City of Walnut Creek

Transportation Analysis Guidelines

June 2021

TRAFFIC ANALYSIS GUIDELINES

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City of Walnut Creek Transportation Analysis Guidelines

1.0 INTRODUCTION

As part of the City's commitment to provide excellent customer service to the general public, developers, and traffic-engineering consultants, the Traffic Engineering Section of the Public Works Department has developed technical guidelines to guide the preparation of Transportation Analysis Guidelines (TAG) for proposed developments in Walnut Creek. The guidelines are designed for use by the traffic-engineering consultants because of its technical contents. The purpose of the TAG is to establish general procedures and requirements for the preparation of traffic impact studies associated with development within the City of Walnut Creek. The term "guidelines" is important in that the City recognizes that every project and study context is unique. These guidelines are intended as a checklist for study preparers to be sure they have not missed any typical study items. They are not intended to eliminate professional judgment or creativity. The guidelines document should be a stand-alone document that could be replicated by a peer consultant or City staff based on the information provided in the document. The document is factually based utilizing industry standards and technical analysis. It guides the environmental review process of land developments and the conformance of development projects to California Environmental Quality Act (CEQA). The guidelines ultimately help in the avoidance of costly litigations associated with developments.

The primary objectives of these guidelines are to provide:

- Guidance in determining if and when a Traffic Impact Study (TIS) is needed
- Consistency and uniformity in the identification of traffic impacts of proposed land uses
- Identification of TAG requirements early in the planning phase of a project to eliminate potential delays later
- An early guidance to establish the assumptions, data requirements, study scenarios and analysis methodologies prior to beginning the TIS
- Early coordination during the planning phases of a project to facilitate the preparation of a TIS

The City of Walnut Creek shares borders with the neighboring Cities of Concord, Pleasant Hill, and Lafayette, and unincorporated Contra Costa County communities. Regional transportation facilities within the Walnut Creek border include: Interstate 680 and State Route 24; major arterials designated as Routes of Regional Significance with performance measure objectives established by the Central County Action Plan adopted by the Contra Costa Transportation Authority (CCTA); Bay Area Rapid Transit (BART) rail service; and Central Contra Costa Transit Authority, which operates County Connection bus routes.

These guidelines are intended to assure that a TIS will address the potential effects of a proposed development on the transportation system in this complex setting, giving equal attention to all modes of travel, in accordance with the goals of the City's General Plan. The City's balanced transportation focus and Complete Streets efforts include the following goals:

- Provide a safe and attractive environment for bicycle travel and walking throughout the city
- Increase transit ridership and service to employment, schools, shopping, and recreation
- Coordinate development with transportation resources
- Minimize future increases in congestion on regional transportation facilities
- Maintain a transportation network that provides mobility for all ages and abilities and for all areas of the community
- Protect residential neighborhoods from through traffic, speeding, and non-residential parking

- Implement comprehensive TDM programs to decrease dependency on single-occupant vehicles and reduce peak-period traffic congestion
- Promote a pedestrian-friendly Downtown, and safe bicycling to and through Downtown
- Develop a comprehensive shuttle system serving Downtown residents, shoppers and employees

2.0 DETERMINING THE LEVEL OF ANALYSIS

A traffic analysis will be required by the City to adequately assess the traffic effects of development projects on the existing and/or planned street system under any of the following conditions:

2.1 Transportation Analysis

1. When project-generated traffic is expected to be greater than 100 vehicle trips during the morning or evening peak hour.
2. When a project includes a General Plan Amendment (GPA) that changes the land use and is expected to generate greater than 50 vehicle trips during the morning or evening peak hour.
3. When a project triggers Vehicle-Miles Traveled (VMT) analysis per CCTA CEQA VMT (Contra Costa Transportation Authority, California Environmental Quality Act, Vehicle Miles Traveled) analysis requirements.

2.2 Limited Scope Traffic Analysis

The City may require the project applicant or consultant to provide a focused traffic analysis in lieu of a full traffic analysis under any of the following circumstances:

1. When the project traffic will affect an intersection or roadway segment where there are known traffic concerns in the vicinity of the project site.
2. When the project will substantially change the off-site transportation system or result in diversion of traffic to other routes, including physical changes such as street closures or access restrictions, lane reductions, new traffic signals or stop signs, disruption of sidewalk or bikeway continuity or safety, relocation or obstruction of transit stops, etc.
3. When the project produces between 50 to 100 evening peak hour trips.
4. When the project is within 1,000 feet of a freeway on-ramp.
5. When the proposed project generates more than 50 trips and is within 500 feet of an impacted neighborhood or impacted intersection.
6. When the proposed project may be presumed to have a less-than-significant VMT impact through screening criteria, but the presumption needs to be verified.

The scope of the focused traffic analysis would be reviewed by City staff, but at minimum should show that the project would not result in any significant effect on any transportation facility or mode.

3.0 TRANSPORTATION IMPACT STUDY FORMAT

Prior to the beginning of any study, the project proponent shall coordinate with staff from Community Development and Traffic Engineering. A tentative schedule for reviewing and processing the TIS will be developed. Initial discussions shall also include a discussion of any key issues along with the development of the scope and boundaries of the study area. The applicant will submit a detailed site plan at this meeting. City staff will provide input into the following specific areas of the analysis:

- Defining the general study area boundaries

- Project access
- Approved development in the vicinity of the project for cumulative analysis
- Approved General Plan (build-out) traffic volumes
- Appropriate trip generation rates for the project

The project proponent shall coordinate with the Traffic Engineering staff so that detailed and technical aspects of the analysis can be discussed prior to a formal submittal. Topics of discussion will include:

- Potential for project-level VMT screening
- VMT Analysis assumptions
- Trip distribution and assignment assumptions
- Intersections and roadway segments where capacity analysis will be required
    - As a minimum, intersections where the project will add 51 or more trips during either the AM or PM peak hours will need to be analyzed. This threshold may be reduced, at the discretion of the City Traffic Engineer, for intersections that are projected to or currently operate at LOS "E" or "F"
- Intersection Capacity Analysis assumptions
- Inclusion of a TDM Plan to mitigate traffic impacts and promote the use of alternate modes of transportation
- Any specific issues that require special consideration such as pedestrian circulation, access, parking, and on-site circulation

The content and level of analysis necessary to evaluate a project will vary and are dependent on the scope of land use proposal and location within the city. All traffic studies will be organized and contain, as a minimum, the information provided in the following outline. Additional study elements may be required by the City Traffic Engineer.

1. Executive Summary

A clear concise summary of the study area, findings, and proposed improvements are required in the Executive Summary.

2. Introduction

a. Site Location and Study Area Boundaries

Briefly describe the proposed development and the general geographical location of the project. Provide the study area limits mutually agreed upon by the developer, its engineer, and the City.

b. Existing Land Uses and Project Proposals

The existing site conditions, the proposed project and if applicable, the previously proposed land use(s) associated with the site shall be identified. The specific land use proposed will be presented since a variety of uses and land use densities may be permitted under existing general plan or zoning designations with varying degrees of impact.

c. Committed and Proposed Developments in the Vicinity of the Proposed Project

Information pertaining to projects that would contribute traffic to the project study area, including both approved developments and proposed developments where an application has

been submitted, shall be identified. The TIS shall include a brief description of these projects, and their traffic-related impacts. During preliminary meetings with the applicant, City staff will identify the need to assess impacts associated with approved and proposed developments.

d. Existing and Proposed Roadways and Intersections

Identify and describe the roadways and intersections within the study area and the role each will play in providing circulation and access to the project. Number of lanes, driveway locations, ultimate right-of-way, intersection geometrics, bus stops, bike lanes, sidewalks and traffic controls shall be included.

To summarize, the information presented in the introduction, a vicinity map depicting the project site, study boundaries, existing lane configurations, traffic controls, and any additional features that are pertinent to the study shall be provided.

3. Methodology and Thresholds

Identify the methodology used to calculate LOS and VMT. Include the criteria used for screening projects from project-level VMT analysis, if applicable. Identify the impact threshold for VMT, and deficient LOS operations for roadways and intersections.

4. Vehicle Miles Traveled (VMT) Analysis

Present the Project VMT per capita for all analysis scenarios and the Project effect on VMT for all analysis scenarios. Data shall be presented in tabular format. If the project meets the criteria for screening from project-generated VMT analysis, this shall be documented. All VMT impacts shall be identified in accordance with the VMT Impact Thresholds described above. Proposed VMT mitigation measures must be identified.

5. LOS Analysis (if needed)

A table summarizing the types of lane use; the corresponding generation rates and land use units and the resulting morning peak, evening peak, and total daily trip ends generated by the project is required. As part of the analysis, a graphic that shows project distribution by percentage and the direction of travel shall be included. The results of the various LOS and V/C calculations shall be summarized using figures that graphically represent the roadways within the study area.

6. Traffic Signal Warrant Analysis

Identify any unsignalized intersections which were studied and operate deficiently. Perform a signal warrant analysis to determine if the installation of a traffic signal is warranted.

7. Site Access Analysis

Refer to Section 9.5.

8. On-site Parking Analysis

Refer to Section 9.5.

9. Active Transportation and Public Transit Analysis

Refer to Section 9.5.

10. **Improvements and Recommendations**
    a. Proposed improvements at intersections
    b. Proposed improvements at roadway segments
    c. Recommended improvements categorized by whether they are included in fee plan or not. (Identify if these improvements are included in an adopted fee program)
11. **Appendix**
    a. Approved scope of work
    b. Traffic counts
    c. Intersection analysis worksheets
    d. VMT and TDM calculations
    e. VMT and TDM mitigation calculations
    f. Signal warrant worksheets

4.0 EXISTING CONDITIONS

4.1 Existing Conditions

The TIS should address the following:

- Provide a description of existing streets and roadways within the project site (if any) and in the surrounding area. Include information on the roadway classifications (per the City of Walnut Creek General Plan Transportation Element), the number of lanes, posted speed limits, divided/undivided configuration, and bike lanes.
- A figure should be included showing the roadways surrounding and/or logically associated with the project site.
- Descriptions of any transit facilities within a radius of no less than 1,300 feet surrounding the project, including the service provider(s), routes, frequency and location/amenities of existing bus stops, should be provided.
- Existing and planned bicycle and pedestrian facilities adjacent to the project site, utilized by the project, connected to by the project, or potentially impacted by the project should be identified and described in detail.
- Results of analyses of existing LOS at intersections and performance measures on regional roadways should be summarized in tables and discussed. Identification numbers for all study intersections shall be assigned and remain consistent among all tables, figures, and LOS analysis worksheets. If any study intersections or roadway segments are operating at unacceptable levels, improvement measures may be identified.

4.2 Roadway System

Traffic Analysis Study Area

The list of intersections and regional roadways to be covered by the traffic study will be determined on a case-by-case basis and shall be sufficient to include existing and planned streets and intersections that may be impacted by the proposed development based on its location and site characteristics, size, land use, and the existing traffic conditions around the site.

The TIS study area should include any Route of Regional Significance roadway segment to which 50 or more project trips would be added during the morning or evening peak hour. The Routes of Regional Significance are Ygnacio Valley Road, Treat Blvd., Geary Road, North Main Street north of I-680, and Pleasant Hill Road.

The TIS should also include any intersection, signalized or unsignalized, to which 25 or more project trips are added, unless otherwise required by the City Traffic Engineer.

Traffic analysis on Freeways

The TIS should include any freeway facility to which 50 or more project trips would be added during the morning or evening peak hour. Traffic analyses of freeway facilities shall be presented in the Appendices of the TIS. This analysis should follow the most current CALTRANS Guide for the Preparation of Traffic Impact Studies (December 2002 or the most recent), which can be obtained from the following web page, to determine CALTRANS requirements for the study of traffic impacts to its facilities: https://nacto.org/docs/usdg/guide_preparation_traffic_impact_studies_caltrans.pdf

Any correspondence with CALTRANS shall be provided to City staff.

Neighboring Agencies

If a project would add 50 or more project trips during the morning or evening peak hour to transportation facilities in other jurisdictions (BART, Central Contra Costa Transit Authority (CCCTA), Contra Costa County, the City of Concord, or the City of Pleasant Hill), the consultant should discuss with Walnut Creek city staff how this should be addressed in the study. This is to determine what, if any, transportation-related issues respective of those jurisdictions that may need to be addressed in the TIS, including the California Environmental Quality Act (CEQA) levels of significance with regard to impacts on each agency's transportation facilities. Correspondence with these jurisdictions shall be provided to city staff.

All contacts with agency and jurisdiction representatives should be cited in the TIS. All assumptions shall have proper citation and justification for their use in the TIS.

If a consultant is performing work in an adjacent agency and analyzing circulation and transportation facilities and infrastructure within the City of Walnut Creek to which 50 or more project trips would be added during the morning or evening peak hour, or when analyzing an inter-jurisdictional corridors and it is determined that the project would add 50 or more peak hours trips to transportation facilities in Walnut Creek, the Transportation Analysis Guidelines presented herein should be used to determine the scope of work for analysis of such facilities and infrastructure to identify impacts and mitigation measures. The consultant should contact City of Walnut Creek staff for review of the scope of work. Consultant should also send a completed document for comment to City staff.

4.3 Pedestrians/Bicycles and Transit

Traffic studies shall provide sufficient detail regarding existing pedestrian, bicycle, and transit facilities. This could include identification of deficient facilities, existing and planned pedestrian and bicycle facilities, and existing and planned transit routes and facilities.

Potential impacts to public transit, pedestrian facilities and travel, and bicycle facilities and travel can be evaluated using the following criteria:

- A significant impact occurs if the project conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

Therefore, the TIS shall include analysis of a project to examine if it is consistent with adopted policies, plans, or programs regarding active transportation or public transit facilities, or otherwise increases or decreases the performance or safety of such facilities and make a determination as to whether it has the potential to conflict with existing or proposed facilities supporting these travel modes.

Projects located in the Downtown area shall provide sufficient quantitative analysis of adjacent pedestrian, bicycle, and transit facilities to identify potential project impacts. These impacts may be pedestrian crossing volumes and any required changes in signal timing parameters that could potentially affect intersection and arterial operations; bicycle volumes and bikeway configuration relative to adjacent traffic volumes and roadway geometry; transit stop boarding's and passenger load factors, etc. Peak period counts of bicycles and pedestrians at study intersections will facilitate this analysis. For projects outside the Downtown area, qualitative analysis of pedestrian, bicycle and transit facilities will be sufficient.

5.0 DATA COLLECTION

5.1 Traffic Counts

Collect new peak period turning movement counts of vehicles, bicycles, and pedestrians at each of the study intersections identified in the approved scope of work. Collect new daily traffic, bike and pedestrian counts on each roadway segment identified in the scope. Traffic counts should be included in the report Appendix.

Available existing counts can be used if they are less than 24 months old and no significant change due to more recent development, roadway or traffic control improvements, or other sources of traffic pattern changes has occurred in the vicinity. City staff shall approve all requests to use existing available counts.

Common rules for conducting traffic counts include but are not limited to:

- Weekday counts shall be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday, and not during the last two weeks of December.
- Counts shall not be conducted in inclement weather conditions, or during temporary road closures, construction activity, events or incidents in the vicinity that could disrupt traffic patterns at the count location.
- Counts shall be collected when schools and colleges are in regular session, but not during the first week that schools and colleges are in session at the start of a new academic year (after summer/winter break.
- Weekday peak period intersection counts shall be collected from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, unless otherwise specified (such as midday or weekend peak periods).
- Peak period intersection counts shall be recorded at 15-minute intervals and should include the peak hour factor calculation.
- Seasonal and weekend variations in traffic should also be considered where appropriate (i.e.,

recreational routes, downtown areas, etc.).

5.2 Field Observations

The traffic consultant should observe each study intersection during peak hours of analysis and document their field observations. This could include any of the following:

- Freeway ramp effects on local streets, including ramp meter spillback
- Uneven lane demand and usage
- Effect of on-street parking
- Pedestrian and bicycle safety issues
- Transit routes and location of transit stops
- Cut-through traffic in neighborhoods
- Sight distance issues
- Intersection gridlock conditions that may explain low peak period traffic counts
- Queuing and storage length
- Issues affecting transit operations
- Truck routes

For study locations where saturated conditions exist for longer than the peak hour, the consultant should note the corresponding traffic queue lengths at the beginning and end of each 15-minute interval.

The report should include a description of the data collected for use in the traffic analysis presented in the TIS including the dates and days of week of traffic counts, specific times of day for peak period counts, etc. If data from a previous study is used, the source document's title, author/publisher, and date should be cited. Each report shall include appendices providing count data used in the preparation of the report.

6.0 PROJECT CHARACTERISTICS

6.1 Project Description

The TIS should include a detailed description of the project, including factors which quantify traffic generators, e.g., dwelling units, square feet of office space, persons to be employed, restaurant seats, acres of raw land, etc. Provide a site plan that includes access, project-only trips at the access points, circulation, parking, and loading as applicable. The project description typically includes the following information:

- Location of the project site, address, and cross streets; information regarding the project site's lot area, existing and proposed zoning, and a figure with the location of the lot on the Assessor's Block.
- Existing and proposed total gross square footage for each land use type and the number of units for residential and live/work uses, including the net changes for each type of use.
- Existing and proposed estimated number of employees and/or dwelling units by type of use, including net changes, if available.

- Description and plans for use (if any) of public rights-of-way by existing or proposed uses, either above or below grade, including sidewalk width changes, changes in width or number of traffic lanes, function of lanes in terms of traffic channelization, and/or direction of travel.
- Existing and proposed number of off-street parking spaces and whether any on-street or off-street parking spaces will be removed.
- Existing and proposed number of off-street and on-street freight loading spaces as well as any proposed changes affecting on-street loading spaces.
- Detailed plans showing vehicular and pedestrian site access, including location of curb cuts for both existing and proposed uses, and internal vehicular circulation, presented in standard architectural or engineering scale.
- Figure identifying parking spaces, the proposed egress and ingress to the parking garage or lot, the circulation pattern within the parking facility and the number and location of parking spaces for the disabled (accessible parking spaces).
- Figure showing the location, dimensions and access to the off-street freight loading spaces as well as the on-site location for trash and garbage storage.
- Identification of the location, number, type of bicycle parking spaces provided, and proposed primary access.

6.2 Proposed Project Trip Generation

Trip Generation

The estimate of trip generation should be based on standard industry practices as described in one or more of the following:

- Institute of Transportation Engineers (ITE) Trip Generation Manual (most current edition).
  - Peak hour trips should be calculated using the data for the peak hour of traffic on adjacent streets.
  - Trips should be calculated using the weighted average rates or rates from the regression equations as determined according to the guidelines in the ITE Trip Generation Manual.
  - Special consideration should be given for ITE rates based on antiquated data or a small sample, which may require use of other data sources or additional data collection to determine the appropriate trip generation. (Local trip generation surveys may be required if the project site is not compatible with any ITE land use codes, the land use code has fewer than five data points, the project size does not fall within the range of ITE study site, or standard deviation is greater than 110 percent of the weighted average rate).
- When ITE data is not available or if the available ITE categories are inadequate for a specific project, trips may be determined using other references such as the San Diego Association of Governments (SANDAG) publications and other reputable sources. Appropriate supporting information is required for the use of these other non-ITE or SANDAG data sources.
- New rates may be determined from similar land uses in the community for uses not updated or included in the ITE Trip Generation Manual or other acceptable data sources, subject to receipt of documentation acceptable to City staff. Local trip generation studies should follow the procedures prescribed in the ITE Trip Generation Manual.

For projects located in the Downtown pedestrian retail district that propose any commercial land use other than office space, the ITE Trip Generation rates for the Shopping Center land use (category 820) at

1.5 million square feet of gross leasable area as calculated using the regression equations shall be applied to estimate project trip generation. Using the most recent data from ITE Trip Generation Manual, 10th Edition (2019), the following rates shall be applied regardless if the size of the project:

- Daily: 37.75 trips per 1,000 square feet
- A.M. Peak Hour: 0.94 trips per 1,000 square feet

  P.M. Peak Hour: 3.81 trips per 1,000 square feet (actually should be 2.86 for PM peak from Neiman Marcus Broadway Plaza Retail Project EIR (Table 4.4-7). The 2.86 is from Shopping Center Data Plot graph and the fitted graph. For 1,000,000 the trip rate is 2.86 trips per 1,000 sq ft. This is for peak hour of adjacent street traffic one hour between 4pm and 6pm (general urban/suburban)

Trip Reductions

Four potential reductions in project trip generation may be applied, subject to City staff review.

1. Existing Trips to avoid a double-count of existing land uses (if any) that will be replaced, the existing levels of trip activity should, in most cases, be based on actual observations rather than on estimates based on ITE rates. Existing project site trips generated by land uses that would be replaced by the project may be deducted in the analysis if they are included in the existing traffic counts and the existing traffic distribution is similar to that for that proposed project.
2. Internally Captured Trips generally refers to trips that are "captured" within the project site or the immediate area, where a complementary mix of residential, employment, and/or retail or service land uses in close proximity to each other allows these trips to be walking (or possibly short bicycling) trips rather than vehicle trips. The consultant is required to support the use of any reductions proposed for internally captured trips.
3. External Trips generally refers to trips with origins/destinations outside the project boundaries, which are categorized and further defined as follows:
    - Trip-making can be broken down into two major categories: 1) pass-by trips, and 2) non-pass-by trips that can be further broken into primary trips and diverted linked trips.
    - Pass-by trips should only be deducted for certain land uses such as fast-food restaurants, service stations, and some retail developments. The use of pass-by reductions should be based on guidance provided in the latest edition of the ITE Trip Generation Manual. The consultant is expected to do due diligence to support the use of any pass-by reductions not included in the ITE Trip Generation Handbook.
    - Diverted Linked Trips should not be deducted and should be treated as new primary trips.

Table I: Maximum Pass-By Trip Percentages for Weekday A.M. and P.M. Peak Hour

Land Use (ITE Code)	*Maximum Pass-By Trip Percentage*	
	Weekday A.M. Peak	*Weekday P.M. Peak*
Shopping Center or General Retail (820)	0%	30%
Free-Standing Discount Store (813, 815)	0%	15%
Super Market (850)	0%	35%

Discount Supermarket (854)	0%	20%
Convenience Store – 24 hour (851)	50%	60%
Convenience Store w/Gas Pumps (853)	60%	65%
Pharmacy/Drugstore without Drive-Through Window (880)	0%	50%
Pharmacy/Drugstore with Drive-Through Window (881)	0%	45%
Drive-in Bank (912)	0%	45%
High-Turnover (Sit-Down) Restaurant (932)	0%	40%
Fast-Food Restaurant with Drive-Through Window (934)	45%	50%
Coffee Stand w/Drive-Thru & No Indoor Seats (935)	85%	85%
Gasoline/Service Station (944)	55%	40%
Gasoline/Service Station w/Convenience Store (945)	60%	55%

Note 1: Based on ITE Average Pass-by trip percentage rounded down to the nearest 5%.

Note 2: The zero values listed for the A.M. peak period may be adjusted if sufficient data can be provided to support different assumptions, and subject to the approval by City Staff.

4. Multi-Modal Trips
    - Transit-proximity trip reductions may apply to residential and employment land uses located within one-half mile of the Walnut Creek BART station. Reductions for transit proximity shall be documented in the traffic study based on local Census mode split data, published survey data for transit-oriented developments (TODs) in California, and similar sources. Justification of proposed reductions greater than ten percent for project sites within one-quarter mile of the BART station, or five percent for sites between one-quarter and one-half mile away, must be presented for consideration by City staff.
    - Trip reductions for Transportation Systems Management/Transportation Demand Management (TSM/TDM) measures will be considered. The estimates for trip reduction shall be well-documented arguments presented for consideration by city staff to assure the long-term validity of any proposed reductions prior to their use in the traffic analysis.

Projected daily trips, morning and evening peak hour trips for the proposed project, and for approved and pending projects as needed for the Near-Term Conditions scenario, shall be summarized in tables. Trip generation rates, factors, and sources shall be provided. Provide a figure illustrating peak hour project-only trips at the study intersections and roadway segments. The inbound and outbound trips shall be totaled in the table. Trip generation shall be summarized in a table form such as Table II that follows, and submitted to the City Traffic Engineer for review and approval before proceeding with subsequent traffic analysis of "plus project" conditions:

Table II: Proposed Project Trip Generation for Weekdays

Land Use	*Size*	*Daily*			*AM Peak Hour*					*PM Peak Hour*			
		*	*Trips*	*	*In: Out*	*In*	*Out*	*Total*	*	*In: Out*	*In*	*Out*	*Total*
Retail	12 ksf	40	480	1.0	60:40	7	5	12	3.7	50:50	22	22	44
Townhomes	32 Units	7.5	240	.75	35:65	8	16	24	.75	65:35	16	8	24

Senior Housing	100 Units	3.7	370	.22	35:65	8	14	22	.27	60:40	16	11	27
Total Trips		**1,090**				**23**	**35**	**58**			**54**	**41**	**95**

* Trip rate

6.3 Proposed Project Trip Distribution and Assignment

Trip Distribution

A figure illustrating the percentage of peak hour project-generated traffic going to and from various destinations along the transportation network shall be included in the TIS. Trip distribution shall be based on the proposed land use, existing travel patterns, site access to major corridors, relative locations of complementary land uses, and model runs of the Contra Costa Transportation Authority (CCTA) travel demand model. Typically, CCTA model runs should only be used for a general trip distribution to and from the North, South, East, and West. Project trips should then be manually assigned to the driveways, intersections, and roadway segments according to the trip distribution, and account for any turning movement restrictions or other relevant roadway characteristics including relative level of congestion on available route options. The model should not be relied on for project trip assignment.

Trip Assignment

A figure illustrating the assignment of peak hour project-only trips at the driveways, study intersections, and roadway segments based on the trip distribution shall be included in the TIS. If the trip distribution is different between existing, near-term, and cumulative conditions, a figure shall be provided for each different trip distribution and/or assignment with supporting discussion and justification. All assumptions shall have proper citation and justification for their use in the TIS. The trip distribution and assignment assumptions shall be submitted with the work scope for review and approval of the City Traffic Engineer, which the consultant should obtain before proceeding with subsequent traffic analysis.

7.0 CEQA ASSESSMENT – VMT ANALYSIS

A key element of Senate Bill (SB) 743, signed in 2013, is the elimination of automobile delay and LOS as the sole basis of determining CEQA impacts. The updated CEQA Guidelines, released in December 2018, recommend VMT as the most appropriate measure of project transportation impacts. However, SB 743 does not prevent a city or county from continuing to analyze delay or LOS as part of other plans (e.g., the general plan), studies, or ongoing network monitoring as part of an informational, non-CEQA analysis. This document includes guidelines for LOS and other non-CEQA circulation system analysis in Chapter 9.

For purposes of SB 743 compliance, a VMT analysis shall be conducted for land use projects as deemed necessary by the Traffic Division and shall apply to projects that have the potential to increase the baseline VMT per capita (i.e., residents, employees, etc.) for the City of Walnut Creek. Normalizing VMT provides a transportation efficiency metric for the analysis to be based on.

7.1 Project Screening

There are three types of screening that may be applied to effectively screen projects from project-level assessment. These screening steps are summarized below:

Step 1: Transit Priority Area (TPA) Screening

Projects located within a TPA[1] may be presumed to have a less than significant impact absent substantial evidence to the contrary. The following projects may ***NOT*** be exempt from analysis:

- Housing projects located in areas that have existing per capita home-based VMT that is greater than 85% of the existing County-wide average;
- Employment-focused projects located in areas that have existing per capita work commute VMT that is greater than 85% of the existing Bay Area regional average;
- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking for use by residents, customers, or employees than required by the lead agency (if the agency allows, but does not require the project to supply a certain amount of parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (SCS) (as determined by the lead agency, with input from the Metropolitan Transportation Commission (MTC)); or
- Results in a net reduction in multi-family housing units.

To identify if the project is in a TPA, the analyst may review the screening maps to identify projects that could be considered for screening from project-generated VMT impacts. Additionally, the analyst shall confirm with all local transit providers that no recent changes in transit service have occurred in the project area.

Step 2: Low VMT Area Screening

Residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area.

For this screening, CCTA's Travel Demand Model shall be utilized to compare the project's characteristics to land uses currently in the low-VMT area and for individual traffic analysis zones (TAZs). TAZs are geographic polygons similar to Census block groups used to represent areas of homogenous travel behavior. Total daily VMT per capita (per resident, per worker, or per service population) was estimated for each TAZ. This presumption may not be appropriate if the project land uses would alter the existing built environment in such a way as to increase the rate or length of vehicle trips. The project applicant shall document whether or not any increase to the rate or length of vehicle trips is expected. Residential and employment-generating projects located within a low VMT-generating area can be presumed to have

[1] A TPA is defined as those areas within one-half mile of a BART station, ferry terminal, or bus stop with at least two bus lines providing 15-minute or better headways during peak periods.

Pub. Resources Code § 21064.3 - '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 § 21155 - For purposes of this section, a 'high-quality transit corridor' means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

a less-than-significant impact absent substantial evidence to the contrary. A low VMT area is defined as follows:

- For housing projects: Cities and unincorporated portions within CCTA's five subregions that have existing home-based VMT per capita that is 85% or less of the existing County-wide average.
- For employment-generating projects: Cities and unincorporated portions of CCTA's five subregions that have existing home-work VMT per worker that is 85% or less of the existing regional average.
- There is no definition of a low VMT area for Regional-Serving and Other Projects, since these projects always require a VMT analysis (unless they are screened out using other criteria).
- Mixed-use projects may qualify for the use of this screening criterion if they include only housing, employment-generating uses and local-serving uses, and can reasonably be expected to generate VMT per resident and/or per worker that is similar to the existing land uses in the low VMT area.

To identify if the project is in a low VMT-generating area, the analyst may review the screening maps. Additionally, as noted above, the analyst must identify if the project is consistent with the existing land use (e.g., if the project is proposing single-family housing, there should be existing single-family housing of approximately the same density) within that TAZ and use professional judgement that there is nothing unique about the project that would otherwise be misrepresented utilizing the data from the Travel Demand Model.

Step 3: Project Type Screening

The shift from LOS to VMT provides new screening options whereby projects meeting the criteria may not be required to perform a VMT analysis. These screening criteria are baselines and are subject to evaluation by City staff (i.e. City staff can deny the use of screening criteria if substantial evidence suggests that the project is not appropriate for screening) as part of the adoption process. The screening criteria developed by CCTA with input from Walnut Creek City staff and Planning Commission Council members include the following:

- CEQA Exemption: Any project that is exempt from CEQA is not required to conduct a VMT analysis.
- Small Projects: Small projects can be presumed to cause a less-than-significant VMT impact. "Small Projects" are defined as having 10,000 square feet or less of non-residential space or 20 residential units or less, or otherwise generating less than 836 VMT per day.[2]
- Local-Serving Uses: Projects that consist of Local-Serving uses can generally be presumed to have a less-than-significant impact absent substantial evidence to the contrary, since these types of projects will primarily draw users and customers from a relatively small geographic area that will lead to short-distance trips and trips that are linked to other destinations. Local-serving retail projects less than 30,000 square feet can be presumed to cause a less-than-significant VMT impact. Drive-thru uses cannot take any exemptions as part of the screening criteria.

[2] This threshold ties directly to the OPR Technical Advisory which notes that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Using statewide average data from the California Statewide Household Travel Survey (CHTS), the amount of daily VMT associated with 10,000 square feet of non-residential space is 836 VMT. Also using statewide average CHTS data, this level of VMT is associated with 20 housing units. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 20 housing units or 10,000 square feet of non-residential space could be considered not to lead to a significant impact.

- Affordable Housing: Projects that provide affordable housing can be presumed to have a less-than-significant impact absent substantial evidence to the contrary. This exemption would apply if the project provides 100% affordable housing.

7.2 VMT Assessment for Non-Screened Development

Projects not screened through the steps above must complete VMT analysis and forecasting through the CCTA model to determine if they have a significant VMT impact. This analysis shall include "project generated VMT" and "project effect on VMT" estimates for the project TAZ(s) under the following scenarios:

- Baseline conditions - This data is available from the CCTA Travel Demand Model; analysts should use caution to ensure that the baseline values calculated are reflective of values at the time that the Notice of Preparation for a project is released (consistent with guidance from OPR). The screening maps also provide the baseline VMT per capita in the City of Walnut Creek.

- Baseline plus project - The project land use shall be added to the project TAZ or a separate TAZ shall be created to contain the project land uses. A full base year model run shall be performed and VMT changes must be isolated for the project TAZ and across the full model network. The model output must include reasonableness checks of the production and attraction balancing to ensure the project effect is accurately captured. If this scenario results in a less-than-significant impact, then additional cumulative scenario analysis may not be required (more information about this outcome can be found in the Thresholds Evaluation discussion later in this chapter). The screening maps provide an estimate of the Baseline plus project conditions. This data could be presented in lieu of results from the full model run. However, it is recommended that a base year plus project run always be performed as a check for reasonableness and consistency with the cumulative year results.

- Cumulative no project - This data is available from the CCTA travel demand model. Projects that are unable to mitigate their project-specific VMT impacts levels require a Cumulative VMT analysis. The cumulative year shall be confirmed with City staff prior to beginning the cumulative analysis.

- Cumulative plus project - The project land use shall either be added to the project TAZ or a separate TAZ must be created to contain the project land uses. The addition of project land uses shall be accompanied by a reallocation of a similar amount of land use from other TAZs; especially if the proposed project is significant in size such that it would change other future developments. Land use projects are often represented in the assumed growth of the cumulative year population and employment. It may be appropriate to remove land use growth that represents the Project from the cumulative year model to represent the cumulative no project scenario. If project land uses are simply added to the cumulative no project scenario, then the analysis shall reflect this limitation in the methodology and acknowledge that the analysis may overestimate the project's effect on VMT.

The model output shall include total VMT, which includes all vehicle trips and trip purposes, and VMT per capita (per resident, per worker, or per service population). Total VMT (by speed bin) is needed as an input for air quality, greenhouse gas (GHG), and energy impact analysis while total VMT per capita is recommended for transportation impact analysis.

Both "plus project" scenarios noted above will summarize two types of VMT: (1) project generated VMT per capita and comparing it back to the appropriate benchmark noted in the thresholds of significance, and (2) the project effect on VMT, comparing how the project changes VMT on the network looking at citywide VMT per capita comparing it to the no project condition.

Project-generated VMT shall be extracted from the travel demand forecasting model using the origin-destination trip matrix and shall multiply that matrix by the final assignment skims. The project-effect on VMT shall be estimated using the City boundary and extracting the total link-level VMT for both the no project and with project condition.

A detailed description of this process can be found in CCTA's *VMT Methodology Memorandum*.

7.3 VMT Impact Thresholds

The following minimum criteria will apply to analysis and mitigation of VMT impacts from projects that are not exempted from analysis:

1. A residential project's VMT impact is considered less-than-significant if its residential VMT per resident is at least 15% below the County-wide average residential VMT per resident
2. An employment-generating project's VMT impact is considered less-than-significant if its Home-Work trip VMT per Worker is at least 15% below the 9-County MTC regional average Home-Work trip VMT per Worker.
3. A regional-serving project shall consider the total study area VMT and should define a VMT study area[3] over which to evaluate that metric. The VMT impact is considered less-than-significant if its baseline project generated total VMT per service population (employees plus residents) is 15% below the existing County-wide average total VMT per service population.

7.4 VMT Mitigation Measures

When a Project is found to have a significant impact under CEQA, CCTA has created a set of tools to assist local jurisdictions in mitigating VMT, which will include the following at a minimum:

1. A toolkit of urban design and land use strategies, with a presumed VMT reduction tied to each strategy.
2. An expanded Transportation Demand Management (TDM) program as well as a tool for tracking TDM implementation and effectiveness.

[3] A geographic area over which the project's effect on total VMT will be evaluated. The study area should be defined such that it captures the reasonably foreseeable VMT changes associated with the project, but not so large that the effects of the project get swamped by broader economic and land use changes. In many instances, a city boundary would be a reasonable study area; in cases where a project is located at the edge of a city or in an unincorporated area, or if the project is very large such that it is likely to affect travel patterns in neighboring cities, then a subregion of the County or even the entire County might be a more appropriate study area.

3. A potential future VMT Mitigation Bank or Exchange.

If adoption and implementation of all feasible mitigation measures will fail to lessen impacts to the less-than-significant levels defined above, a jurisdiction may adopt a Finding of Overriding Consideration under CEQA in order to approve a project and comply with this policy.

The City of Walnut Creek has released a Draft Plan for Rethinking Mobility: A Transportation Strategic Plan for the City of Walnut Creek that includes TDM measures that are appropriate for the City. VMT reductions shall be evaluated using state-of-the-practice methodologies recognizing that many of the TDM strategies are dependent on building tenant performance over time. As such, actual VMT reduction cannot be reliably predicted and monitoring may be necessary to gauge performance related to mitigation expectations.

8.0 TRAFFIC OPERATIONS – LEVEL OF SERVICE ANALYSIS

8.1 Traffic Analysis Scenarios

LOS and other applicable analyses of morning and evening peak hour traffic conditions at designated study intersections and regional roadways shall be included for the following scenarios in the TIS:

- Existing Conditions – Current year traffic volumes and existing transportation facilities, capacities, and lane geometries.
- Existing plus Proposed Project Conditions – Project trip generation and trip distribution added to the previous scenario.
- Near-Term (without project) Conditions – Trip generation and distribution from approved projects that are not yet constructed, or are constructed but not occupied, plus pending projects, for the anticipated year of full occupancy of the project (based on a reasonable estimate of the project's development rate), added to the previous scenario traffic volumes. See previous section on "Approved and Pending Projects" for more detail. Assume any transportation facility improvements programmed and funded in the city's five-year Capital Improvement Program (CIP) that will be completed by the anticipated year of full occupancy of the project.
- Near-Term plus Proposed Project Conditions – Project trip generation and trip distribution added to the previous scenario.
- Cumulative Year 2040 (without project) Conditions – Year 2040 traffic projections, based on current CCTA travel demand forecasting model projections for 2040. May assume completion of the Walnut Creek General Plan Circulation Network and other long-term regional transportation improvements, pending confirmation by City staff. (Other cumulative horizon years may be selected subject to approval by City Staff.)
- Cumulative Year 2040 plus Proposed Project Conditions – Project traffic added to the previous scenario. (Other cumulative horizon years may be selected subject to approval by City Staff.)

If any phasing of the project is to take place, each development phase should be studied at its anticipated year of full occupancy in addition to the above scenarios, which will determine the timing of recommended project improvements/mitigations. No physical improvements should be assumed unless there is a CIP already identified for construction no later than the applicable analysis year. For information on CIP projects near the project, refer to the following City web page: https://www.walnut-

creek.org/departments/public-works/engineering-services/capital-investment-program. If the improvement is identified in an impact fee program and the improvement is scheduled for construction by the anticipated year of the project's full occupancy, that improvement can be assumed under Cumulative Analysis scenarios. However, the project may be conditioned with constructing the assumed improvement. Assumptions regarding CIP projects shall be confirmed by City staff when the project is defined.

All assumptions shall have proper citation and justification for their use in the TIS. Provide information for both scenarios similar to the above-referenced scenarios. Please discuss in detail how the traffic volume forecasts were developed using the CCTA model. This information should be easy to follow and reproducible by a peer consultant and/or City of Walnut Creek staff.

8.2 Approved and Pending Projects

Approved and pending projects located within the vicinity of the project (i.e. developments generating vehicle trips that would impact study intersections and/or roadway segments) which can reasonably be expected to be in place by the project's anticipated year of full occupancy, must be included in the Near-Term Conditions analysis. The list of relevant projects should include all approved, pending, or constructed projects that are not fully occupied at the time of the existing traffic counts and that have the potential to substantially change the volumes at one or more project study intersections. The list of approved projects shall be subject to the approval of the city staff. A table summarizing the approved and pending projects with their locations and trip generation shall be provided. A figure illustrating the Existing plus Approved and Pending Projects peak hour traffic volumes should be provided. If conditional use permit/parcel map/tract numbers are available, they should be provided in the report. Pending projects are defined as those projects that have been accepted for processing by the City of Walnut Creek Community Development Department's Planning Division.

All assumed future roadways and intersections, or any other transportation circulation improvements, must be identified and discussed. The discussion should include the scope and the status of the assumed improvements including the construction schedule and funding plan.

Results of analyses of LOS at intersections and performance measures on regional roadways should be summarized in tables and discussed. Identification numbers for all study intersections shall remain consistent among all tables, figures, and LOS analysis worksheets. If any study intersections or roadway segments are projected to operate at unacceptable levels, improvement measures may be identified.

Transportation improvements in the City's Capital Improvement Program (CIP) that are assumed in the traffic analysis should be identified and documented with the anticipated completion year. For information on CIP projects near the project refer to the following City web page: www.walnut-creek.org/citygov/depts/ps/engineering/cip.

All assumptions shall have proper citation and justification for their use in the TIS.

8.2 Level of Service, Delay Index, and Average Speed

The analyses of LOS at study intersections and performance measures of regional roadways shall be calculated using guidelines provided in the latest version of Contra Costa Transportation Authority (CCTA) Technical Procedures Level of Service and Delay Index Analysis Methodologies:

- Signalized Intersections[4] – CCTA LOS method outlined in the CCTA Technical Procedures (similar to the Intersection Capacity Analysis Circular 212 Planning Methodology) and Synchro, or other software approved by City staff.
- Unsignalized Intersections – Highway Capacity Manual (HCM) (latest version) using HCS, TRAFFIX, Synchro, or other software approved by City staff. Two-way (or one-way) minor street stop-controlled intersections must report LOS for the worst-case movement.
- Roundabout intersections that may be proposed in the future should be analyzed using SIDRA software. However, SIDRA does not account for chaining of two roundabouts and the queues associated between the roundabouts. Simulation with proper assumptions is the only way this analysis could be done correctly. The consultant shall discuss methodology with City staff prior to performing the work for roundabout analysis. The consultant will need a conceptual design of the roundabout for the analysis. The analysis should reflect United States and Walnut Creek driver behavior.
- Freeways - Mainline segment LOS and ramp junction LOS per latest HCM operational analysis consistent with Caltrans TAG Guidelines (to be presented in the TAG Appendices).
- Routes of Regional Significance – Delay Index[5] and Average Speed methods outlined in the CCTA Technical Procedures, Appendix A

8.3 Presentation of Results

The results of the preceding VMT, LOS, and other analyses shall be presented in a tabular format that includes the estimated project, citywide, or countywide VMT, V/C ratio, delay, or density and the corresponding LOS, or the Delay Index and average speed, for each analysis scenario at all designated study intersections and regional roadways as appropriate.

9.0 ANALYSIS OF TRAFFIC EFFECT

All City intersections and regional roadways shall operate at or better than the Level of Service Standards (LOS and Delay Index as applicable) in accordance with standards specified in the Transportation chapter of the City of Walnut Creek General Plan and shown in the Appendix of these guidelines. Any intersection or roadway not meeting these standards is considered to be operating at unacceptable conditions.

* Specified edition of the Highway Capacity Manual by Transportation Research Board.

[4] The CCTA LOS procedures in the CCTA Technical Procedures do not explicitly address operations of closely spaced signalized intersections. Under such conditions, several unique characteristics must be considered, including spill-back potential from the downstream intersection to the upstream intersection, effects of downstream queues on upstream saturation flow rate, and unusual platoon dispersion or compression between intersections. An example of such closely spaced operations is signalized ramp terminals at urban interchanges. Queue interactions between closely spaced intersections may mean that actual conditions seriously deviate from the results obtained from CCTA LOS procedures. In this case, simulation of the study area using the average of multiple runs to evaluate the compound effects when the intersection spacing is less than 250 feet (measured between curb extensions) or when the estimated 95% queue lengths exceed the distance between intersections may be necessary as determined by City staff.

[5] Delay Index is determined by dividing congested travel times for each scenario by the observed existing uncongested travel time for each peak hour. Existing travel times are determined through detailed field measurements during the uncongested portion of the peak hour for each direction, to account for significant fluctuations in signal timing at various times of day. The uncongested travel time is chosen based on the lowest recorded value when signal timing is similar to the subject peak hour. To predict changes in travel times in future scenarios, Synchro software is typically used to calculate incremental speed changes, which are then applied to the existing field measurements. See Appendix for additional detail.

9.1 Thresholds

Significant thresholds are determined according to acceptable LOS or other applicable standards based on the subject roadway's classification, as specified by the table presented in the Appendix section regarding Performance Measure Standards (based on the City's General Plan Policies).

Intersection Thresholds

For study intersections, the threshold is considered significant if the addition of the traffic generated from the proposed project results in any one of the following:

- Causes a signalized intersection operating at an acceptable LOS without the project to operate at unacceptable LOS.
- Increases the v/c ratio by greater than 0.05 for a signalized study intersection that is already operating at unacceptable LOS without the project.

Significant Routes of Regional Significance thresholds

For Routes of Regional Significance under study, the threshold is considered significant if the addition of the traffic generated from the proposed project results in any one of the following:

- Increases the Delay Index from 2.0 or less without the project to exceeding 2.0 with the project.
- Decreases the average travel speed from 15 miles per hour (mph) or greater without the project to less than 15 mph.

Signal Warrants

- California Manual on Uniform Traffic Control Devices* (MUTCD) Peak Hour Traffic Volume Signal Warrant. The most current edition of the California MUTCD shall be used.

9.2 Queuing at Study Intersections

Queuing analysis for study intersections should be based on the LOS analysis methodologies from the latest version of the Highway Capacity Manual (HCM), using HCS, TRAFFIX, Synchro/SimTraffic, or other software approved by City staff. Recommendations should be provided for 95th percentile queues under existing or future conditions that exceed the available queue storage capacity at locations where the resulting spillover into through traffic lanes or upstream intersections would cause a substantial hazard. Queue lengths exceeding available storage lengths in the Downtown area are not typically considered significant impacts because the prevailing low speeds of traffic would not result in a substantial hazard related to queue spillover conditions.

9.3 Mitigations

The TIS should discuss conclusions regarding the adverse impacts caused by the proposed project on the transportation system, and the recommended mitigations, which must balance the needs of all transportation modes and apply complete streets principles. The TIS must identify the improvements required to mitigate significant impacts but should consider such mitigation infeasible if an improvement would have an unacceptable impact on other transportation facilities such as pedestrian, bicycle, and transit systems and facilities.

Describe proposed mitigations and provide resulting LOS other performance measure for the subject intersection or facility in a table or figure. Discuss the timing and funding of proposed mitigations.

Objective recommendations for improvements at locations where project impacts are determined to be less than significant and mitigation is not a CEQA requirement may also be provided.

APPENDIX

Detailed VMT Forecasting Information

Most trip-based models generate daily person trip-ends for each TAZ across various trip purposes (HBW, HBO, and NHB, for example) based on population, household, and employment variables. This may create challenges for complying with the VMT guidance because trip generation is not directly tied to specific land use categories. The following methodology addresses this particular challenge among others.

Production and attraction trip-ends are separately calculated for each zone, and generally: production trip-ends are generated by residential land uses and attraction trip-ends are generated by non-residential land uses. OPR's guidance addresses residential, office, and retail land uses. Focusing on residential and office land uses, the first step to forecasting VMT requires translating the land use into model terms, the closest approximations are:

- Residential: home-based production trips
- Office: home-based work attraction trips

Note that this excludes all non-home-based trips including work-based other and other-based trips.

The challenges with computing VMT for these two types of trips in a trip-based model are 1) production and attraction trip-ends are not distinguishable after the production attraction (PA) to OD conversion process and 2) trip purposes are not maintained after the mode choice step. For these reasons, it is not possible to use the VMT results from the standard vehicle assignment (even using a select zone re-assignment). A separate post-processer must be developed to re-estimate VMT for each zone that includes trip-end types and trip purposes. Two potential approaches to address this problem are described below.

Simplified

This approach uses standard model output files and requires minimal custom calculations. It is based on a regional MPO trip-based model with peak (PK) and off-peak (OP) skims and person trip PA matrices.

- Calculate custom vehicle trip PA matrices from PK and OP person trip matrices
    - Keep trip purposes and modes separate
    - Use average vehicle occupancy rates for drive-alone and shared ride trips
- Use the final congested drive-alone PK and OP skim matrices to estimate trip length between zones
- Multiply the skim matrices by vehicle trip matrices to estimate VMT
- Sum the PK and OP results to estimate daily VMT and aggregate mode trip purpose and mode
- Calculate automobile VMT for individual TAZs using marginal totals:
    - Residential (home-based) - row total
    - Office (home-based work) - column total

Detailed

The process described above simplifies the approach but does not account for different congestion patterns throughout the day (AM, MD, PM, and NT), the direction of travel (all productions are origins and all attractions are destinations), or the benefits of exclusive lanes (HOV or HOT lanes). This more

detailed approach attempts to address these limitations and better estimate the VMT produced by the vehicle assignment model.

- Re-skim final loaded congested networks for each mode and time period
- Run a custom PA to OD process that replicates actual model steps, but:
    - Keeps departure and return trips separate
    - Keeps trip purpose and mode separate
    - Converts person trips to vehicle trips based on auto occupancy rates and isolates automobile trips
    - Factors vehicle trips into assignment time periods
- Multiply appropriate distance skim matrices by custom OD matrices to estimate VMT
- Sum matrices by time period, mode, and trip purpose to calculate daily automobile VMT
- Calculate automobile VMT for individual TAZs using marginal totals:
    - Residential (home-based) - row of departure matrix plus column of return matrix
    - Office (home-based work) - column of departure matrix plus row of return matrix

Appropriateness Checks

Regardless of which method is used, the number of vehicle trips from the custom PA to OD process and the total VMT shall match as closely as possible with the results from the traditional model process. The estimated results must be checked against the results from a full model run to understand the degree of accuracy. Note that depending on how each model is setup, these custom processes may or may not include IX/XI trips, truck trips, or special generator trips (airport, seaport, stadium, etc.).

When calculating VMT for comparison at the study area, citywide, or regional geography, the same methodology that was used to estimate project-specific VMT shall be used. The VMT for these comparisons can be easily calculated by aggregating the row or column totals for all zones that are within the desired geography.

SB743 Background Information

SB 743, signed by the Governor in 2013, changed the way transportation impacts are identified. Specifically, the legislation directed the Office of Planning and Research (OPR) to look at different metrics for identifying transportation as a CEQA impact. The Final OPR guidelines were released in December 2018 and identified vehicle miles of travel (VMT) as the preferred metric moving forward. The Natural Resources Agency completed the rule making process to modify the CEQA guidelines in December of 2018. The CEQA Guidelines identify that by July of 2020 all lead agencies must use VMT as the new transportation metric for identifying impacts for land use projects.

CCTA is assisting its member agencies in setting the numeric, VMT-based threshold of significance for certain types of land use projects. As noted in CEQA Guidelines Section 15064.7(b) below, lead agencies are encouraged to formally adopt their significance thresholds and this is key part of the SB 743 implementation process.

> *(b) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2).*

To complement the work being done by CCTA, the City of Walnut Creek has produced these Transportation Analysis Guidelines (TAG) to outline the specific steps for complying with the new CEQA expectations for VMT analysis and the applicable general plan consistency requirements.

It shall be noted that CEQA requirements change as the CEQA Guidelines are periodically updated and/or legal opinions are rendered that change how analysis is completed. As such, the City of Walnut Creek will continually review their guidelines for applicability and consultants must contact the City to ensure that they are applying the most recent guidelines for project impact assessment.

Is Level of Service Still Important?

The City of Walnut Creek has adopted vehicle LOS policies that set standards which local infrastructure will strive to maintain. These policies are contained in general plans and therefore apply to discretionary approvals of new land use and transportation projects. Therefore, these guidelines also include instructions for vehicle LOS analysis consistent with general plan requirements. The LOS guidelines are largely based on City of Walnut Creek Traffic Impact Analysis Guidelines that were last updated in 2014 and have been updated here to reflect state of the practice.

VMT Guidelines

State and federal laws require the correlation of Land Use Element building intensities in a General Plan with the Circulation Element capacity. A TIS is required by the City of Walnut Creek so that the impact of land use proposals on the existing and future circulation system can be adequately assessed and to ensure that CEQA and Congestion Management Program laws and guidelines are met.

The following TIS requirements are intended for any person or entity who is proposing development in the City of Walnut Creek and shall be used in coordination with the City's Local CEQA Guidelines and Walnut Creek Municipal Code to guide the development review process.

For the past several decades, the preparation of a TIS was integrated into the CEQA process, in which the TIS was used primarily to analyze a project's impacts under CEQA. However, with the passage of Senate Bill (SB) 743, changes to the TIS process are necessary. Specifically, a TIS may be needed as a stand-alone document which is a requirement of project approval and will include information for the decision makers that is not required as part of the CEQA process.

The purpose of Traffic Analysis Guidelines is to provide general instructions for analyzing the potential transportation impacts of proposed development projects. These traffic study guidelines present the recommended format and methodology that shall generally be utilized in the preparation of a TIS.

CEQA Changes

A key element of SB 743 is the elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. This change is intended to assist in balancing the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

SB 743 amended current congestion management law and allows cities and counties to effectively opt-out of the LOS standards that would otherwise apply in areas where Congestion Management Plans (CMPs) are still used (including Walnut Creek). Further, SB 743 required the OPR to update the CEQA

Guidelines and establish criteria for determining the significance of transportation impacts. In December 2018, OPR released its final recommended guidelines based on feedback with the public, public agencies, and various organizations and individuals. OPR recommended Vehicle Miles Traveled as the most appropriate measure of project transportation impacts for land use projects and land use plans. For transportation projects, lead agencies may select their own preferred metric but must support their decision with substantial evidence that complies with CEQA expectations. SB 743 does not prevent a city or county from continuing to analyze delay or LOS outside of CEQA review for other transportation planning or analysis purposes (e.g., general plans, impact fee programs, corridor studies, congestion mitigation, or ongoing network monitoring) but these metrics may no longer constitute the sole basis for CEQA impacts.

General Plan Policies

Performance Measure Standards

All City intersections and regional roadways shall operate at or better than the Level of Service (LOS) and other performance measure standards specified in the Transportation chapter of the City of Walnut Creek General Plan and listed below:

Roadway Classification	*LOS/Standard*	*Range of v/c Ratios*
Residential Local	LOS B	Up to 0.70 v/c
Collectors	LOS low D	Up to 0.84 v/c
Arterials	LOS high D	Up to 0.90 v/c
Routes of Regional Significance: Ygnacio Valley Road, Treat Blvd., Geary Road, Pleasant Hill Road, North Main Street	Delay Index = 2.0 Peak hour average speed: 15 mph	(Not applicable)
Core Area bounded by I-680, Iron Horse Trail, and Walden Road	LOS low E	Up to 0.94 v/c

Any intersection or roadway not meeting these standards is considered to be operating at unacceptable conditions. The analysis of LOS at study intersections and performance measures on regional roadways shall be calculated using guidelines provided in the latest version of Contra Costa Transportation Authority (CCTA) Technical Procedures.

Multimodal Transportation

A consultant performing work in the City of Walnut Creek should be familiar with all General Plan Goals and Policies pertinent to transportation. General Plan Chapters 2, 4, and 5 include a number of policies regarding pedestrians, cyclists, transit users, carpools, transportation demand management (TDM), and goods movement that are of equal weight and importance as the LOS policy requirements in the TAG. The General Plan and related documents can be accessed at the following web page: https://www.walnut-creek.org/departments/community-and-economic-development/planning-zoning/long-range-planning/general-plan-2025-specific-plans

Delay Index Methodology

Delay Index is determined by dividing congested travel times for each scenario by the observed existing uncongested travel time for each peak hour.

Existing travel times are determined through detailed field measurements during the uncongested portion of the peak hour for each direction, to account for significant fluctuations in signal timing at various times of day. The uncongested travel time is chosen based on the lowest recorded value when signal timing is similar to the subject peak hour. The observed uncongested travel time is held constant by peak hour for all analysis scenarios.

To predict changes in travel times in future scenarios, Synchro software is typically used to calculate incremental speed changes between existing conditions and the subject future scenario, which are then applied to the existing uncongested travel times observed through field measurements. In the Synchro calculations, the existing traffic signal timing along the subject corridor shall be held constant by peak hour for Near-Term future analysis scenarios. For Cumulative future scenarios, the signal timings may be optimized in the Synchro calculations for the No Project condition, but those same signal timings must also be used for Cumulative plus Project conditions, unless additional optimization of signal timing is recommended as mitigation for the project.

GLOSSARY

Approved and Pending Projects: Approved projects include development for which an entitlement to build has been granted but construction is not complete or the project is not fully occupied. Pending projects include development for which an entitlement to build is still under review by the responsible jurisdiction.

Average Speed: The average travel time for all vehicles traveling the entire length of the facility divided by the length of the facility.

Delay: Additional travel time experienced by a driver, passenger, bicyclist, or pedestrian beyond that required to travel through an intersection without interruption by traffic controls or conflicting traffic, or on a roadway segment at the uncongested or free-flow speed.

Capacity: The maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions. Capacity at intersections is based on the maximum rate of flow that may pass through the intersection under prevailing traffic, roadway, and signalization conditions.

Capital Improvement Program (CIP): A ten-year plan, divided into two- year increments, listing the upcoming needs for the City for both new capital projects and projects improving existing assets. The CIP is a planning tool used to categorize, prioritize and schedule project needs for five 2- year budget cycles, and includes sources and/or potential sources of funding that have been identified.

CCTA: Contra Costa Transportation Authority.

CEQA: California Environmental Quality Act.

Congestion: The travel time or delay in excess of that normally incurred under light- to free-flow travel conditions.

Cumulative Traffic Conditions: Traffic volume forecasts obtained from the Contra Costa Transportation Authority travel demand forecasting model under build-out conditions.

Delay Index: A quantitative measure representing the degree of congestion on a given roadway or within a given corridor. It is calculated by dividing the congested travel time by the free-flow travel time. A computed value above one (1) indicates congestion.

Evening Peak Hour: Defined as weekday peak hour of adjacent street traffic between 4 PM and 6 PM

Facility: A modal element (e.g., roadway, pathway, or transit route) that has relatively similar physical or operating characteristics (e.g., number of lanes, pathway width, service frequency) over its length.

GPA: General Plan Amendment.

Goal: Statement describing in general terms a condition or quality desired by the jurisdiction. Goals may be used as the policy basis for standards and objectives.

ITE: Institute of Transportation Engineers.

Improvement: Any substantial physical change to an intersection or roadway or construction of a new roadway, operational enhancements, traffic signal system management upgrades, and other related items.

Level of Service *("LOS")*: A measure of mobility characteristic of an intersection as defined by volume-to-capacity ratio or average vehicle delay based on the methodology of the Contra Costa Transportation Authority or the Highway Capacity Manual, respectively.

Mixed-Use Development: A project that combines two or more different land use types. Depending on whether the land uses complement each other such that some trips originating at one use have their destination at another use, thereby internally capturing those trips as walking trips on site, the vehicle trips generated by the development may be fewer than if the uses were developed separately.

Mode Split: The percentage of peak-period travelers that use a given mode of travel.

Morning Peak Hour: Defined as weekday peak hour of adjacent street traffic between 7 AM and 9 AM

Objective: Statement representing a level or quality of performance that the jurisdiction seeks to attain through its programs and policies.

Pass-By Trip: Trips generated by a proposed retail project that would be attracted from traffic already passing the proposed project site on an adjacent street that has direct access to the project. Therefore, pass-by trips are not included as new trips added to the surrounding roadway network, but must still be accounted for as part of the turning movement volumes at the project access driveways.

Phased-Development Project: A project that will be completed in separate phases over a period of time.

Project: Any development proposal for a new or changed use or new construction, alteration, or enlargement of any structure. This term also refers to any action that qualifies as a "project" as defined by the California Environmental Quality Act (CEQA).

Route of Regional Significance: Road designated by the Contra Costa Transportation Authority, consistent with procedures described in the Implementation Guide: Traffic Level of Service Standards and Programs for Routes of Regional Significance. These roads are subject to objectives and programs in adopted Action Plans. Also referred to as "Regional Routes".

Saturation Flow Rate: The maximum number of vehicles that can pass through an intersection under prevailing traffic conditions.

Significant Impact: An impact by a project resulting in an unsatisfactory level of service or an unsafe condition at an intersection or on a roadway segment, or an increase of load at a critical intersection.

Standard: Statement representing a commitment by the jurisdiction to attain a specified level or quality of performance through its programs and policies.

Study Intersection: Any intersection included in the traffic impact study analysis for a project.

Study Area: The vicinity around and/or adjacent to the project which is expected to incur a significant portion of the impacts related to the development of the project.

TAZ: Traffic Analysis Zone. Geographic area delineated for organizing land use or travel data to be used in computer modeling of traffic patterns.

Traffic Analysis Guidelines (TAG): Provides guidance on how to prepare Traffic Impact Study.

Traffic Impact Study (TIS): Assesses the transportation needs and effects of a development on the surrounding roadway network. A TIS projects future transportation demands, describes the effects of the increased demands, and identifies ways of alleviating the adverse effects of new developments.

Travel Demand Forecasting Model: An analytical tool that predicts travel patterns based upon the spatial relationship between various types of land uses at their forecasted quantities and the connecting transportation facilities (e.g., roadways and transit). Inputs to transportation forecasting models include economic, demographic, and socio-economic projections developed on a regional and local level. Outputs from transportation forecasting models include analyses of the overall transportation system's performance in terms of vehicle hours of travel, average system wide speed, vehicle miles of travel, etc.

Trip Generation: An analysis which forecasts the total number of trips generated by a project per unit of a chosen independent variable (e.g., per dwelling unit, per 1,000 square feet gross floor area, per employee, per student, per seat, etc.).

Trip Distribution: An analysis that estimates the geographic origin or destination of trips related to the project.

Travel Time: The time taken by a vehicle to traverse a given segment of street or highway. It includes the running time, the time a vehicle is spent in motion and delay, and the time lost in traffic because of traffic control devices (fixed delay) and traffic frictions (operational delay).

TSM/TDM. Transportation Systems Management/Transportation Demand Management: Programs to increase the efficiency of the transportation system, to reduce demand for road capacity during the peak hour and otherwise affect travel behavior to minimize the need for capacity-increasing capital projects.

Unacceptable Level of Service: A level of service not meeting the applicable benchmark, as specified in the Circulation Element of the Walnut Creek General Plan.

VMT: Vehicle-Miles Traveled, a metric that captures the total amount of vehicular travel through measuring the number of vehicle trips generated and the length or distance of those trips. For transportation impact analysis purposes, VMT is usually measured on a typical weekday and can be expressed in several ways, such as total VMT, total VMT per service population (residents plus employees), home-based VMT per resident, and home-based work VMT per employee.

Volume-Capacity Ratio (V/C): The ratio of traffic volume to the capacity of the roadway.

REPORT PREPARATION

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