Project-Based VMT Assessment

1. Identify the ITE land use type for the project and the Tahoe adjusted trip rate for the project.
2. Use the ITE rate and project size to determine the total number of trips.
3. Trip Generation Adjustments – Identify and apply any appropriate adjustments to the total number of trips identified in step 2, consistent with the guidance below, to determine the total number of trips for the project
    a. Pass-by trips - Pass-by trips are vehicle trips that are already on the roadway network and make a stop at a development (such as a gas station, coffee shop, or fast-food restaurant) as part of an existing trip, without creating a new or diverted trip onto the network. A standardized set of pass-by rates will be applied by land use type. The rates will be drawn from the published rates in the Pass-By Data and Rate Tables Appendix of the 11th Edition[1]. The Tahoe adjusted trip rate for the type will incorporate the published pass-by rate. No pass-by reductions are appropriate for residential; tourist accommodations, recreation, or public service uses.
    b. Annualization factor - For commercial and recreation projects that will not be operational year-round, the project-generated VMT can be adjusted by dividing the number of days the project is operational by the total number of days in the year. As a general rule, if an operational detail is not recorded on the deed, it should generally not be considered within the impact assessment process. No additional adjustment is necessary for residential or other overnight lodging types.
    c. Mode share-based trip adjustments - Mode share-based trip adjustments refer to the reductions to the number of auto trips generated by a land-use because of trips taken via another mode (eg. walking, biking, etc). The total number of trips is scaled based on the observed number of trips in Tahoe today, so additional mode share-based adjustments are not necessary or appropriate.
4. Identify the Zone for the project and the zone average trip length.
5. Multiply the total number of trips from step 3 by the zone average trip length from step 4 to calculate the total project VMT.

[1] https://www.ite.org/ITEORG/assets/File/Trip%20Generation%20Appendices%20PUBLISHED/Appendices/Pass-By%20Tables%20-%20Trip%20Generation%20Manual%2011th%20Ed.xlsx

Adjusted Tahoe Trip Rates

The ITE Trip Generation Manual is a reference guide published by the Institute of Transportation Engineers (ITE) that provides empirical data on vehicle trip generation rates for a wide range of land use types. It is widely used by transportation planners, engineers, and developers to estimate the number of trips a development will generate.

While the ITE manual is widely used in planning, it is also known to overestimate trip generation, especially in urban, mixed-use, or transit-oriented areas. Several factors contribute to the overestimation, including:

1. Suburban, Auto-Oriented Data Bias - ITE rates are derived from studies that favor standalone developments in suburban or low-density locations with limited access to transit, biking, or walking. These sites tend to have higher car dependence, leading to more observed vehicle trips than would occur in denser, more walkable contexts.

2. Single-Use Development Focus - Many trip rates are based on single land uses (e.g., a supermarket or office) analyzed in isolation. In mixed-use developments, internal capture (e.g., walking from an office to a retail area) reduces vehicle trips; however, ITE rates don't always account for these synergies.

3. Mode Split - The manual generally does not differentiate between trips by car, transit, bike, or walking—it assumes trips are by car unless otherwise stated. In reality, especially where sidewalks and bike paths are available and connected to amenities, a significant share of trips may occur by non-auto modes.

Due to the known bias, ITE rates are often adjusted by transportation engineers and planners during the planning process.

Multiple lines of evidence, including the Tahoe Travel Demand Model, Streetlight, and Replica, indicate that approximately 200,000 automobile trips occur daily in the Tahoe region. The most recent update of the travel demand model suggested that there were 208,557 daily automobile trips and 417,114 trips ends in the Tahoe region. In 2024, the Streetlight estimated annual average daily trip ends was 419,539.

Based on the total amount of development in the Tahoe region and standard ITE trip generation rates, the estimated number of daily trip ends in Tahoe would be 728,495 (Table 1).

	#	ITE	Rate	Pass by	Trips
Single Family (units)	39,006	210	9.44		368,217
Multi-family (units)	9,885	220	7.32		72,358
CFA (sq. ft)	6,477,943	820	37.75	24%	195,634
TAU (units)	11039	310	8.36		92,286
Total					728,495

Table 1. Total number of estimated trips in the Tahoe region based on ITE rates.

Comparing the 417,114 trip ends in the Tahoe Region with the ITE's estimated 728,495 trip ends, the number of trip ends in the region is 57.3% of the estimated number by ITE.

This factor can be applied to all ITE trip rates to derive Tahoe-specific trip generation factors for each land use.

Use	ITE Code	Trip Rate (weekday)	TRPA Rate
Single-Family Detached	210	9.44	5.41
Multi-Family (low-rise, one or two levels)	220	7.32	4.19
Senior Adult Housing – Attached	252	3.7	2.12
Congregate Care Facility (Residential Care)	253	2.02	1.16

Table 2. ITE trip rates adjusted for Tahoe.

The ITE manual provides trip rates for a suite of development types and is the basis for analyzing travel impacts for most jurisdictions. The application of factored ITE trip rates for planning in Tahoe leverages the wealth of knowledge and information in the ITE manual and places that within a regionally appropriate context. The approach provides a rapid project assessment process for any land use type in the ITE manual.

The approach posits that the ITE trip generation ratios for different uses are the same in Tahoe as elsewhere, but the number of trips for each type is region-specific. For example, the ITE manual suggests that a single-family residential unit generates 29% more trips (9.44/ day) than a low-rise multiple-family unit (7.32/day) (Table 1). The proposed approach supposes that multi-family units in Tahoe will produce fewer trips than single-family units and that the reduction in Tahoe is proportional to that observed elsewhere.

Appendix A. Sample Tahoe Adjusted Trip Rates

		Use	ITE Code	Rate	Tahoe Rate	Variable
	Residential					
1	TRPA10	Single-Family Detached	210	9.44	5.41	DU
2	TRPA11	Multi-Family (low-rise, one or two levels)	220	7.32	4.19	DU
3	TRPA17	Senior Adult Housing – Attached	252	3.7	2.12	DU
4	TRPA18	Congregate Care Facility (Residential Care)	253	2.02	1.16	DU
	Tourist Accommodation					
5	TRPA20	Hotel	310	8.36	4.79	Units
6	TRPA23	Motel	320	3.35	1.92	Units
7	TRPA14	Timeshare	265	9.73	5.57	Units
	Commercial					
8	LA11	General retail	820	37.75	21.61	KSF
9	TRPA101	Furniture Store	890	6.3	3.61	KSF
10	TRPA99	Pharmacy/Drugstore	880	90.08	51.58	KSF
11	TRPA92	Supermarket	850	106.78	61.14	KSF
12	TRPA102	Walk-In Bank	911	12.13	6.95	NA
13	TRPA107	High Turnover Sit-Down Restaurant (<1 hr. turnover)	932	112.18	64.23	KSF
14	TRPA108	Fast Food Restaurant	933	346.23	198.24	KSF
15	TRPA106	Quality Restaurant (>1 hr. turnover)	931	83.84	48.00	KSF
16	TRPA103	Drinking Place	925	11.36	6.50	KSF
17	TRPA89	Auto Parts and Service Center	943	16.28	9.32	KSF
18	TRPA77	Building Materials/Lumber	812	18.05	10.33	KSF
19	TRPA79	Free-Standing Discount Store	815	53.12	30.41	KSF

20	TRPA63	General Office Building (GFA of more than 5,000 sf)	710	9.74	5.58	KSF
21	TRPA67	Medical –Dental Office Building	720	34.8	19.93	KSF
22	LA26	Light industrial	110	4.96	2.84	KSF
23	LA28	Warehouse	151	1.51	0.86	KSF
26	TRPA86	Automobile Sales (New	840	27.84	15.94	KSF
	Recreation					
30	TRPA31	Public Park	411	0.78	0.45	Acres
31	TRPA32	Developed Campground/RV Park	416	12.57	7.20	Sites
32	TRPA33	Marina	420	2.41	1.38	Berths
33	TRPA34	Golf Course	430	3.74	2.14	Acres
34	TRPA35	Bowling Alley	437	24.07	13.78	KSF
35	TRPA36	Movie Theater (traditional)	444	78.09	44.71	KSF
36	TRPA41	Health and Fitness Club	492	38.97	22.31	KSF
37	TRPA43	Recreational Community Center	495	28.82	16.50	KSF
	Public Services					
38	TRPA52	University/College	550	26.04	14.91	KSF
39	TRPA46	High School	530	14.07	8.06	KSF
40	TRPA45	Middle School/Junior High School	522	20.17	11.55	KSF
41	TRPA44	Elementary School	520	19.52	11.18	KSF
42	TRPA48	Private School (K-12)	536	42.34	24.24	KSF
43	TRPA53	Church	560	9.9	5.67	KSF
44	TRPA56	Daycare Center	565	47.62	27.27	KSF
45	TRPA58	Library	590	72.05	41.25	KSF
46	TRPA59	Hospital	610	10.723	6.14	KSF