

Memorandum

Date: December 8, 2023
To: Robin Chee, City of San Leandro
From: Sam Tabibnia, Fehr & Peers
Subject: **City of San Leandro Proposed Guidelines for Analyzing VMT**

OK23-0521.01

This memorandum presents the proposed guidelines for analyzing vehicle miles traveled (VMT) for projects in the City of San Leandro. Sections in this document include:

1. **Background** (starting on page 1) – discusses the purpose of this memorandum and provides the legislative background.
2. **Screening Criteria** (page 3) – presents the screening criteria that can be used to quickly identify projects that would not have a significant impact on VMT.
3. **Estimating VMT** (page 5) – describes the methods and processes that can be used to estimate the VMT metrics for projects that require a VMT estimate.
4. **Thresholds of Significance** (page 6) – presents the thresholds of significance to determine if a VMT impact is significant for various project types.
5. **Mitigation Measures** (page 7) – discusses various options that can reduce VMT impacts and the available methodologies to quantify the VMT reduction.
6. **Other Transportation Topics** (page 8) – discusses the non-VMT topics that are required for analysis in CEQA documents as well as the triggers for conducting a Local Transportation Impact Analysis (LTIA).
7. **Glossary** (page 9) – defines the technical terms used throughout this document or commonly used in VMT evaluation.

Figure 1 (all figures attached at the end of the memorandum) shows the City's VMT analysis process, which is described in more detail in Sections 2 through 5.

1. Background

The California Environmental Quality Act (CEQA) requires land use development and transportation projects to identify, disclose, and mitigate environmental impacts. Historically, many lead agencies chose to use Level of Service (LOS), a measure of vehicle delay, to define



transportation impacts under CEQA. Mitigations of LOS impacts compelled communities to widen roads and incentivized spread out land use patterns resulting over time in more driving, congestion, and pollution.

Senate Bill 743 (Steinberg, 2013), codified in [Public Resources Code section 21099](#), requires lead agencies to replace LOS to better align transportation impact criteria with State environmental, economic, and public health goals. The criteria for determining the significance of transportation impacts and setting new thresholds must “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.”

The Governor’s Office of Planning and Research (OPR) supports the implementation of SB 743 by providing resources including the [Technical Advisory on Evaluating Transportation Impacts in CEQA](#) (2018). OPR recommends that jurisdictions replace LOS with VMT based metrics and provides guidance on how to accomplish this. This shift better aligns transportation impact analysis and mitigation outcomes to reduce greenhouse gas emissions, encourage infill development, and improve public health. Jurisdictions in California are now required to use VMT based metrics to evaluate environmental impacts related to transportation. Jurisdictions may still use LOS within the local development review process to inform site access and traffic operations decisions, but LOS cannot be used to evaluate CEQA impacts or mitigations. Thus, the City of San Leandro intends to continue to use LOS analysis for some purposes, such as evaluating the need for adding or modifying traffic signals, or modifying lane configuration at intersections. Section 6 of this memorandum addresses when a project may require the preparation of a Local Transportation Impact Analysis (LTIA), which would include LOS analysis.

VMT measures the amount of driving produced by a project and provides a measure of travel efficiency of a land use project. For most types of projects, VMT-based analysis offers a streamlined analysis that saves jurisdiction staff time and provides clarity for the public and land developers. The shift to VMT policies is intended to help achieve climate commitments, preserve the environment, improve health and safety, create sustainable communities, encourage more efficient use of the transportation network, and provide more travel choices for each jurisdiction, as well as for the region and state.

VMT can be measured in several ways. For the purposes of VMT analysis in San Leandro, the City proposes to use the metrics of home-based VMT per resident for residential uses, and home-work VMT per worker for employment-generating uses. Both metrics are “efficiency” metrics, in which the level of VMT is expressed in “per person” terms. This form of the metric speaks to how efficiently the people at a given location travel. A project that contributes to a more efficient use of the transportation system would reduce the VMT per person as compared to a no-project scenario. Some amount of overall VMT growth is always expected to occur when there is overall growth in population and economic activity; many development projects will cause an increase in total VMT, but the VMT per person can decrease if the new residents and/or workers travel in



more efficient ways. These VMT metrics are consistent with those recommended in the OPR Technical Advisory. OPR notes that these per capita metrics better address the intent of SB 743 than total VMT for residential and employment-generating land uses by prioritizing efficient locations.

For the purposes of VMT analysis in San Leandro, the VMT generated by heavy vehicles is not included in the estimated VMT metrics. This is consistent with OPR's recommendation that VMT analysis for transportation impact purposes can focus solely on passenger vehicle travel and can exclude heavy truck trips. Heavy truck trips and their impacts are included in the analysis of other environmental topic areas, such as air quality, noise, and greenhouse gas emissions. In addition, and as described in Section 6 of this memorandum, an LTIA, which would be conducted outside of the CEQA process, would address the effects of truck trips on traffic operations, including LOS.

This memorandum is consistent with the City of San Leandro General Plan Policy T-5.2, which requires the use of "VMT as the primary metric for evaluating the transportation impacts of new development proposals," and Action T-5.2-A, which requires the City to "Consistent with SB 743, implement new methodologies for evaluating and mitigating transportation impacts which are based on VMT."

2. Screening Criteria

There are seven screening criteria that City of San Leandro can apply to screen projects out of conducting project-level VMT analysis. Even if a project satisfies one or more of the screening criteria, City of San Leandro may still require a VMT analysis if there is evidence that the project has characteristics that may lead to a significant increase in VMT.

Generally consistent with the OPR Technical Advisory, the City of San Leandro proposes to use the following screening criteria:

1. **CEQA Exemption.** Any project that is subject to and exempt from CEQA is not required to conduct a VMT analysis.
2. **Small Project.** The project is small, and generates fewer than 110 daily vehicle trips. Developments that qualify for this criterion could include:
 - Detached single-family: 11 or fewer dwelling units
 - Attached single-family: 15 or fewer dwelling units
 - Low-rise (2 or 3 stories) multi-family dwelling units: 16 or fewer dwelling units
 - Mid-rise (4 to 10 stories) multi-family dwelling units: 24 or fewer dwelling units
 - General office: 10,000 square feet or smaller
 - Other uses that generate 110 or fewer daily vehicle trips based on the latest version of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* or other defensible sources.



3. **Local Serving.** The project is local-serving retail/public facilities (grocery store, neighborhood school, library, drug store, dry cleaners, gym, etc.) not exceeding 50,000 square feet in size.
4. **Affordable Housing.** The project consists of 100% affordable housing.
5. **Transit Priority Area (TPA).** The project is located within a 0.5-mile of a major transit stops (i.e., the BART stations or the bus rapid transit stations) or high-quality transit corridors. Maps that show the TPAs in San Leandro as of August 2023 are attached at the end of this memorandum.
6. **Low-VMT Area.** The project is located in an area where existing VMT per capita meets the VMT thresholds (e.g., 15% below existing rates of VMT for residential and office uses and below the existing average VMT rate for industrial and warehouse uses). Figures 1 and 2 show the Low-VMT areas in San Leandro based on the latest version of the Alameda County Transportation Commission (CTC) Travel Demand Model as of August 2023. (Note that Alameda CTC is currently updating their Travel Demand Model and the updated Model may identify different areas as Low-VMT areas.)
7. **Infill Residential Developments.** The project is a residential development with a minimum density of 30 dwelling units per acre, qualifies as an infill development (Public Resources Code, § 21099(a)(4)), and is located in the areas eligible for the infill residential screening as shown on Figure 2.¹

Projects are not eligible for the location-based screening (Transit Priority Area [#5], Low-VMT area [#6], or Infill Residential Development [#7]) if one or more of the following are true:

- Project is low density (<0.75 FAR)
- Project provides more parking than the estimated demand for the project (Project parking demand can be estimated using the latest version of the ITE *Parking Generation Manual* or other defensible sources)
- Project replaces existing affordable housing units with a smaller number of market rate units
- Project has project-specific or location-specific characteristics that indicates it will generate significant levels of VMT (examples include a project with lower density than

¹ This screening criterion is developed in addition to the screening criteria recommended by the OPR. It is based on the average home-based VMT per resident as estimated by the Alameda CTC Model and the application of Strategy T-1 (increasing residential densities) per the CAPCOA Handbook. According to the CAPCOA Handbook, the elasticity of VMT with respect to residential density is -0.22, meaning that a 1 percent increase in development density would reduce VMT by about 0.22 percent. The CAPCOA Handbook also sets a maximum VMT reduction of 30 percent from baseline conditions for this strategy. Figure 2 shows the areas of San Leandro where developments with a density of 30 or more units per acre would have a home-based VMT per resident below the threshold of significance based on the application of the CAPCOA Handbook Strategy T-1 to the baseline VMT metrics estimated by the Alameda CTC Model. The technical details and the policy justifications for this criterion are provided in a white paper prepared for MTC.



surrounding uses, a commercial development with a drive-through window, or a project without easy access to transit service and minimal pedestrian or bicycle infrastructure)

3. Estimating VMT

A project not excluded from VMT analysis through the screening process described above shall be subject to a VMT analysis to determine if it has a significant VMT impact.

The most common method of calculating VMT metrics is through a travel forecasting model. A travel forecasting model uses specialized software and is designed to reflect the interactions between different land use and transportation network elements in a large area. The travel model most applicable in the City of San Leandro is the Alameda CTC Countywide Travel Demand Model.

The Alameda CTC Model is regularly updated and validated, and it contains a script that calculates estimates of VMT per resident and VMT per worker for all the Transportation Analysis Zones (TAZs) in the Model. The City of San Leandro proposes to use the Alameda CTC Model as the primary source of information for VMT forecasts for projects in San Leandro.

If the project is a small, single-use project that is similar to other developments that already exist in that TAZ, then it may be concluded that the project generated home-based VMT per resident or the home-work VMT per worker will be the same as the existing VMT per resident or per worker in that TAZ; in that instance, no new model run should be required.

If the project is small, single-use project and only slightly different than the existing uses in the project TAZ (such as a residential development with a slightly higher or lower development density in a primarily residential area), then the Alameda County VMT Reduction Calculator Tool can be used to adjust the available VMT metrics for that TAZ to better reflect the VMT for the project.

However, a new run of the Alameda CTC Model should be conducted in the following circumstances:

- The project is large enough to affect regional trip-making; generally generating more than 2,000 daily trips and/or 300 peak hour trips (generally corresponding to about 210 single-family dwelling units, 425 mid-rise multi-family dwelling units, or about 180,000 square feet of office)
- The project is very different from the existing land uses in the TAZ (i.e., new residential development in a TAZ without any existing residential development)
- The project more than doubles the amount of a given land use in the TAZ, even if it would not generally be considered a regionally significant project



In the case where a new model run is required, the project land use(s) should be added to the land use database for the relevant TAZ, or a separate TAZ should be created in the Alameda CTC model to contain the project land uses. A full model run should then be performed and the VMT metrics for the project TAZ calculated. The final model output should be reviewed to confirm reasonableness.

Note that VMT may also need to be estimated for purposes of other, non-transportation analysis topics under CEQA, including air quality, greenhouse gas emissions, energy use and noise. For these impact areas, the VMT metric used is typically total VMT, which is different from the VMT metrics used for the transportation analysis.

For projects that consist of atypical land uses that are not represented in the Alameda CTC Model, the appropriate methodology for estimating and evaluating the VMT impact of the project shall be determined in consultation with the City of San Leandro staff.

4. Thresholds of Significance

Once the project VMT is calculated, the City must determine if that level of VMT (whether in absolute terms or on a per-capita basis) constitutes a significant environmental impact. Thus, the measured VMT must be compared against a threshold of significance.

According to the OPR Technical Advisory, the threshold of significance can be based on the average regional or citywide VMT metrics. **Table 1** summarizes the existing home-based VMT per resident and the home-work VMT per worker for the City of San Leandro and the different regions applicable to the City of San Leandro. For both the home-based VMT per resident and the home-work VMT per worker, the average for the Central Planning Area (which consists of the Cities of San Leandro and Hayward, and the unincorporated areas of Ashland, Cherryland, San Lorenzo, and Castro Valley) is the least stringent. Thus, it is recommended that the thresholds of significance be based on the VMT metrics for the Central Planning Area.

Table 1: VMT Metric Comparison

Geography	Home-Based VMT per Resident	Home-Work VMT per Worker
City of San Leandro	17.5	18.4
Central Planning Area	20.6	19.2
Alameda County	19.4	15.9
Bay Area Region	19.8	18.1

Source: Fehr & Peers based on the Alameda CTC Travel Demand Model results, 2023.



Based on OPR guidance, the City of San Leandro proposes to use the thresholds of significance listed below for various types of projects; projects that exceed their corresponding threshold would be presumed to have a significant transportation-related environmental impact.

- **Residential (and similar) projects:** The proposed project's VMT exceeds the level that is 15% below existing home-based VMT per resident for the Central Planning Area (also known as Planning Area 2). (In other words, the project's home-based VMT per resident is greater than 85% of the existing Central Planning Area home-based VMT per resident.)
- **Employment generating/office (and similar) projects:** Project VMT exceeds the level that is 15% below existing home-work VMT per worker for the Central Planning Area. (In other words, the project's home-work VMT per worker is greater than 85% of the existing Central Planning Area home-work VMT per worker.)
- **Employment generating/industrial and warehouse (and similar) projects:** Project VMT exceeds the level that is below existing home-work VMT per worker for the Central Planning Area.²
- **Mixed-use projects:** Each land use component of the project should be analyzed independently, applying the appropriate threshold of significance from above to each land use type included in the project.
- **Other land use and regional-serving project types:** Net increase in total VMT in the region (that is, the difference in total VMT in the region with and without the project), an appropriate per capita metric, or as determined by the Planning staff.
- **Transportation projects:** Net increase in total VMT in the region.

Consistent with CEQA requirements, the same methodology shall be used to estimate both the project VMT and the threshold of significance used to evaluate the impact.

5. Mitigation Measures

If the VMT analysis concludes that the project would cause a significant VMT impact based on one or more of the significance thresholds defined above, then mitigation is required. CEQA requires that all feasible measures be implemented to reduce identified impacts to less-than-significant levels

Mitigating a VMT impact involves different types of actions than mitigating an LOS impact. Mitigating a project's VMT impact entails reducing the number and/or the length of vehicle trips

² A separate threshold for industrial and warehouse uses is developed because areas zoned for these uses are typically disconnected from other uses, have low development densities, and may not be well served by transit or non-motorized infrastructure. As a result, these areas tend to have higher VMT. Thus, an adjusted threshold, which is different from OPR recommendations, is used to acknowledge that industrial and warehouse developments could not relocate to areas with a greater mix of uses or better transit or non-motorized connectivity that would have low VMT.



generated by the project. The following could reduce the VMT generated by a project and potentially reduce a significant impact on VMT to a less-than-significant level:

- Modify the project's characteristics to reduce VMT generated by the project. This may involve increasing the density of the project, including a broader mix of complementary land uses in the project, reducing the project parking supply, or changing the project's location to one that is more accessible by transit or other travel modes.
- Implement transportation demand management (TDM) or physical design features to reduce VMT generated by the project.
- Participate in a citywide or regional impact fee program and/or VMT mitigation exchange/banking program if/when one is established.

One tool available in quantifying the effectiveness of VMT-reducing strategies in reducing the VMT generated by a project is the Alameda CTC [VMT Reduction Calculator Tool](#), which is an Excel-based tool that accounts for the location of a development project and estimates the percentage reduction in VMT by various standalone strategies or a combination of strategies. These strategies comprise both one-time physical improvements (such as providing bicycle parking and constructing new sidewalks) and on-going operational measures (such as discounted transit buses and charging for parking). The Alameda CTC VMT Reduction Calculator Tool is primarily based on the research compiled in the California Air Pollution Control Officers Association (CAPCOA) [Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Healthy and Equity](#) (December 2021), which is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various TDM strategies.

For project that have a significant impact on VMT, the project shall propose mitigation measures to reduce the VMT, quantify the reduction in VMT using the Alameda CTC VMT Reduction Calculator Tool or other defensible sources, and determine if the mitigation measure would reduce the impact to a less-than-significant level or if the impact would be significant-and-unavoidable and require a finding of overriding consideration as allowed by CEQA.

6. Other Transportation Topics

The guidelines described above concern the impacts of VMT as that is the major change triggered by SB 743. However, there are other transportation-related topics that the City is required to consider as part of a CEQA evaluation. Consistent with the "Environmental Checklist Form" (Appendix G of the *CEQA Statutes & Guidelines*), these additional impacts are if a proposed project would:

- Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.



- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

In addition to the CEQA topics listed above, proposed projects may need to prepare a Local Transportation Impact Analysis (LTIA), which would address traffic operations (such as LOS and queuing) at nearby intersections, access and circulation in and around the site for various travel modes, and parking.

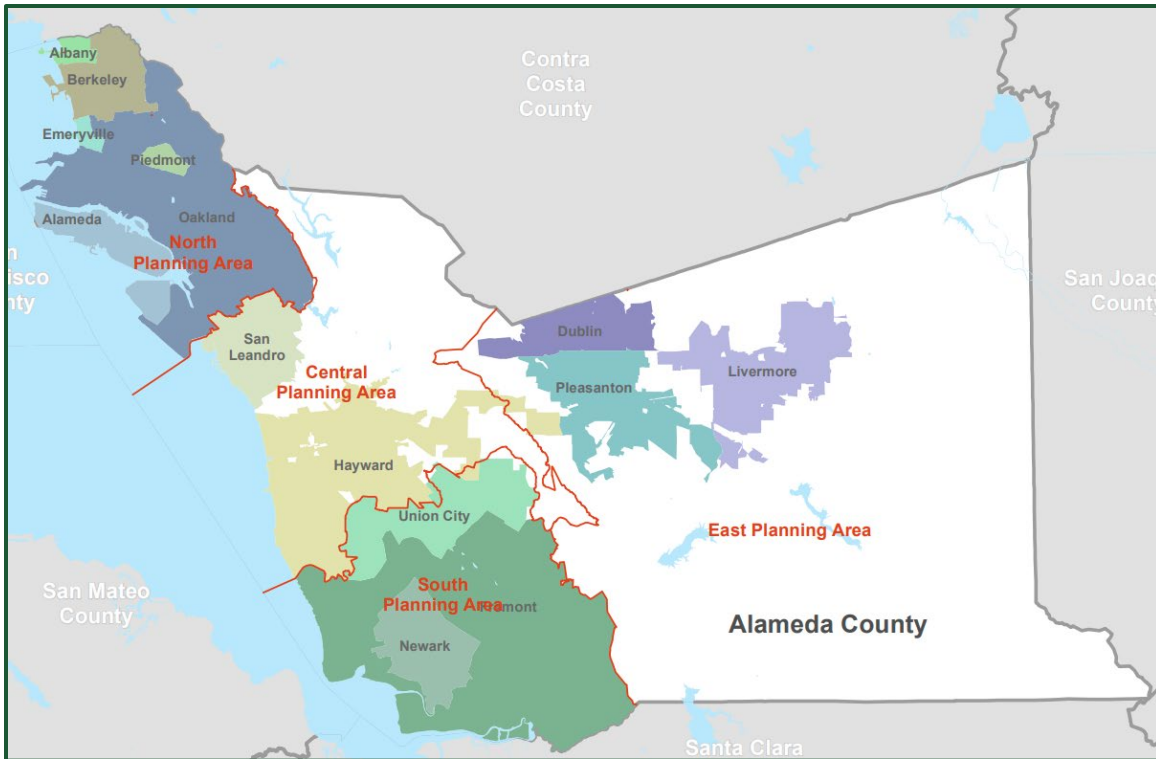
It is recommended that an LTIA be prepared for projects that generate 100 or more net new peak hour vehicle trips as estimated using the data and methodology in the latest version of the ITE *Trip Generation Manual*. The trip generation for development projects that would generate substantial heavy truck traffic, such as industrial and warehouse uses, should estimate the truck trips separately and convert the truck trips to passenger car equivalents (PCE) to account for trucks being larger and less maneuverable than passenger vehicles.

7. Glossary

Alameda CTC Travel Demand Model. Alameda CTC maintains a travel demand model for use in producing forecasts of future transportation system usage. The current model is a four-step, trip-based model that encompasses the entire nine-county Bay Area region, with additional zonal and network detail within Alameda County. Alameda CTC maintains a detailed database of land use and demographic data that is used in the Model, based on census-tract-level forecasts prepared by the Association of Bay Area Governments (ABAG). Alameda CTC regularly updates the Model. Tables and maps showing the latest VMT metrics from the Model can be found at <https://www.alamedactc.org/planning/sb743-vmt>.

California Environmental Quality Act (CEQA). This statute, enacted in 1970, requires identification of any significant environmental impacts due to certain state or local actions including approval of new developments or infrastructure projects. The process of identifying these impacts is typically referred to as the environmental review process.

Central Planning Area. One of the four geographic subregions in Alameda County as defined by the Alameda CTC and generally comprising the Cities of San Leandro and Hayward, and the unincorporated areas of Ashland, Cherryland, San Lorenzo, and Castro Valley, as shown below.



Employment Generating Uses/Projects. Office, industrial, logistics or other land uses where most of the activity at the site is related to employment functions.

High-Quality Transit Corridor. Public Resources Code, § 21155 defines a 'high-quality transit corridor' as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

Home-based VMT. VMT for trips that begin or end at a residence; also referred to as household VMT.

Home-work VMT. VMT associated with commute trips between a residence and an employment-generating use, also referred to as home-based-work or commute trips.

Infill Site. Based on Public Resources Code, § 21099(a)(4), an "Infill site" means a lot located within an urban area that has been previously developed, or on a vacant site where at least 75 percent of the perimeter of the site adjoins, or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

Level of Service (LOS). A metric that assigns a letter grade to transportation network performance. The most common application of LOS has been to measure the average amount of delay experienced by vehicle drivers along a roadway segment or at an intersection during the most congested time of day and to assign a rating that ranges from LOS A (fewer than 10



seconds of delay) to LOS F (more than 80 seconds of delay). Based on the requirements of SB 743, LOS and other measures of vehicle delay can no longer be used in determining significant impacts under CEQA.

Local-Serving Uses/Projects. Land uses that are expected to draw users from a local area, typically no more than a 2- to 3-mile radius. These uses may generally include local-serving public facilities such as a branch library, a police or fire station, neighborhood-based schools, and local-serving retail businesses such as grocery stores, coffee shops or dry cleaners.

Local Transportation Impact Analysis (LTIA). Analysis conducted outside of the CEQA process to address the potential effects of a proposed project on various transportation topics, such as traffic operations (LOS and queuing) at nearby streets segments and/or intersections, access and circulation in and around the site for various travel modes, and parking.

Low VMT Areas. TAZs that have existing VMT that is 15% below the existing home-based VMT per resident for the Central Planning Area for residential uses, 15% below the existing home-work VMT per worker for the Central Planning Area for employment uses that are office or similar uses, and below the existing average home-work VMT per worker for the Central Planning Area for employment uses that are industrial, warehouse or similar uses. Figures 2 and 3 show the low-VMT areas in San Leandro for residential and employment generating uses, respectively.

Major Transit Stop. Public Resources Code, § 21064.3 defines major transit stop as a site containing an existing rail or bus rapid 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 15 minutes or less during the morning and afternoon peak commute periods.

Mixed Use Projects/Uses: Projects that consist of a mix of uses otherwise described in this document.

Other Uses/Other Projects: Uses and projects which do not qualify as Residential, Employment-Generating, Local-Serving, or Regional-Serving (all of which are defined in this document).

Physical Design Measures. VMT reduction strategies that involve changes to the built environment. Examples include changes to the density or mixture of land uses, or the installation of new pedestrian or bicycle facilities.

Regional-Serving Uses/Projects. Land uses that are expected to draw users from a region that is larger than that for "local-serving uses," meaning a radius that is typically up to 3 miles. These uses may generally include regional-serving public facilities such as a regional museum, private schools and colleges, movie theaters and other entertainment, and regional retailers such as shopping malls and big box retailers.



Residential Uses/Projects: Uses and projects consisting solely of residential units such as single-family and multi-family units.

Target VMT Reduction. The level of VMT reduction necessary to avoid a significant VMT impact. Consistent with OPR recommendations, the target reduction for the City of San Leandro is set at 15% below the existing VMT for the Central Planning Area (equivalent to 85% of existing VMT).

Total VMT. All of the VMT from all types of vehicles and for all trip purposes.

Transportation Analysis Zone (TAZ). A geographic polygon somewhat similar to a Census block group that is used in a travel model to represent an area of relatively homogenous travel behavior.

Transit Priority Area (TPA). An area of close proximity to a significant transit mode, defined as a one-half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor.

Transportation Demand Management (TDM). Strategies that are intended to reduce travel by motor vehicle through operational programs and physical measures that maximize traveler choices through information, encouragement and incentives geared toward modifying travel behavior and choices.

Truck Trips. Trips made by heavy vehicles. based on OPR recommendations and their interpretation of Public Resources Code, §15064.3, VMT analysis for transportation impact purposes can focus solely on passenger vehicle travel and can exclude truck trips. Truck trips are included in the analysis of other environmental topic areas, such as air quality, noise, and greenhouse gas. truck trips can also be addressed in any LOS or traffic operations analysis, such as a LTIA, conducted outside of the CEQA process.

Vehicle Miles Traveled (VMT). 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 workers), home-based VMT per resident, and home-based work VMT per worker.

VMT Reduction Strategies. Strategies intended to reduce VMT, including TDM and physical design measures.

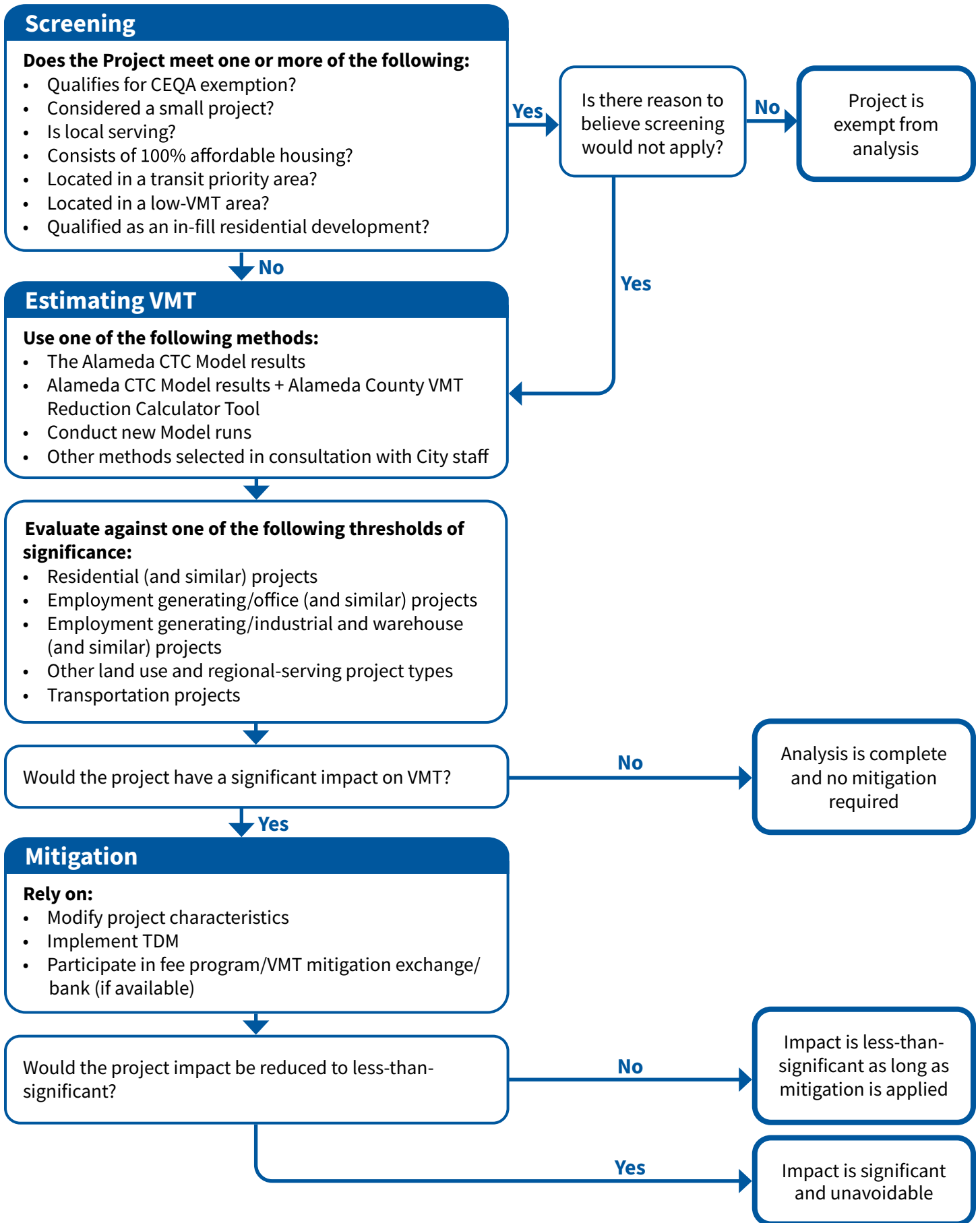
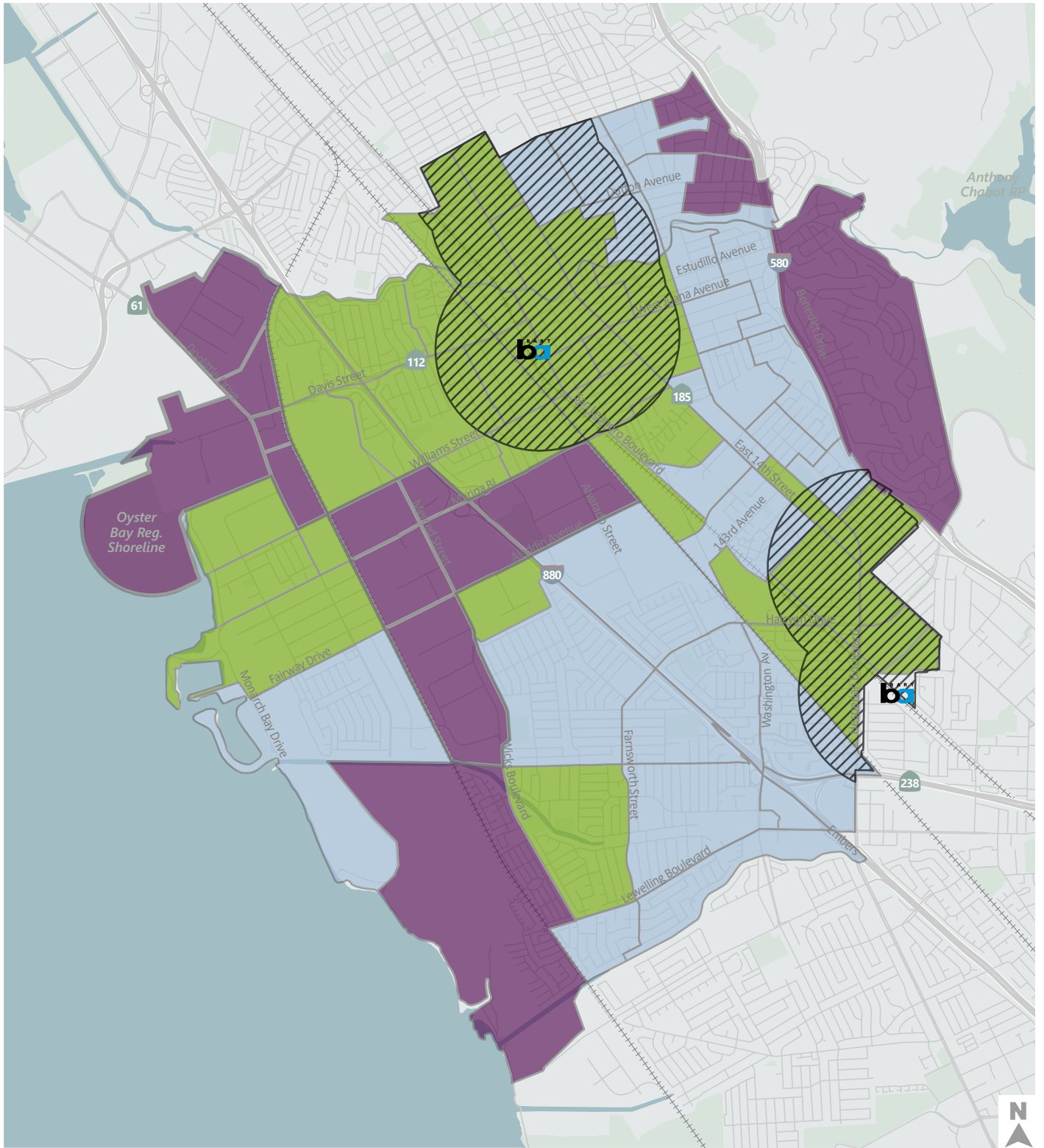


Figure 1









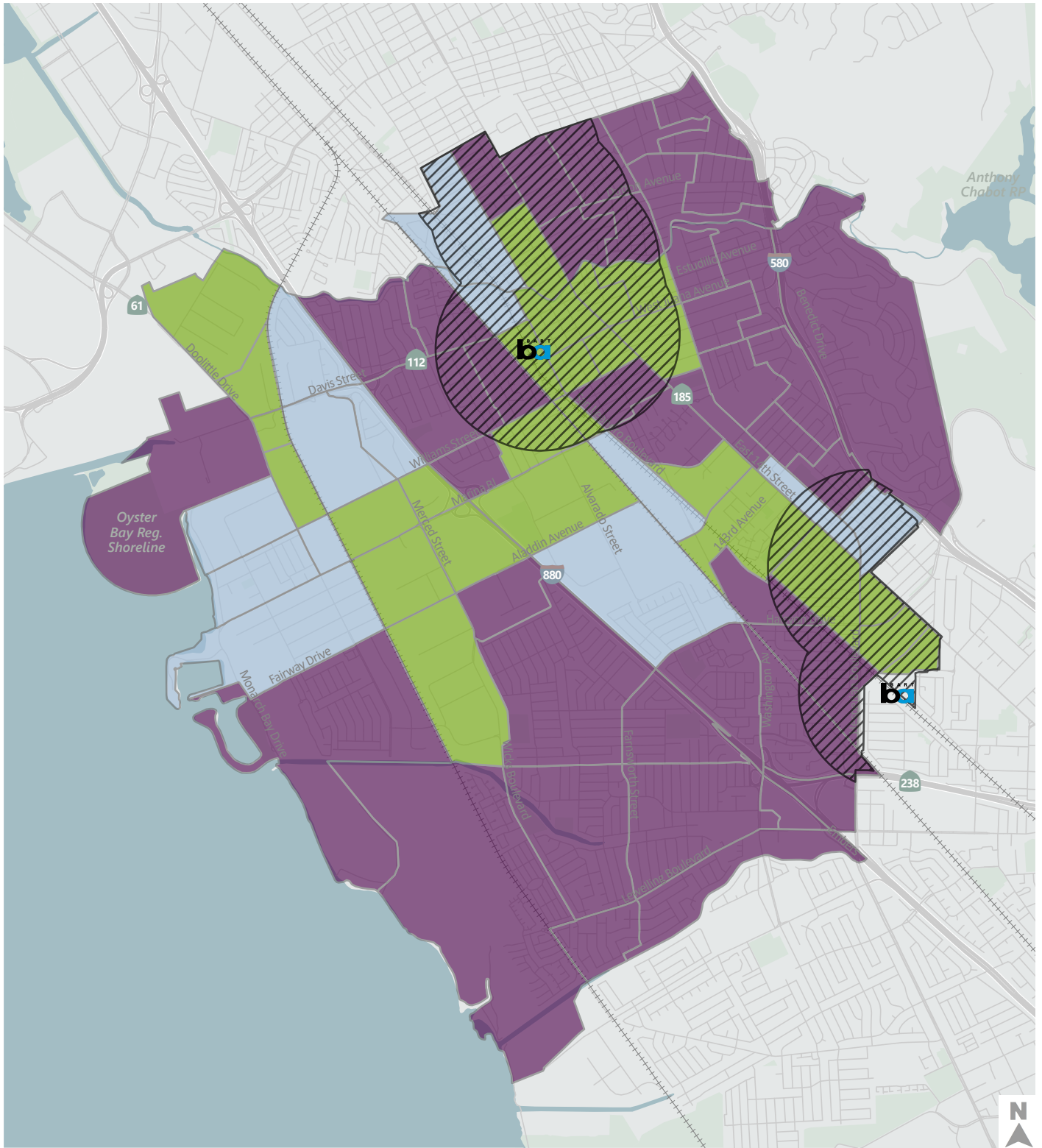

-  Transit Priority Areas: 1/2 mi from BART or bus stops with service at least every 15 min (as of September 2023)
-  Low-VMT Areas: at least 15% below Planning Area 2 average (2020 home-based VMT per resident according to the Alameda CTC Model)
-  Eligible for infill residential screening (minimum 30 units/acre)
-  Not eligible for location-based screening


Figure 2
**VMT Screening
 for Residential Uses**






 Transit Priority Areas: 1/2 mi from BART or bus stops with service at least every 15 min (as of September 2023)

Home-Work VMT per Worker

 At least 15% below Planning Area 2 average (threshold of significance for office uses)

 Between 15% below and Planning Area 2 average (threshold of significance for industrial uses)


 Above Planning Area 2 average

Figure 3

Low VMT Areas for Employment Uses

