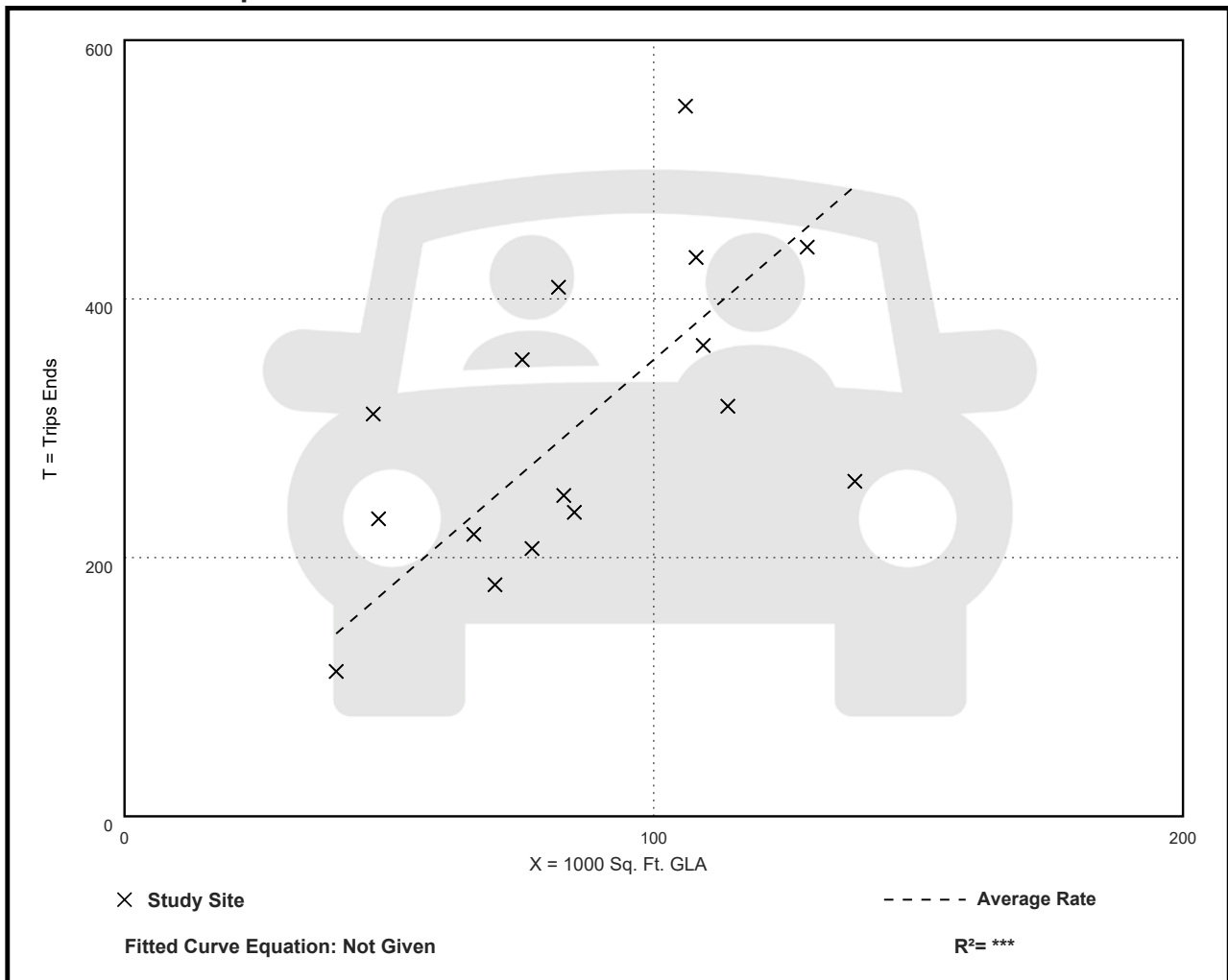
Avg. 1000 Sq. Ft. GLA: 86

Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.53	1.88 - 6.62	1.17

Data Plot and Equation



Shopping Plaza (40-150k) - Supermarket - Yes (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 51

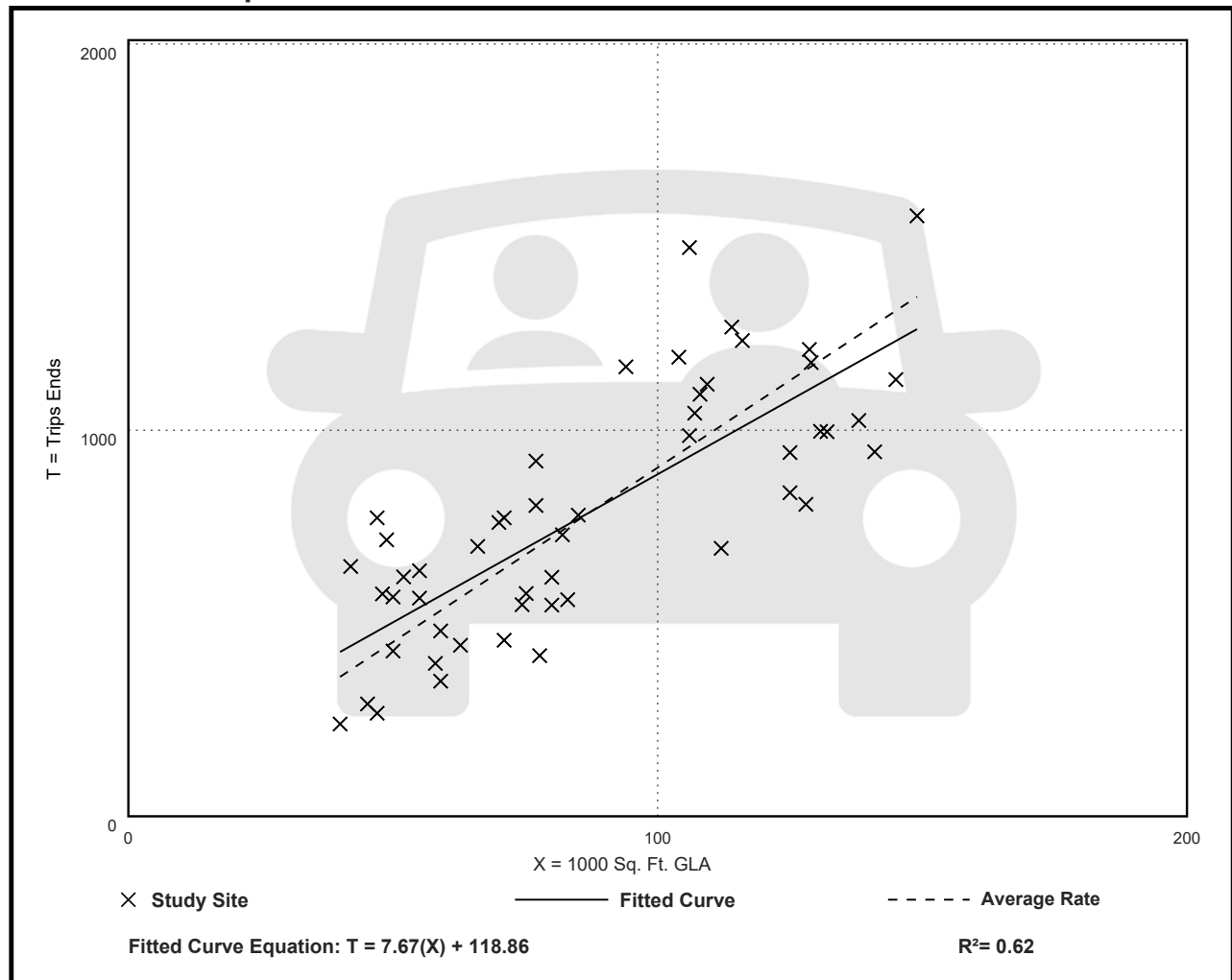
Avg. 1000 Sq. Ft. GLA: 87

Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
9.03	5.35 - 16.45	2.37

Data Plot and Equation



Land Use: 932

High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.

Some facilities offer carry-out for a small proportion of its customers. Some facilities within this land use may also contain a bar area for serving food and alcoholic drinks.

Fast casual restaurant (Land Use 930), fine dining restaurant (Land Use 931), fast-food restaurant without drive-through window (Land Use 933), and fast-food restaurant with drive-through window (Land Use 934) are related uses.

Additional Data

Users should exercise caution when applying statistics during the AM peak periods, as the sites contained in the database for this land use may or may not be open for breakfast. In cases where it was confirmed that the sites were not open for breakfast, data for the AM peak hour of the adjacent street traffic were removed from the database.

If the restaurant has outdoor seating, its area is not included in the overall gross floor area. For a restaurant that has significant outdoor seating, the number of seats may be more reliable than GFA as an independent variable on which to establish a trip generation rate.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Georgia, Indiana, Kentucky, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Vermont, and Wisconsin.

Source Numbers

126, 269, 275, 280, 300, 301, 305, 338, 340, 341, 358, 384, 424, 432, 437, 438, 444, 507, 555, 577, 589, 617, 618, 728, 868, 884, 885, 903, 927, 939, 944, 961, 962, 977, 1048

High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 50

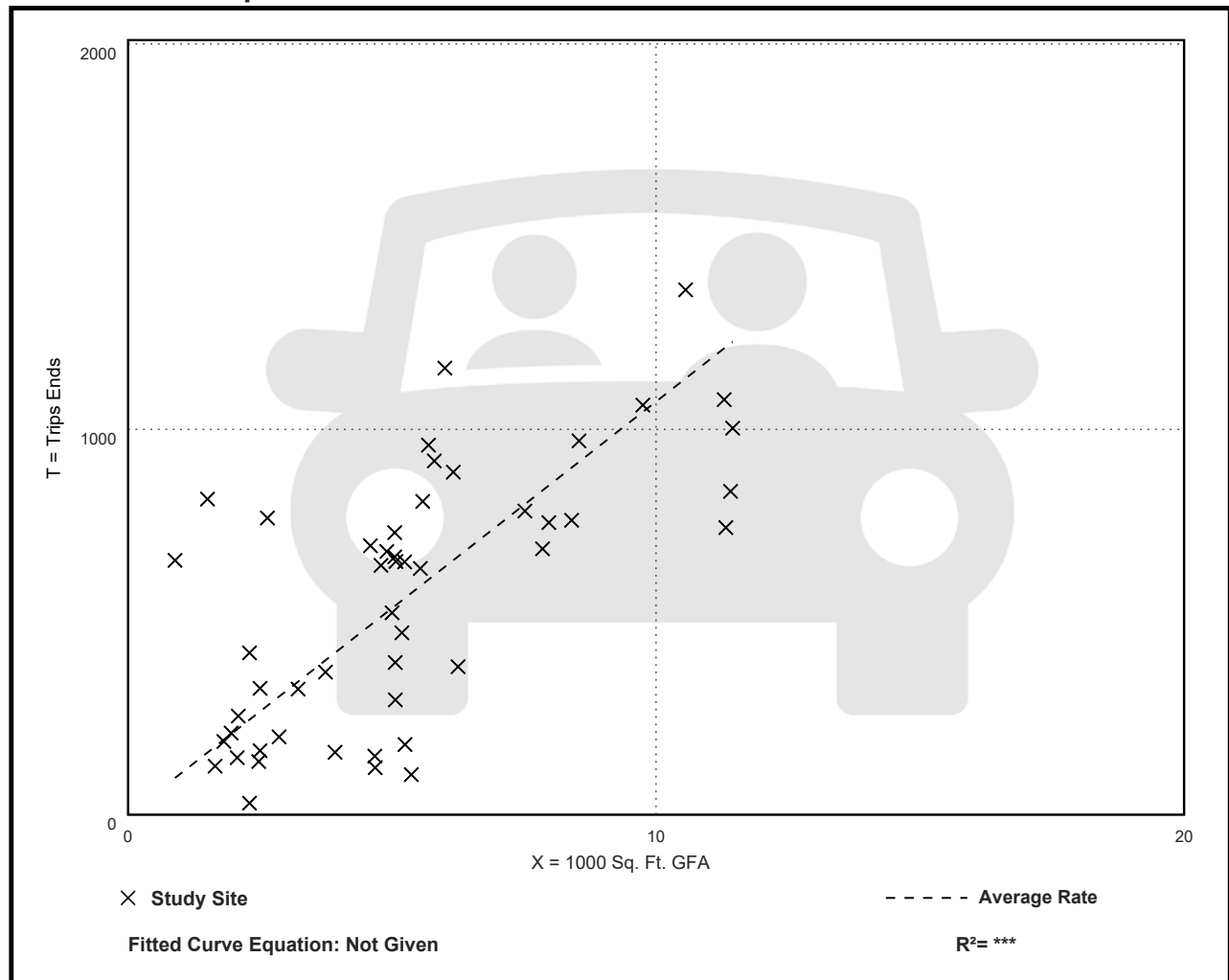
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
107.20	13.04 - 742.41	66.72

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 37

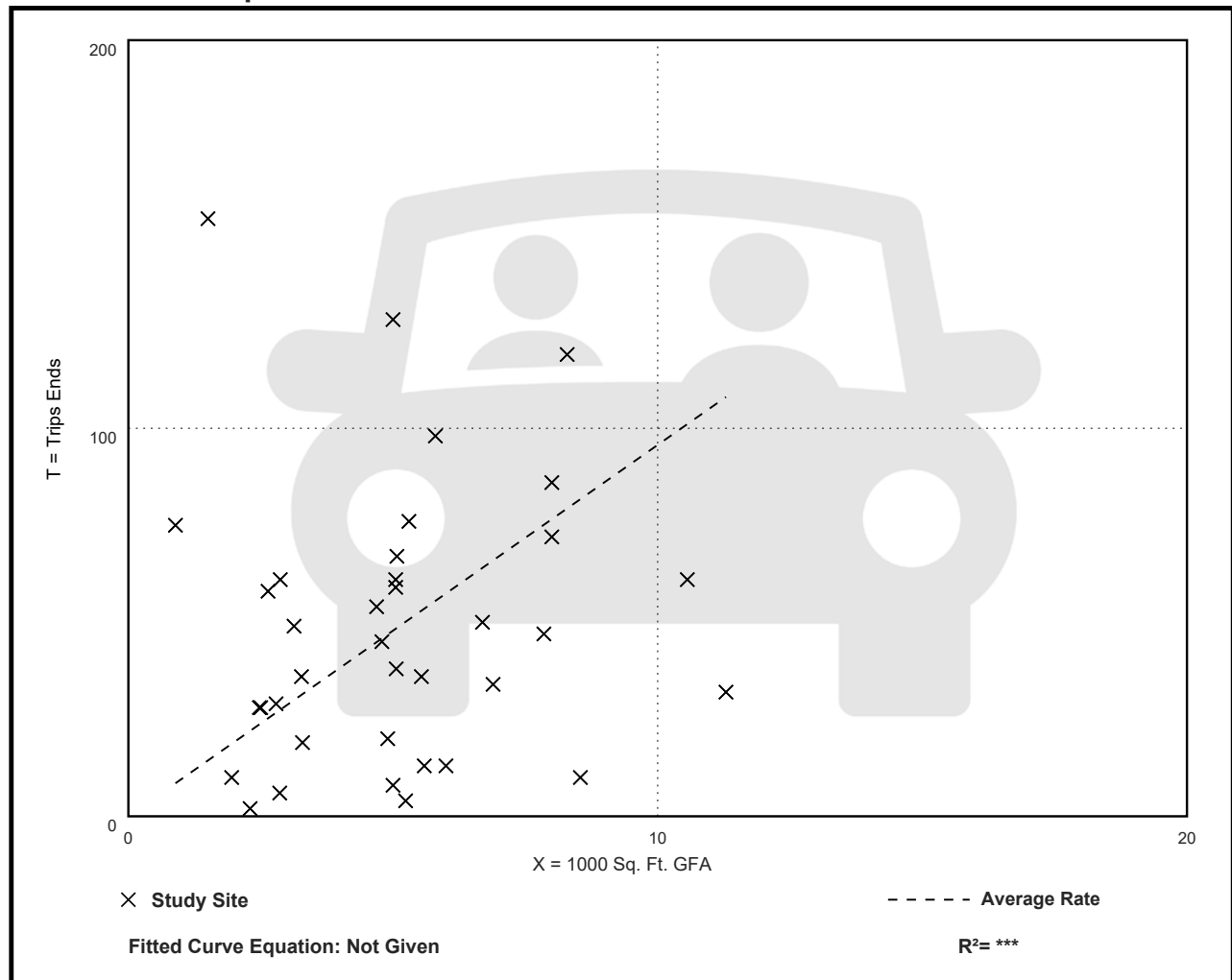
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.57	0.76 - 102.39	11.61

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 104

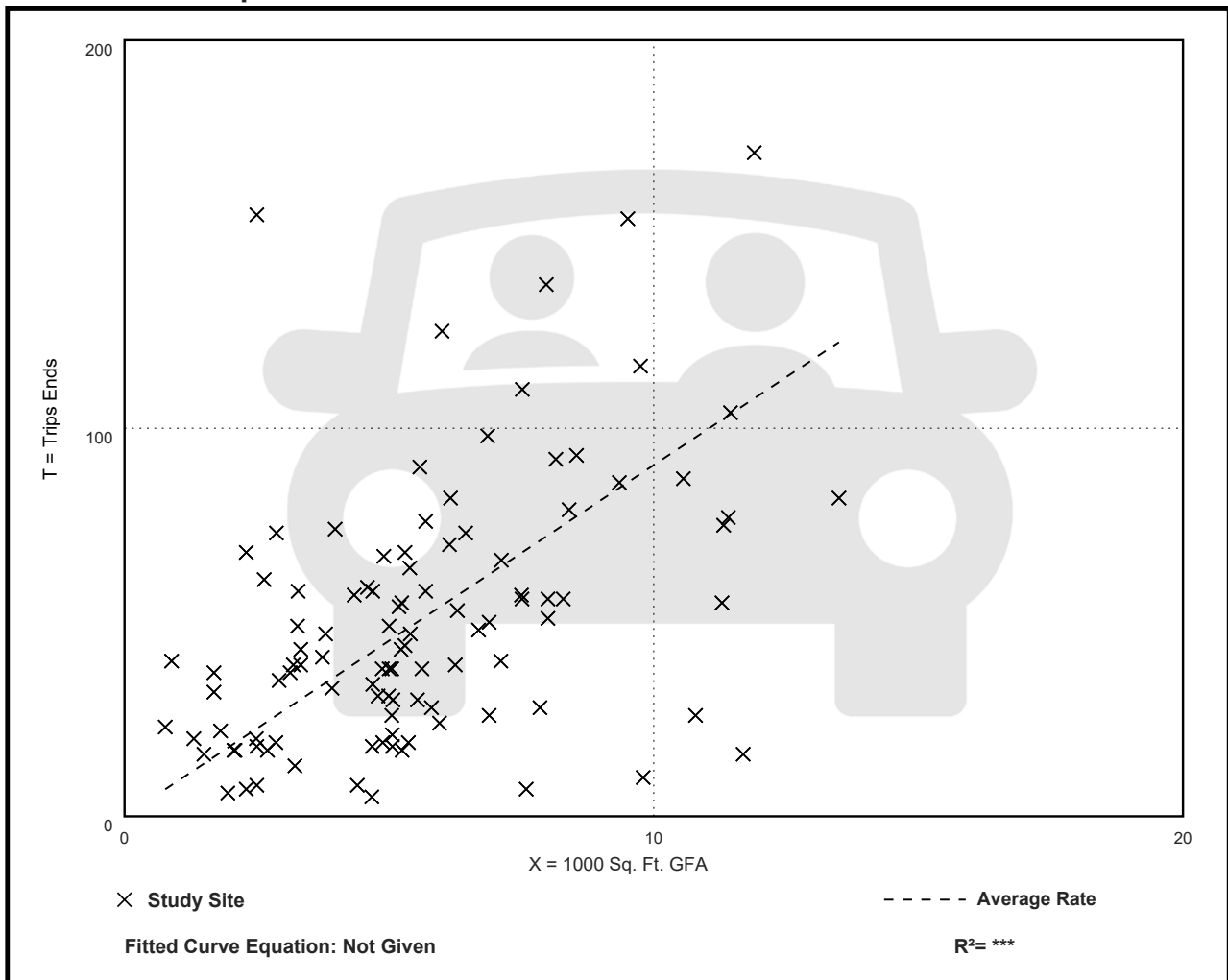
Avg. 1000 Sq. Ft. GFA: 6

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.05	0.92 - 62.00	6.18

Data Plot and Equation



APPENDIX B – City of Tustin VMT Screening Form



CITY OF TUSTIN VMT SCREENING FORM FOR LAND USE PROJECTS

This form acknowledges the City of Tustin requirements for the evaluation of vehicle miles traveled (VMT) under CEQA. The analysis provided in this form should follow the City of Tustin approved VMT Guidelines, dated February 13, 2024.

I. Project Description

Case Number: GPA-2024-0001, CA-2024-0003, and ZC-2024-0001

Project Name: Enderle Center Housing Overlay Zone

Project Location: The Project is located at the southeast corner of 17th St and Carroll Way-Yorba St South.

Project Description: 413 housing units and 118,470 square feet (SF) of commercial use

Current GP Land Use: PCCB **Proposed GP Land Use:** PCCB

Current Zoning: PC COM **Proposed Zoning:** PC COM & HOD

Does the Project require a General Plan Amendment and/or Zone Change?

YES	X	NO	
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II. VMT Screening Criteria

A. Is the Project 100% affordable housing? YES NO X Attachments:

B. Is the Project within 1/2 mile of qualifying transit? YES NO X Attachments:

C. Is the Project a local serving land use? YES NO X Attachments:

D. Is the Project in a low VMT area? YES X NO X Attachments:

E. Are the Project's Net Daily Trips less than 500 ADT? YES NO X Attachments:

Low VMT Area Evaluation:

City of Tustin VMT Thresholds		
Citywide Average Home-Based VMT ¹ =	15.0	VMT/Capita
Citywide Average Employment VMT ¹ =	25.1	VMT/Employee

¹ OCTAM 5.0 v.6.22.23 base year (2016) statistics.

Project Traffic Analysis Zone (TAZ)	VMT Rate for Project TAZ ¹		Type of Project	
1103	12.1	VMT/Capita	Residential:	X
	25.3	VMT/Employee	Non-Residential:	X

Trip Generation Evaluation:

Source of Trip Generation: Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition, 2021
* Use trip rates from the latest edition of the ITE Trip Generation Manual or as approved by City Staff.

Project Trip Generation: 18,528 **Average Daily Trips (ADT)**

Internal Trip Credit:	YES	<input type="text"/>	NO	X	% Trip Credit:	<input type="text"/>
Pass-By Trip Credit:	YES	<input type="text"/>	NO	X	% Trip Credit:	<input type="text"/>
Affordable Housing Credit:	YES	<input type="text"/>	NO	X	% Trip Credit:	<input type="text"/>
Existing Land Use Trip Credit:	YES	<input type="text"/>	NO	X	Trip Credit:	<input type="text"/>

Net Project Trip Generation: 18,528 **Average Daily Trips (ADT)** Attachments:

Does project trip generation warrant an LOS evaluation outside of CEQA?

YES	X	NO	
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III. VMT Analysis Summary

A. Is additional VMT modeling required to evaluate impacts?

YES*	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
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Projects that do not satisfy at least one (1) of the VMT screening criteria AND generate 2,400 or more net daily trips AND require a zone change/general plan amendment may require additional VMT modeling using OCTAM. Project that generates less than 2,400 daily trips may use the base TAZ rate for VMT analysis and mitigation purposes.

*A complete VMT analysis for the residential portion was conducted at the request of the City.

B. City of Tustin VMT Threshold of Significance:

Residential-VMT per Capita: City's Threshold: 15.0 Commercial-VMT per Employee : City's Threshold: 25.1
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C. Unmitigated Project VMT Rate:

Residential-VMT per Capita: Base Year 2016:12.0 Future Year 2045: 12.2 Commercial-VMT per Employee: Base Year 2016:23.7 Future Year 2045:24.2
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D. Does Unmitigated Project VMT Rate Exceed VMT Threshold?

YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
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E. Is mitigation required?

YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
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F. Percentage Reduction Required to Achieve the Citywide Average VMT:

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G. Mitigation Measures:

Source:		
VMT Reduction Mitigation Measure:		Estimated VMT Reduction (%)
1.	N/A	0.00%
2.	N/A	0.00%
3.	N/A	0.00%
4.	N/A	0.00%
5.	N/A	0.00%
6.	N/A	0.00%
7.	N/A	0.00%
8.	N/A	0.00%
9.	N/A	0.00%
10.	N/A	0.00%
Total VMT Reduction (%)		

All mitigation measures are subject to become Conditions of Approval of the project. Provide attachments showing all VMT reduction calculations.

H. Mitigated Project TAZ VMT Rate:

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I. Significance Finding:

(Less than significant, less than significant with mitigation, potential significant, etc.)

Less than significant

Prepared By		Developer/Applicant	
Company:	EPD Solutions	Company:	City of Tustin
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Phone:	949-798-1180	Phone:	714-573-3172
Email:	techservices@epdsolutions.com	Email:	ksaldivar@tustinca.org
Date:	Revised 3/22/24	Date:	Revised 3/22/2024
Approved by:			
Tustin Public Works Engineering	Date	Tustin Community Development Planning	Date

Development review and processing fees should be submitted with, or prior to the submittal of this Form. The Public Works and/or Planning Division staff will not process the Form prior to fees being paid to the City.

OCTAM 5.0 v.6.22.23 Base Model Year 2016 VMT Statistics

Zone	Home-based VMT per Capita	Employment (commute) VMT per employee
759	8.8	25.2
832	23.6	33.8
851	23.5	34.3
857	16.0	26.0
859	13.0	25.2
863	16.9	25.3
1102	15.4	25.9
1103	12.1	25.3
1104	21.1	30.1
1105	12.2	25.1
1106	15.8	24.6
1107	14.5	24.3
1108	21.8	33.2
1109	11.6	24.4
1110	21.2	29.4
1111	13.8	24.6
1112	11.4	22.8
1113	10.7	23.6
1114	11.6	23.6
1115	14.1	24.4
1116	15.5	28.6
1117	12.1	24.3
1118	17.2	26.8
1119	15.0	26.0
1120	16.0	27.6
1121	12.9	23.3
1122	13.5	32.1
1123	11.6	22.5
1124	14.7	27.4
1125	16.8	24.5
1126	0.0	23.6
1127	17.5	27.4
1128	0.0	25.2
1129	17.2	28.0
1130	0.0	24.8
1131	18.0	25.7
1132	0.0	25.0
1133	0.0	0.0
1134	13.4	26.0
1135	0.0	0.0
1136	8.3	36.8
1137	17.2	29.6
1138	0.0	25.3

* Geography nests into OCTAM zone structure. VMT includes all VMT to/from specified geography, except for VMT that leaves OCTAM model area.

** Note that as OCTAM is updated, these statistics are subject to change.