ANTIOCH
CALIFORNIA

City of Antioch

Transportation and VMT Impact Analysis Guidelines

June 2023

Table of Contents

1.0 Introduction

The purpose of these Transportation Impact Analysis (TIA) Guidelines is to establish general procedures and requirements for the preparation of transportation impact studies for development projects within the City of Antioch. In general, they are designed for use by transportation engineering and California Environmental Quality Act (CEQA) professionals because of their technical contents. The term "guideline" is important in that the City recognizes that every project and study context is unique. The guidelines are intended as a checklist for study preparers to be sure that all required study items are included. They establish a uniform approach, methodology, and tool set to evaluate the effects of land use decisions and related transportation projects on the City transportation system. They are not intended to eliminate professional judgment or creativity. However, the need for and final scope of a TIA shall be determined by the City of Antioch. This is intended to be a "living document" and will be updated periodically to reflect newly acquired data and relevant policies.

The primary objectives of these guidelines are to provide:

- Guidance in determining if and when a Transportation Impact Analysis is needed;
- Consistency and uniformity in the identification of transportation impacts of proposed land uses;
- An early guidance to establish assumptions, data requirements, study scenarios and analysis methodologies prior to beginning the TIA; and
- Early coordination during the planning phases of a project to facilitate the preparation of a TIA.

These guidelines are intended to ensure that a TIA will address the potential effects of a proposed development on the transportation system of the City, giving sufficient attention to all modes of travel, in accordance with the goals of the City's General Plan. Note that these are only guidelines, and the information provided herein does not constitute a complete scope of work for any particular transportation analysis. The guidelines provide a broad overview of analysis procedures, while a tailored scope of work is required to match the size and complexity of transportation issues associated with a particular project. The City Engineer, under the authority of the Public Works Director and recommendations from the Traffic Engineer, will make the final decision on the need for a transportation study.

1.1 SB 743 and the Updated CEQA Guidelines

Senate Bill 743 (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 consider different metrics for identifying transportation impacts under the California Environmental Quality Act. OPR finalized updates to the CEQA Guidelines in December 2018; the updated CEQA Guidelines identify vehicle miles of travel (VMT) as the preferred transportation impact metric. The updated CEQA Guidelines state that, as of July 2020, all lead agencies must use VMT as the new transportation metric for identifying impacts of land use projects.

The updated CEQA guidelines include revised Appendix G Checklist questions for transportation impact evaluation. The four questions are:

Would the project:

1. *Conflict with a program, plan, ordinance or policy addressing the circulation system, including public transit, roadway, bicycle and pedestrian facilities?*
2. *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*
3. *Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?*
4. *Result in inadequate emergency access?*

Question 2 is the implementation of the SB 743 requirement. CEQA Guidelines section 15064.3(b) reads, in part, as follows:

(1) Land Use Projects. Vehicle-miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

1.2 CEQA Transportation Impact Analysis and Local Transportation Assessment

One of the fundamental roles of government agencies is the construction and maintenance of public infrastructure facilities including roadways, rail and bus facilities, bicycle and pedestrian infrastructure, water lines, sanitary sewer lines, stormwater treatment facilities, parks, and other public facilities. When private development occurs, it is the responsibility of government to ensure that there are adequate public facilities to serve incremental population and employment growth. For the transportation system, one way to address this issue has been the preparation of a Transportation Impact Analysis.

For the past several decades, the preparation of a TIA within the City of Antioch was integrated into the CEQA process, in which the TIA was used primarily to analyze a project's impacts under CEQA. However, with the passage of SB 743, changes to this process are necessary. Specifically, a TIA may need to be prepared as a stand-alone document, as part of the project approval process, including information for the decision makers that is not required as part of the CEQA process (e.g. Level of Service assessments).

The purpose of this TIA Guidelines document is to provide instructions for analyzing the potential transportation impacts of proposed development projects, for purposes of both the CEQA and non-CEQA transportation evaluations. These guidelines present the recommended methodology that should generally be utilized in the preparation of TIAs. These recommendations are general guidelines, and the City of Antioch may modify the TIA requirements based on the unique characteristics of a particular project.

1.2.1 Local Transportation Analysis (Non-CEQA Analysis)

SB 743 does not prevent a city from continuing to analyze delay or Level of Service (LOS) outside of CEQA review for other transportation planning or analysis purposes (i.e., 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. If a project is required to prepare a CEQA traffic analysis, or if the project is anticipated to generate 50 or more peak hour trips, then a local transportation analysis will be required, however, the City retains the discretion to require a local transportation analysis be prepared for any project.

The City's General Plan has a standard of LOS D or better, with exception to regional commercial portions of the Antioch Planning Area in which intersections within 1,000 feet of a freeway interchange may have a low LOS E (volume-to-capacity ratio between 0.90-0.94). Residential and commercial portions of the Rivertown Focus Area and freeway interchanges may have a high LOS D (v/c ratio of 0.85 to 0.89). Residential and arterial roadways in non-Regional Commercial areas may have a mid-range LOS D (v/c ratio of 0.83 to 0.87).

LOS can continue to be assessed relative to this standard during development review, to promote the City's interest in maintaining and operating a functional roadway network. However, assessment of a development project's effect on intersection level of service must be conducted outside the CEQA process. The assessment can be performed as part of a General Plan consistency assessment. City

planning and traffic engineering staff will define the scope and methodology for project-level of service analysis as part of the development review process.

2.0 Developing the Scope of Work

A transportation impact analysis will be required by the City to assess the transportation effects of development projects on the existing and/or planned street system under the conditions described below.

2.1 Transportation Impact Analysis (TIA)

1. Projects that do not meet any of the Vehicle Miles Traveled screening criteria outlined in section 5.2.2 of these guidelines.
2. When project-generated traffic is expected to be greater than 100 vehicle trips during the morning or evening peak hour.
3. When a project includes a General Plan Amendment (GPA) that changes the land use or is expected to generate greater than 50 vehicle trips affecting an intersection of Circulation Element Roadways during the morning or evening peak hour.

2.2 Focused Transportation Memorandum

The City may require a focused transportation memorandum in lieu of a full transportation analysis under any of the following circumstances:

- When project traffic will affect an intersection or roadway segment where there are known traffic concerns in the vicinity of the project site.
- Any project that contains a "drive through" function.
- 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.
- When the project produces fewer than 100 morning or evening peak hour trips.
- When the project is within 1,000 feet of a freeway on-ramp.
- 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 memorandum 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.

2.3 Traffic Scoping Memorandum

Prior to the initiation of the preparation of a full Transportation Impact Analysis or Focused Transportation Memorandum, a Traffic Scoping Memorandum shall be prepared and submitted to City staff for approval. The Traffic Scoping Memorandum should detail the proposed scope of work and include the following elements:

(1) Brief Project Description
(2) CEQA VMT Assessment

a. VMT Screening Criteria Check
b. Provision of Average VMT Values
    i. Antioch average VMT/resident or VMT/employee, whichever is appropriate.
    ii. Contra Costa County average VMT/employee
    iii. Applicable VMT for the project's Traffic Analysis Zone (TAZ)
c. Trip Generation using the latest edition of the ITE Trip Generation Manual or other appropriate source
    i. Land Use Type
    ii. Daily Rate and Daily Trip Generation Estimate
    iii. AM and PM peak hour rates and estimated trip generation
    iv. Pass-By and Diverted-Linked Trip Estimates
d. Trip Distribution
e. List of Proposed Study Intersections
f. Proposed Analysis Scenarios
    i. Land use assumptions
    ii. Roadway network Assumptions

3.0 Transportation Impact Study Format

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 transportation impact studies will be generally organized and contain the information provided in the following outline. Additional study elements may be required by the City Traffic Engineer.

1. Executive Summary
    a. Project Description and Analysis Parameters
    b. Key Findings and Recommendations
        i. CEQA Findings and Recommendations
        ii. Local Transportation Analysis (Non-CEQA) Findings and Recommendations
2. Introduction
    a. Study Purpose
    b. Project Description
    c. Site Location and Study Area Boundaries
    d. Analysis Scenarios
    e. Analysis Methods
    f. Regulatory Setting – Applicable Plans and Policies
    g. Significance Criteria
3. Project Characteristics
    a. Project Description
    b. Project Trip Generation
    c. Project Trips Distribution and Assignment
4. Site Plan Review
    a. Vehicular Circulation
        i. On-Site Queuing and Storage Assessment
    b. Bicycle and Pedestrian Facilities
    c. Emergency Vehicle Access
    d. Transit Facilities
    e. Parking
        i. City Code Requirements
        ii. Parking Demand
5. Existing Conditions
    a. Existing Roadway System

b. Existing Pedestrian Facilities
c. Existing Bicycle Facilities
d. Existing Transit Service
e. Existing Traffic Counts
f. Existing Operations Assessment
g. Existing Queuing Analysis

6. Existing with Project Conditions
    a. Existing with Project Traffic Volumes
    b. Analysis of Existing with Project Conditions
        i. Intersection Operations Assessment
        ii. Queuing Assessment
        iii. Signal Warrants
7. Near-Term Traffic Conditions (5 years)
    a. Near-Term Roadway Assumptions
    b. Approved and Pending Near-Term Projects
    c. Near-Term Traffic Forecasts
    d. Analysis of Near-Term Conditions
        i. Intersection Operations Assessment
        ii. Queuing Assessment
        iii. Signal Warrants
8. Cumulative Traffic Conditions
    a. Cumulative Roadway Assumptions
    b. Cumulative Traffic Forecasts
    c. Analysis of Cumulative Conditions
        i. Intersection Operations Assessment
        ii. Queuing Assessment
        iii. Signal Warrants
9. Environmental Assessment (CEQA)
    a. Vehicle Miles Traveled
        i. VMT Screening Review
        ii. Vehicle Miles Traveled Assessment
        iii. VMT Reductions, if applicable
    b. Pedestrian System Impacts
    c. Bicycle System Impacts
    d. Transit System Impacts
    e. Emergency Vehicle Access Impacts
    f. Vehicular Circulation/Hazardous Features
10. Summary of Findings

11. Appendix
    a. Traffic Counts
    b. Intersection Operations Calculations
    c. Traffic Signal Warrant Calculations

4.0 Local Transportation Analysis (Non-CEQA Assessment)

4.1 Level of Service Analysis

When evaluating the impacts of development projects on the performance of the City's transportation facilities, the City applies operational standards to ensure the levels of growth and development provided in the City's General Plan Land Use Element are sufficiently accommodated.

4.1.1 LOS Analysis Methodologies

The method used for evaluating Level of Service (LOS) at signalized and unsignalized intersections shall be the method defined in the latest version of the Transportation Research Board's *Highway Capacity Manual* (HCM), unless directed otherwise by the City. This method bases intersection operations on the average vehicular control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay. The average delay for intersections should be calculated using the latest version of Synchro analysis software (Trafficware), unless directed otherwise by the city.

Roundabout intersections should be analyzed using the latest version of the SIDRA Intersection software (SIDRA Solutions). Freeway mainline segment LOS and ramp junction LOS shall be analyzed using the latest HCM operational analysis consistent with Caltrans' Traffic Impact Analysis Guidelines.

4.1.1.1 Intersection Operational Analysis Assumptions

In general, the operations analysis at study intersections should utilize data and information collected in the field. Where field data is unavailable, default values presented in the latest version of the Transportation Research Board's *Highway Capacity Manual* may be used with City staff approval. Unless otherwise directed by City staff, the following shall be used in operational analysis:

- Peak Hour Factors – existing conditions assessments shall incorporate peak hour factors from traffic counts. Future year conditions shall use a default factor of 0.95, or lower based on engineering judgement.
- Heavy Vehicle Percentages – should be based on counts.
- Speed Limits – from field observations.
- Signal Timings – should be obtained from Caltrans or City staff as appropriate. Where signal timing cards are not available, timing and phasing can be collected in the field.

If an intersection's geometry, phasing, or timing is not compatible with the latest version of the Transportation Research Board's *Highway Capacity Manual*, an alternative methodology may be employed. The TIA should describe the methodology used and its appropriateness for the condition.

4.1.2 Queuing Assessment

Using the latest versions of the Simtraffic (Trafficware) and SIDRA (SIDRA Solutions) intersection analysis software, 95th percentile queue lengths will be reported for approach lanes to study intersections. Where the addition of project traffic is found to increase queue lengths at locations wherein the available storage is exceeded, improvement measures will be developed and proposed.

4.1.3 Selection of Study Intersections

The scope of the transportation analysis shall include the following intersections:

- All intersections adjacent to the project site;
- All proposed driveways and/or access points to the existing roadway network from the project site;
- All signalized or all-way stop controlled intersections at which the project may result in a violation of City LOS policy; and
- All side-street stop-controlled intersection(s) at which the project may result in a violation of City LOS policy.

Study intersections should be selected without consideration of jurisdictional boundaries. Additional study intersections may be selected after City staff has reviewed the trip generation, distribution, and assignment of a proposed project.

4.1.4 Traffic Counting Protocol

Traffic counts shall be conducted as follows:

1. Three-hour peak period counts of vehicles, pedestrians, heavy vehicles, and bicyclists are required for all study intersections. Typical analysis will include both weekday morning (6a.m. - 9a.m.) and evening (4p.m. - 7p.m.) peak periods, unless otherwise directed by the City. Counts shall be recorded at 5-minute or 15-minute intervals, tallied by turning movement for vehicles and bicyclists and by crossing leg for pedestrians.

2. During Fair Weather – Counts should be conducted in fair weather, without rain, flooding, heavy winds, or other adverse weather conditions that could disrupt the flow of traffic.

3. Counts shall be conducted on a Tuesday, Wednesday, or Thursday of a non-holiday week when public schools are in session.

4. Typical School Day – Counts should be taken on typical school days avoiding half days, late start days and early-dismissal days whenever possible. Note that currently City of Antioch schools operate on early-dismissal schedules on Wednesdays.

5. No Major Road Closings – If temporary road closings have occurred that affect traffic flow at the count location, the count should be postponed until the road is re-opened. If the road closing is to be for an extended period, and a count needs to be conducted, the count results should be

annotated to reflect the road closure conditions.

6. No Construction Activity – Counts should not be conducted in the presence of construction activity that could disrupt the arrival or departure of traffic at the count location.

7. No Collisions or Special Events – If a collision or special event the vicinity of the count location, or if such an event occurs during the count, the count should be discarded, and repeated at a later date.

4.1.4.1 Field Observations

The transportation consultant should observe each study intersection during peak hours of analysis and document their field observations. This should note the following:

- Field observations of delay match calculated delay
- Freeway ramp effects on local streets, including ramp meter spillback
- Uneven lane demand and usage
- Presence and 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 saturation that may explain low peak period traffic counts
- Queuing and storage length
- Issues affecting transit operations
- Truck routes

4.2 Level of Service Policies

Although not a CEQA metric, intersection levels of service are required to be assessed for General Plan compliance and to identify potential transportation improvements that could be implemented as part of the project to improve the overall operations of the transportation system for all travel modes. The City of Antioch strives to maintain level of service D operations for signalized intersections, unless other standards are adopted by CCTA or other regional agency.

The project could have a noticeable effect on local and regional travel if it would:

- Cause an increase in traffic which is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or delay and congestion at intersections) or
- Change the condition of an existing street (e.g., street closures, changing direction of travel) in a manner that would substantially change access or traffic load and capacity of the street system.

4.2.1 Operational Thresholds

Recommendations will be designed to enhance mobility for all travel modes, including transit vehicles, without degrading or precluding the provision of planned bicycle, pedestrian, and transit facilities.

4.2.1.1 Intersection Level of Service Thresholds

Intersection or roadway improvements shall be recommended if project-generated traffic causes existing or planned facilities' traffic operations to deteriorate from acceptable levels to below the thresholds described in **Table 1**.

TABLE 1: INTERSECTION LEVEL OF SERVICE STANDARDS

Control Type	LOS Standard
On Route of Regional Significance	
Signalized Intersection	Conditions decline from LOS high-D (an average delay of 55 seconds for signalized intersections) or better to LOS E or F, based on the HCM LOS method, with the addition of project traffic.
Signalized Intersection	Would the project deteriorate already unacceptable operations by adding three or more seconds of vehicle delay by adding traffic.
Unsignalized Intersection	Would the operations of an unsignalized study intersection decline from acceptable to unacceptable with the addition of project traffic (i.e. LOS D to E or F) with traffic signal warrants being met.
Not on Route of Regional Significance	
Signalized Intersection	Conditions decline from LOS Low-E (an average delay of 65 seconds for signalized intersections) or better to a high- LOS E or F, based on the HCM LOS method, with the addition of project traffic for intersections within 1,000 feet of a freeway interchange.
Signalized Intersection	Conditions decline from LOS high-D (an average delay of 55 seconds for signalized intersections) or better to a LOS E or F, based on the HCM LOS method.
Signalized Intersection	Conditions decline from LOS mid-D (an average delay of 50 seconds for signalized intersections) or better to a high-LOS D, LOS E or F, based on the HCM LOS method, with the addition of project traffic for residential and arterial roadways in non-regional commercial areas.
Signalized Intersection	Would the project deteriorate already unacceptable operations by adding three or more seconds of vehicle delay at a signalized intersection by adding traffic.
Unsignalized Intersection	Would the operations of an unsignalized study intersection decline from acceptable to unacceptable with the addition of project traffic (i.e. LOS D to E or F) with traffic signal warrants being met.

For the Caltrans freeway facilities, the operational standards and significance criteria are established by the Contra Costa Transportation Authority (CCTA) acting as the designated Congestion Management Agency (CMA) representing the jurisdictions of Contra Costa County. As the acting CMA, the CCTA establishes the traffic LOS standards for all state highway facilities in Contra Costa County, which supersede the general Caltrans operational standard for all state highways.[1]

[1] *2013 Contra Costa Congestion Management Plan*, Contra Costa County Authority, Walnut Creek, CA, 94598, December 19, 2013.

4.2.1.2 Queuing Thresholds

Where the addition of project traffic is found to increase 95th percentile queue lengths at locations wherein the available storage is exceeded, improvement measures will be developed and proposed.

4.2.2 Operational Improvements

The traffic analysis must recommend appropriate treatments for the transportation system to offset operational deficiencies that are found to have exceeded operational standards for the City of Antioch. Furthermore, as appropriate, the traffic analysis must disclose any secondary operational deficiencies that the proposed treatments could generate. For example, the secondary operational deficiency generated by adding approach lanes to an intersection could include an increase in pedestrian crossing time. The project should pay their proportionate share of improvements that would provide acceptable operations. In addition, projects are required to participate in the East Contra Costa Regional Fee and Finance Authority (ECCRFFA) regional fee program as appropriate.

4.3 Analysis Scenarios

The transportation operations analysis shall include the following scenarios:

1. **Existing Conditions** – This scenario evaluates transportation facilities based on volumes, lane geometry and traffic controls at the time of analysis. Where existing traffic volumes are demonstrated to be substantially below recent historical counts, the recent historical counts may be more appropriate to use for the existing conditions and for forecasting purposes to represent a sufficiently conservative estimate of "typical" conditions. The city will confirm the use of traffic counts through feedback on the Traffic Scoping Memorandum produced by the traffic consultant**.**
2. **Existing plus Project Conditions** – Existing Conditions with the addition of traffic from the proposed project.
3. **Near-term Conditions** – Existing Conditions with the addition of trips added by the buildout of approved and planned projects in the study area expected to be complete in the next 5 years. Traffic volume growth rate for Near-Term conditions shall be approved by the City through the Traffic Scoping Memorandum.
4. **Near-term plus Project Conditions** – Near-term Conditions with the addition of traffic from the proposed project.
5. **Cumulative Conditions** – This scenario evaluates horizon year conditions with the implementation of all approved land use changes and any development that is consistent with the General Plan and expected to occur within the time frame of the project. It will also include transportation projects programmed for implementation prior to the horizon year and any programmed capital improvements. Unless otherwise directed by the city, cumulative forecasts should be developed using the latest available version of the CCTA travel demand model, accessible from the CCTA.

6. **Cumulative plus Project Conditions** – Cumulative Conditions with the addition of traffic from the proposed project.

4.4 Project Assessment

The TIA should include a detailed description of the project, including factors which quantify traffic generation, (e.g., dwelling units, square feet of office space, persons to be employed, restaurant seats). A detailed site plan shall be provided that includes access, circulation, parking, and loading as applicable. The project description should include the following information:

1. **Site Location.** Location of the project site, address, and cross streets; information regarding the project site's lot area, existing and proposed zoning.
2. **Building Area/Project Density.** Existing and proposed total gross square footage for each land use type and the number of units for residential uses, including the net changes for each type of use.
3. **Employees.** Existing and proposed estimated number of employees and/or dwelling units by type of use, including net changes.
4. **Off-Street Parking.** Existing and proposed number of off-street parking spaces and whether any on-street or off-street parking spaces will be removed.
5. **Ingress/Egress.** 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).
6. **Loading Spaces.** Existing and proposed number of off-street and on-street freight loading spaces as well as any proposed changes affecting on-street loading spaces.
7. **Site Circulation.** 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.
8. **Loading/Trash Storage.** 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.
9. **Bicycle Parking.** Identification of the location, number, type of bicycle parking spaces provided, and proposed primary access.

4.4.1 Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Trip generation estimates shall be developed using the latest version of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. 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).

Other trip generation rates may be approved by the city due to unique characteristics of a proposed project. In cases where the published ITE trip generation rates are based on very limited data, rates shall be verified through alternative source documents or local peak-period field observations of similar uses. 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, if approved by the City. 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.

4.4.1.1 Other Trip Generation Adjustments

The city may consider the following adjustments to trip generation if appropriate:

1. Trips generated by existing uses at the project site to be removed are already included in existing transportation counts and thus may be subtracted from the total project trip generation. A trip generation survey of the existing site is generally required for claiming this trip reduction and the results of the survey shall determine the reduction; however, ITE Trip Generation analysis may be substituted for a survey subject to the approval of City transportation staff. If the existing and proposed site differs by land uses and/or access points, existing trips shall be distributed and reassigned separately to the network as both positive and negative trips.

2. Pass-by, diverted, and linked trips are created by intermediate stops on a through trip. Pass-by trips are trips present on adjacent roadway facilities under existing conditions that enter the project site and then exit in the same direction of travel. They are attracted to the land use – typically service stations, fast food restaurants, and convenience stores – from an adjacent roadway with direct access to the project site. Diverted and linked trips are existing trips on nearby roadways that will divert from their existing routes to access the project site, typically larger retail development. These trips change existing through movements to turning movements or vice versa at nearby intersections. The latest edition of the ITE Trip Generation Handbook shall be used as the starting point to determine these reductions. Pass-by trip reductions shall only be applied to shopping centers greater than 10,000 square feet, gas stations, fast food restaurants, and convenience stores. Use of this reduction requires justification of the percent reduction based on existing volumes and an analysis of turning movements to and from the project driveways.

4.4.2 Trip Distribution and Assignment

Project trip distribution refers to the directions of approach and departure that vehicles would take to access and leave the site. 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 TIA. 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 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.

A preliminary trip distribution pattern should be submitted in the proposed project scope for review and approval by City staff. Trip distribution may be further refined after consultation with City staff, even after a transportation analysis work scope is agreed upon.

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 TIA. 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 TIA. 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.

4.5 Other Analyses

The following assessments should be included in the TIA as appropriate and directed by city staff.

4.5.1 Site Plan Review

The TIA will review and evaluate the site plan for the proposed project to ensure safe and efficient circulation of vehicles, bicycles, and pedestrians through the project site and on the roadways adjacent to the project site. The site plan review section will include evaluations of the following:

1. Site access and interface with roadway network including adequacy of turn-pocket lengths, driveway throat lengths, sight distance and level of service
2. Vehicular circulation and internal intersection operations
3. Emergency vehicle access and circulation
4. Pedestrian access and circulation within and adjacent to the site
5. Bicycle access and circulation within and adjacent to the site
6. Transit and shuttle vehicle circulation within and adjacent to the site
7. Pedestrian access to and from transit stops
8. Truck circulation and loading dock access
9. Level of parking supply in relation to code requirements and expected demand
10. Construction traffic evaluation and phasing (in the city's right-of-way)
11. Bicycle parking

5.0 CEQA Assessment

5.1 CEQA Significance Criteria

A project would have a significant effect on the environment if it would:

1. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including public transit, roadway, bicycle, and pedestrian facilities.
2. Conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).
3. Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment).
4. Result in inadequate emergency access.

CEQA Guidelines section 15064.3, subdivision (b) details the requirements regarding the implementation of SB 743 and the use of VMT in the assessment of transportation impacts.

5.2 VMT Analysis

A key element of SB 743, signed in 2013, is the elimination of automobile delay and LOS as the sole basis of determining CEQA impacts. The most recent 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 from continuing to analyze delay or LOS as part of other plans (i.e., the general plan), studies, or ongoing network monitoring. These guidelines provide technical guidance regarding the assessment of VMT, thresholds of significance, and mitigation measures for land development and transportation projects within the City of Antioch.

5.2.1 VMT Thresholds of Significance

The following are thresholds of significance related to substantial additional VMT:

- For residential projects, a project would cause substantial additional VMT if it exceeds 85 percent of existing citywide household VMT per capita.
- For office projects, a project would cause substantial additional VMT if it exceeds 85 percent of the existing countywide VMT per employee.
- For regional retail projects a project would cause substantial additional VMT if it exceeds 85 percent of the baseline Bay Area total VMT per service population.
- Mixed-Use Projects – shall be divided into their individual constituent parts and evaluated against their individual components' standards.

Additional guidance is provided below regarding review of other types of land uses.

5.2.2 Project VMT Screening

The following screening criteria may be used to identify types, characteristics, and/or locations of land use projects that would not exceed these VMT thresholds of significance. If a project or components of the project meet any of the below screening criteria, then it is presumed VMT impacts would be less than significant for the project or component of the project and a detailed VMT analysis is not required. It should be noted that City staff may deny the use of screening criteria if substantial evidence suggests that the project is not appropriate for screening.

There are three key screening criteria for projects: project type, project location in a low-VMT area, and project location near transit stations. A project only needs to meet one of the three screening criteria: Project Type, Low VMT Area, or Proximity to Transit to be screened out. Projects that do not meet any of the identified screening criteria are required to conduct a detailed VMT assessment.

Screening Criteria 1: Project Type

Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, the following types of projects should be expected to cause a less-than-significant impact under CEQA and would not require further VMT analysis.

- Small Projects: Small projects generate or attract fewer than 110 trips per day. Based on research for small project triggers, this may equate to non-residential projects of 10,000 square feet or less and single-family residential projects of 10 units or less (or approximately 16 multi-family units), or otherwise generating less than 836 VMT per day.
- Small Scale, Local-Serving Retail: Local-serving retail projects are defined as projects of less than 50,000 square feet in size on the basis that they attract trips that would otherwise travel longer distances. Local-serving retail generally improves the convenience of shopping and other activities close to home and has the effect of reducing vehicle travel.
- 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 only applies to projects that provide 100% affordable housing.
- Public services: Police stations, fire stations, public utilities, and parks do not generally generate VMT. Instead, these land uses are often built in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-significant impacts on VMT. However, this presumption would not apply if the project is sited in a location that would require employees or visitors to travel substantial distances and the project is not located within ½ mile of a major transit stop or does not meet the small project screening criterion.

Screening Criteria 2: Low VMT Area Screening

Residential and employment-generating projects located within a low-VMT generating area of the city (i.e., lower than baseline average levels, based on the significance thresholds in this document) may be presumed to have a less than significant impact absent substantial evidence to the contrary. 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 like census block groups used to represent areas of homogenous travel behavior. For the low VMT area screening to be satisfied, the analyst must verify that the project land uses would not alter the existing built environment in such a way as to increase the rate or length of vehicle trips (e.g. the proposed project is consistent with existing land use in the area, the project would be expected to contribute VMT consistent with existing land use in the area, and the project would not significantly alter travel patterns in the area).

A low VMT area is defined as follows:

- For housing projects: TAZs that have a baseline home-based VMT per capita that is 85% or less of the existing City-wide average.
- For employment-generating projects: TAZs that have baseline home-work VMT per employee that is 85% or less of the existing countywide average.

To identify if the project is in a low VMT-generating area, the analyst may review the screening maps provided as **Figure 1** (residential project mapping) and **Figure 2** (employment-generating project mapping) attached to this document. 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 about the project that would otherwise be misrepresented utilizing the data from the travel demand model.

Screening Criteria 3: Proximity to Transit

Projects located within a Transit Priority Area (TPA[2]) may be presumed to have a less than significant impact absent substantial evidence to the contrary. This includes residential, retail, office projects, or mixed-use projects proposed within half a mile of an existing major transit stop or an existing stop along a high-quality transit corridor. In Antioch, this includes the existing Antioch BART station and the Antioch-

[2] A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high quality transit corridor per the definitions below. The City has discretion to measure the half-mile based on a straight radius or walking routes. The straight radius method will maximize the footprint of the TPA and allow for the greatest amount of potential project screening. Using the walking route method will decrease the land area subject to potential TPA screening but will increase the likelihood that development projects located in this area have a less than 1/2 mile walking distance to the transit station. Academic research has demonstrated that walking distance is an important factor that influences the choice to take transit and thereby reduce VMT. For more background on this, see the following article: http://www.reconnectingamerica.org/assets/Uploads/20111018UCB-ITS-VWP-2011-5.pdf).

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.' Note that this requirement means that both intersecting routes must have the 15-minute or less frequency of service interval.

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.

Pittsburg Amtrak Station. This presumption would not apply, however, if project-specific or location-specific information indicates that the project will still generate significant levels of VMT. For example, the presumption might not be appropriate if the project:

1. Has a Floor Area Ratio (FAR) of less than 0.75;
2. Includes more parking for use by residents, customers, or employees of the project than required by the City (if the City requires the project to supply parking);
3. Is inconsistent with the applicable Sustainable Communities Strategy/Plan Bay Area;
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units; or
5. Has a retail component that is greater than 50,000 square feet.

Projects in proximity to an existing major transit stop or an existing stop along a high-quality transit corridor that do not satisfy all these criteria should prepare a detailed VMT analysis.

5.2.3 VMT Assessment for Non-Screened Development

Projects that do not meet any of the screening criteria above as well as project for which evidence suggests the project is not appropriate for screening should complete a 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 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 service population in the City of Antioch.

- Baseline Plus Project - The project land use would be added to the project TAZ or a separate TAZ would be created to contain the project land uses. A full base year model run would 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.

- Cumulative No Project– This data is available from the CCTA travel demand model. The cumulative year shall be confirmed with City staff prior to beginning the cumulative analysis. 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.

- Cumulative Plus Project - The project land use would either be added to the project TAZ or a separate TAZ would be created to contain the project land uses. The addition of project land uses may need to 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 could change other future

developments. If project land uses are simply added to the cumulative no project scenario, then the analysis should reflect this limitation in the methodology and acknowledge that the analysis may overestimate the project's effect on VMT.

The model output should include total VMT, which includes all vehicle trips and trip purposes, and VMT per service population (population plus employment), home based VMT per resident for residential, and home-based-work VMT per worker for employment uses. Total VMT (by speed bin) is needed as an input for air quality, greenhouse gas (GHG), and energy impact analysis while total VMT per service population is recommended for transportation impact analysis.

Both Baseline plus Project and Cumulative plus Project scenarios noted above will summarize different types of VMT: (1) project generated VMT per service population, home based VMT per resident for residential, and home-based-work VMT per worker for employment uses and comparing those back to the appropriate benchmark noted in the thresholds of significance, and (2) the project effect on VMT, comparing how the project changes VMT compared 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 appropriate boundary and extracting the total link-level VMT for both the no project and with project condition.

5.2.4 VMT Mitigation Measures

To mitigate VMT impacts, the following general choices are available to projects:

1. Modify the project's design features and/or land uses to reduce project trips or reduce trip length.
2. Moving the proposed development to a more travel-efficient area (i.e. area with access to high quality transit, or other transportation solutions that reduce the length/number of trips).
3. Implement Transportation Demand Management (TDM) measures to reduce VMT generated by the project.

Proposed projects shall utilize the latest version of the California Air Pollution Control Officers Association ("CAPCOA") Quantifying Greenhouse Gas Mitigation Measures document to estimate the maximum feasible VMT mitigation. However, it should be noted that most of the data used to develop the CAPCOA mitigation strategies are based on projects from urban or relatively dense suburban areas. The effectiveness of VMT mitigations will vary from project to project based on the surrounding land use context, the combination of its uses, and the availability of alternative transportation modes. The proposed project's transportation impact analysis must quantifiably demonstrate, through the use of reliable calculation tools, proposed VMT mitigations will result in the estimated reductions when applied to the project.

The following VMT mitigation strategies should be considered for the mitigation of project VMT impacts.

Project/Site Level Strategies

1. Increase diversity of land uses – This strategy focuses on inclusion of mixed uses within projects or in consideration of the surrounding area to minimize vehicle travel in terms of both the number of trips and the length of those trips. This strategy may not be feasible for smaller projects or projects subject to limited uses due to zoning such as single-family residential uses.

2. Increase density – This strategy focuses on increasing residential density within projects, which can be associated with lower VMT per capita. Increased residential density in areas with high jobs access may have a greater VMT change than increases in areas with lower jobs access. This measure also applies at the city and community level, with neighborhoods of higher density typically having lower VMT per capita.

3. Increase transit accessibility – This strategy focuses on ensuring site design favors access to existing or planned transit stations and is commonly referred to as Transit-Oriented Development (TOD). This strategy includes maximizing the amount of developable space within walking distance to transit stations (typically considered a radius of ¼ to ½ mile of a transit station), including a central transit station in the site design, and/or deemphasizing automobile facilities such as vehicle parking, garages, and driveways.

4. Limit parking supply – This strategy focuses on eliminating or reducing parking requirements, creating maximum parking requirements, and providing shared parking to encourage alternative transportation mode choices by residents and employees. This measure applies to various types of projects such as residential, office, retail, and mixed-use projects in urban or suburban contexts.

5. Unbundle parking costs – This strategy separates parking costs from property costs removing the burden from those who do not utilize parking spaces and requiring those who wish to do so to purchase parking spaces at an additional cost. This measure has the same applicability as the "Limit Parking Supply" strategy.

6. Encourage telecommuting – This strategy relies on effective internet access/speeds, flex space, and/or accessory office units for individual project sites/buildings that provide the opportunity for telecommuting. The effectiveness of the strategy depends on the ultimate building tenants; this should be a factor in considering the potential VMT reduction, as tenants may change over time.

7. Provide ride-sharing programs – This strategy includes measures such as designating a proportion of parking spaces exclusive to ride sharing vehicles, providing adequate loading, and unloading areas for passengers of ride-sharing vehicles and generating a web site or message board for ride coordination. The focus of this strategy is to increase the vehicle occupancy by ride sharing between people driving similar trips, which will result in fewer cars, and thus a decrease in VMT.

8. Implement subsidized or discounted transit program – This strategy focuses on providing daily or monthly transit passes at a discounted cost to encourage participants to change modes from cars to transit, which would reduce VMT. These passes can be subsidized by the employer, school, or development. Revenue from parking can be used to offset the cost of the program.

9. Provide employer sponsored shuttle – This type of program entails an employer purchasing or leasing vans for employee use, which will provide service to nearby transit stations and surrounding commercial centers. This strategy is appropriate for office, industrial, and mixed-use projects. In some cases, this can be employed as a community strategy with employers within a particular area pooling resources to provide shuttles to transit.

10. Price workplace parking – This strategy focuses on pricing parking, so employees consider alternative modes to commute to work. It may include explicitly charging for parking for its employees, implementing above market rate pricing, validating parking only for invited guests, not providing employee parking and transportation allowances, and educating employees about available alternatives.

11. Employee parking cash out – This strategy requires employers to provide employees with a choice of forgoing current subsidized or free parking for a cash payment equivalent to the cost of the parking space to the employer. This strategy provides an incentive for people who could walk, bike, or take transit to work but choose not to because they receive free parking and have little incentive to use other modes.

City/Community Level Strategies

12. Provide pedestrian network improvements – This strategy focuses on creating a pedestrian network and connecting projects to nearby destinations via pedestrian pathways. Projects in the City of Antioch range in size, so the emphasis of this strategy for smaller projects would likely be the construction of network improvements that connect the project sites directly to nearby destinations. For larger projects, this strategy could focus on the development of a robust pedestrian network within the project itself or closing gaps that could connect the project to other areas. This strategy could also include improvements that improve the safety outcomes for people walking, especially walking to/from transit stops. Alternatively, implementation could occur through an impact fee program or benefit/assessment district based on local or regional plans.

13. Provide traffic calming measures and low-stress bicycle network improvements – This strategy combines the CAPCOA research focused on traffic calming to provide a low-stress bicycle network. Traffic calming creates networks with low vehicle speeds and volumes that are more conducive to walking and bicycling. Implementation options are similar to those for providing pedestrian network improvements. One potential change in this strategy over time is that e-bikes (and e-scooters) could extend the effective range of travel on the bicycle network, which could enhance the effectiveness of this strategy.

14. Implement market price public parking (on-street) – This strategy focuses on implementing a market-based pricing strategy for on-street parking within central business districts, employment centers, and retail centers to encourage "park once" behavior. This measure deters parking spillover from project supplied parking to other public parking nearby, which undermine the

vehicle miles traveled benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area.

15. Increase transit service frequency and speed – This strategy focuses on improving transit service convenience and travel time competitiveness with driving. While the City of Antioch has fixed route rail and bus service that could be enhanced by returning to pre-pandemic service conditions, it is possible that new forms of low-cost, demand-responsive transit service could be provided. Given land use density in Antioch, this strategy may be limited to traditional commuter transit where trips can be pooled at the start and end locations or require new forms of demand-responsive transit service. The demand-responsive service could be provided as subsidized trips by contracting to private transportation network companies (TNCs) or Taxi companies. Note that implementation of this strategy would require regional or local agency implementation, substantial changes to current transit practices, and would not likely be applicable for individual development projects. Additionally, this strategy is only effective in VMT reduction if it includes a pooling element to increase average vehicle occupancy.

16. Implement a car-sharing program – This strategy reduces the need to own a vehicle or reduces the number of vehicles owned by a household by making it convenient to access a shared vehicle for those trips where vehicle use is essential. Note that implementation of this strategy would require regional or local agency implementation and coordination and would not likely be applicable for individual development projects.

The above list should not be considered exhaustive, and projects can propose other TDM measures if appropriate and desired.

5.2.4.1 VMT Mitigation Measure Effectiveness

An important consideration when combining TDM measures is whether a maximum VMT reduction should be applied based on the land use context. The CAPCOA methodology identifies VMT reduction maximums based on community types tied to land use context. The caps are applied at each step of the VMT reduction calculation (i.e., at the strategy scale, the combined strategy scale, and the global scale). However, these caps are not based on research related to the effectiveness of VMT reduction strategies in different land use contexts. The cap differences are largely based on VMT generation differences within different land use contexts and serves as a proxy for potential limits on VMT reduction strategy effectiveness. For suburban jurisdictions such as Antioch, CAPCOA identifies a global VMT reduction maximum of 15 percent. **Table 2** presents a summary of the maximum allowable reductions recommended for individual VMT mitigation measures based on the available research and the City's local context. For projects adjacent to the City's BART station, a higher VMT reduction could be realized. However, it is not expected that projects located adjacent to the BART station would result in a VMT impact that would need to be mitigated.

TABLE 2: VMT MITIGATION MEASURE REDUCTION CAPS	
Mitigation Measure	**Maximum Allowable Reduction**
Increase Diversity of Land Uses	5 percent
Increase Density	3 percent
Increase Transit Accessibility	5 percent
Limit Parking Supply	5 percent
Unbundle Parking Costs	5 percent
Encourage Telecommuting	2 percent
Provide Ridesharing Programs	4 percent
Implement Subsidized or Discounted Transit Program	5 percent
Provide Employer Sponsored Shuttle/Vanpool	4 percent
Price Workplace Parking	5 percent
Employee Parking Cashout	3 percent
Provide Pedestrian Network Improvements	2 percent
Provide Traffic Calming Measures and Low-Stress Bicycle Network Improvements	1 percent
Implement Market Price Public Parking (on-street)	3 percent
Increase Transit Service Frequency and Speed	3 percent
MAXIMUM COMBINED	**15 percent**

Each of the TDM measures described above can be combined with others to increase the effectiveness of VMT mitigation; however, the interaction between the various TDM measures is complex and sometimes counter intuitive. Generally, with each additional measure implemented, a VMT reduction is achieved, but the incremental benefit of VMT reduction may diminish. To quantify the VMT reduction that results from combining TDM measures, the analyst must consider multiplicative dampening as outlined in the CAPCOA documentation.

5.3 Other Environmental Considerations

As noted in the Introduction, the updated CEQA Guidelines Appendix G Checklist contains three additional criteria beyond the VMT evaluation criteria (checklist item 2) discussed in the preceding section. They are listed below.

Would the project:

1. *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*
3. *Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?*
4. *Result in inadequate emergency access?*

TIAs should address these three questions, considering the unique characteristics of the project, including its location, size, design, use mix, transportation and urban form context, and other relevant details. In the assessment of transit, bicycle and pedestrian network, the following standards of significance shall be used.

Transit System - The project would create a significant impact related to transit service if the following criteria is met:

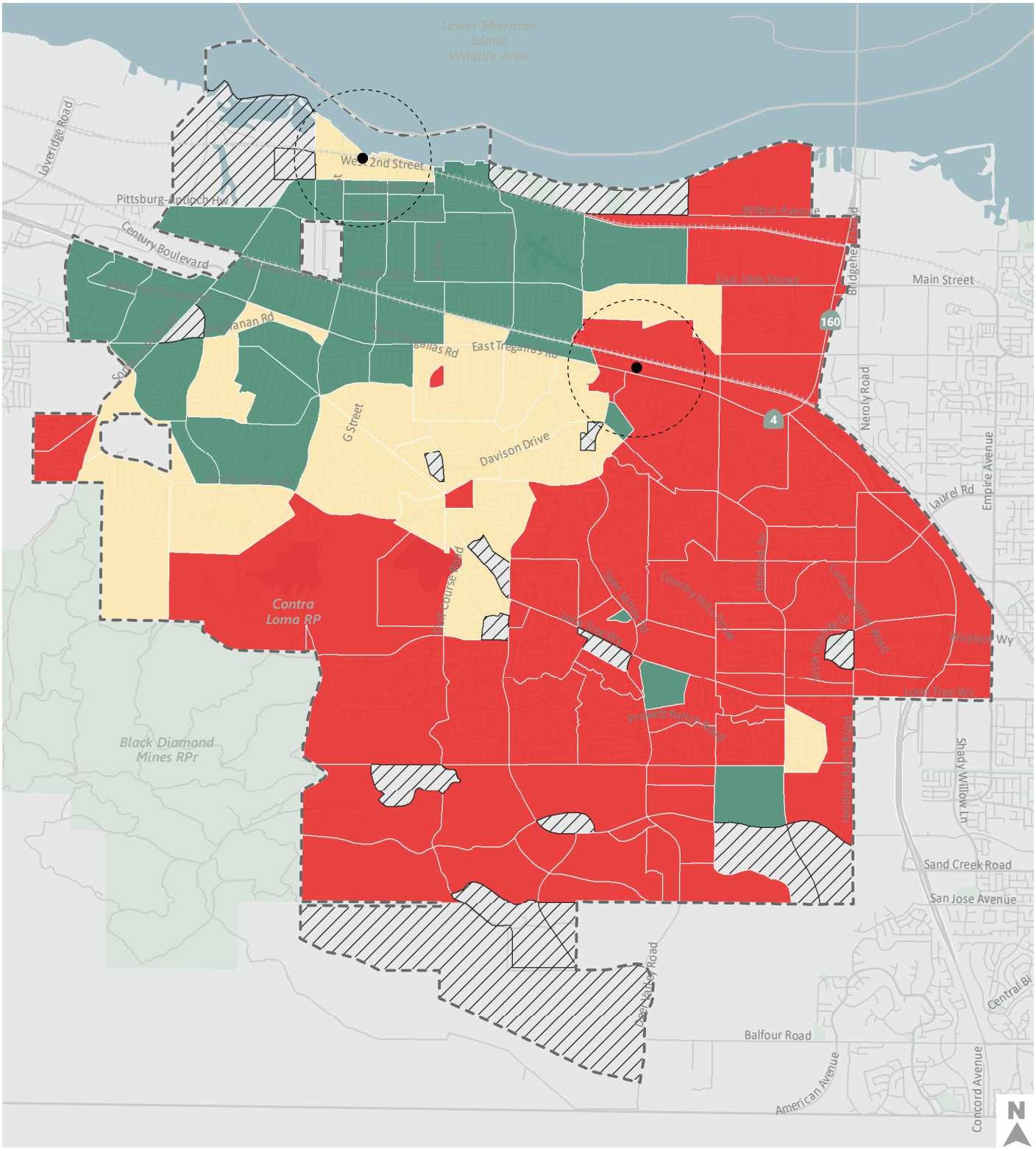
1. The project interferes with existing transit facilities or precludes the construction of planned transit facilities.

Bicycle System - The project would create a significant impact related to the bicycle system if any of the following criteria are met:

1. The project disrupts existing bicycle facilities; or
2. The project interferes with planned bicycle facilities; or
3. The project creates inconsistencies with adopted bicycle system plans, guidelines, policies, or standards.

Pedestrian System - The project would create a significant impact related to the pedestrian system if any of the following criteria are met:

1. The project disrupts existing pedestrian facilities; or
2. The project interferes with planned pedestrian facilities; or
3. The project creates inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.



City of Antioch-Wide Average Home-Based VMT per Resident: 21.6

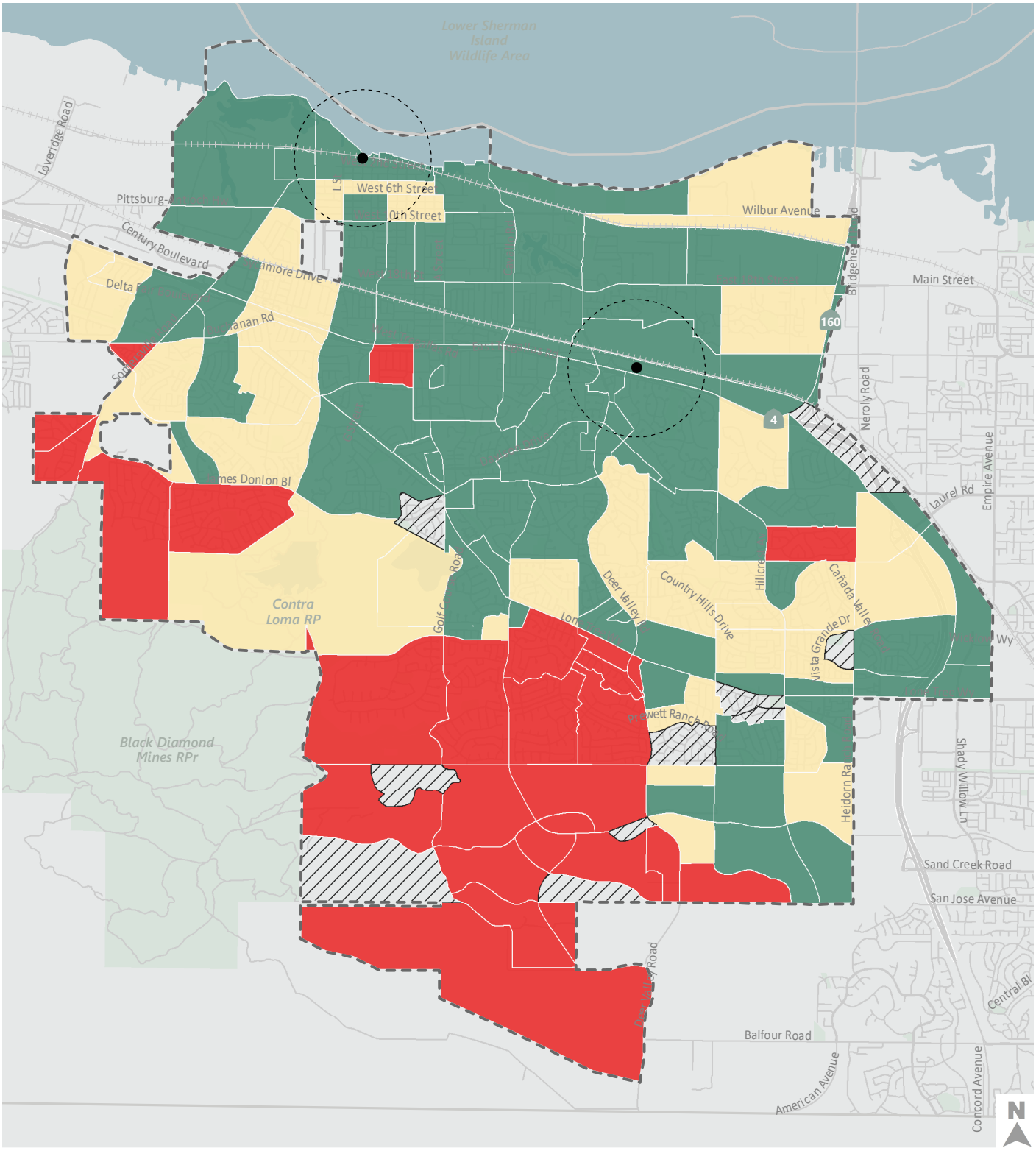
City of Antioch SB 743 Implementation
Source: CCTA Travel Demand Model

Legend

- 15% below City of Antioch Average
- Between 15% - 0% below City of Antioch Average
- Above City of Antioch Average
- TAZ with no Residents
- City Boundary
- 0.5-mile Transit Station Buffer

Figure 1

City of Antioch - Home-Based Vehicle-Miles Traveled Per Resident



Contra Costa County-Wide Average Commute VMT per Worker: 14.9

Legend

- 15% below Contra Costa County average
- Between 15%-0% below Contra Costa County average
- Above Contra Costa County average
- TAZ with no Employees
- City Boundary
- 0.5-mile Transit Station Buffer

City of Antioch SB 743 Implementation
Source: CCTA Travel Demand Model

Figure 2

City of Antioch - Commute Vehicle-Miles Traveled Per Worker