APPENDIX Q-1

VMT ASSESSMENT APPROACH (SEPTEMBER 26, 2022)

FEHR PEERS

Memorandum

Date: September 26, 2022

To: Laura Russell and Cara Silver, Town of Portola Valley
Carla Violet and Curtis Banks, Urban Planning Partners

From: Taylor Whitaker, Charlie Coles, and Daniel Rubins, Fehr & Peers

Subject: Town of Portola Valley Housing Element Update for 2023-2031 – VMT Assessment Approach

SJ21-2115

This memorandum presents the vehicle miles traveled (VMT) metrics, modeling tools, thresholds, and mitigation options to apply in the evaluation of the Town of Portola Valley Housing Element Update for 2023-2031. The options and limitations for VMT metrics, modeling tools, significance thresholds, and mitigation actions are described below from a technical transportation planning and engineering perspective with a particular emphasis on addressing the *CEQA Statute & Guidelines* expectations for an environmental impact analysis.[1]

To facilitate the conversation, this memorandum contains a summary of the information and options presented in the *SB 743 Implementation Decisions* (May 20, 2021) white paper prepared for the City/County Association of Governments (C/CAG) of San Mateo County and its member agencies, including Portola Valley. A draft version of this memorandum (dated December 3, 2021) was submitted to Town staff and included a preliminary recommendation on the VMT assessment approach for the proposed Housing Element Update, which was to evaluate the effects of the proposed project on the environment with a focus on the cumulative condition. Fehr & Peers met with Town staff on December 16, 2021 and July 18, 2022 to review the preliminary recommendation and confirm the VMT assessment approach for the proposed Housing Element Update. This memorandum documents the VMT assessment approach direction we received from Town of Portola Valley staff.

[1] Typical CEQA practice focuses on environmental effects that occur on a typical weekday, so all references to VMT in this document are intended to mean VMT that occurs on a typical weekday.

Background

Senate Bill (SB) 743 changed how transportation impacts are analyzed under the California Environmental Quality Act (CEQA). The latest *CEQA Statute & Guidelines* specify that VMT[2] is the appropriate metric to evaluate transportation impacts and delay and congestion are no longer applicable under CEQA. In short, SB 743 changes the focus of transportation impact analysis in CEQA from measuring impacts to drivers, to measuring the impact of driving.

To comply with these new rules, each lead agency will need to define policies and practices regarding the evaluation of transportation impacts under CEQA, including guidance on how VMT should be calculated and presented in environmental documents. Because there are different ways to analyze and report VMT associated with a given project or plan each local jurisdiction (a town, city, unincorporated County, or other agency in San Mateo County,) will need to set their own guidelines and expectations for how a VMT analysis should be conducted.

The State of California's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) recommends considering a project's short-term, long-term, and cumulative effects on VMT. The first reference is on page 5 related to retail projects while the references on page 6 are for all projects (see excerpts below with most relevant portions highlighted).

> ***Retail Projects***. *Generally, lead agencies should analyze the effects of a retail project by assessing the change in total VMT[11] because retail projects typically re-route travel from other retail destinations. A retail project might lead to increases or decreases in VMT, depending on previously existing retail travel patterns. (*Quote from page 5 of the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018; footnote 11 in this quote is a reference to see Appendix 1 of the OPR Technical Advisory, which discusses evaluation of Total VMT*).*
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> ***Considerations for All Projects***. *Lead agencies should not truncate any VMT analysis because of jurisdictional or other boundaries, for example, by failing to count the portion of a trip that falls outside the jurisdiction or by discounting the VMT from a trip that crosses a jurisdictional boundary. CEQA requires environmental analyses to reflect a "good faith effort at full disclosure." (CEQA Guidelines, § 15151.) Thus, where methodologies exist that*

[2] VMT refers to "Vehicle Miles Traveled," a metric that accounts for the number of vehicle trips generated plus the length or distance of those trips. VMT is an accessibility performance metric that evaluates the changes in land use patterns, regional transportation systems, and other built environment characteristics, which is different from what the mobility performance metric vehicle level of service measures – vehicle mobility. The white paper uses the terms Project generated VMT and Project's effect on VMT using boundary VMT metrics for specific geographic areas. Project generated VMT is the sum of the "VMT from" and "VMT to", and within a project site. Project's effect on VMT uses geographic boundary VMT to evaluate the change in VMT on all roadways without and with the project within a specific geographic area.

> *can estimate the full extent of vehicle travel from a project, the lead agency should apply them to do so. Where those VMT effects will grow over time, analyses should consider both a project's short-term and long-term effects on VMT.* (Quote from page 6 of the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018).
>
> ***Cumulative Impacts**. A project's cumulative impacts are based on an assessment of whether the "incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (Pub. Resources Code, § 21083, subd. (b)(2); see CEQA Guidelines, § 15064, subd. (h)(1).)* (Quote from page 6 of the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018).

The importance of a complete analysis that considers the project's effect on total VMT reflects the fact that certain types of land use projects can influence the routing of existing trips and the VMT generation of surrounding land uses. We expect the proposed Town of Portola Valley Housing Element Update for 2023-2031 (the combination of accessory dwelling units, affordable housing, employment housing, and other residential units included in the housing element) to have an effect on overall total VMT within the Town.

SB 743 Implementation Decisions White Paper and C/CAG VMT Estimation Tool

To help C/CAG member agencies meet the requirements of CEQA under SB 743, C/CAG of San Mateo County prepared the *SB 743 Implementation Decisions* (May 20, 2021) white paper (hereinafter referred to as "white paper"). With the *CEQA Statute & Guidelines* in mind, the white paper includes curated SB 743 implementation information with substantial evidence to support Town decisions for seven implementation questions. The seven questions address elements related VMT metrics, VMT calculation methods, VMT significance thresholds, and VMT mitigation actions needed to fully implement SB 743 as summarized below.

A. **VMT Metrics**:
    1. What form of VMT metrics could be used?
B. **VMT Calculation Methods**:
    2. What methods are available to use in estimating and forecasting VMT?
C. **VMT Impact Significance Thresholds**:
    3. Is the use of VMT impact screening desired?
    4. What is the VMT impact significance threshold for land use projects and land use plans under baseline conditions?
    5. What is the VMT impact significance threshold for land use projects and land use plans under cumulative conditions?
    6. What is the VMT impact significance threshold for transportation projects under baseline and cumulative conditions?
D. **VMT Mitigation Actions**:

7. What VMT reduction mitigation strategies are feasible?

The white paper highlights options and limitations for each question from a technical transportation planning and engineering perspective, with a particular emphasis on addressing the *CEQA Statute & Guidelines'* expectations for an environmental impact analysis.

In addition, the white paper includes baseline and cumulative VMT estimates for the Town of Portola Valley, San Mateo County, and Bay Area Region (refer to **Attachment A**) and is accompanied by a customized C/CAG VMT Estimation Tool.[3] The C/CAG VMT Estimation Tool provides for:

- Low VMT generation screening of small- to medium-size office, residential and industrial projects.
- Transit priority areas (TPAs) screen layer from the Metropolitan Transportation Commission (MTC) in 2017. This is a 1/2-mile buffer around existing major transit corridor (along El Camino Real and the 120 and 130 bus stops) or a major transit stop[4] (i.e., along Caltrain, BART and the South San Francisco ferry terminal).
- Local screening criteria to provide a jurisdiction the option to use its own screening criteria.

For projects that do not meet the VMT screening criteria, member agencies will likely need to conduct a complete VMT analysis that evaluates cumulative conditions, and the project's effect on boundary VMT within a specific geographic area. This complete VMT analysis will be used as an input into the air quality, GHG, and energy impact analysis.

VMT Metrics

VMT can be measured in multiple ways. Thus, the first decision for the Town, is deciding which VMT *metrics* to use to express a project's transportation effects. **Table 1** summarizes the common VMT metrics available to the Town, which are discussed in more detail below. As will be shown in the **VMT Modeling Tools** section.

[3] The VMT Estimation Tool can be used to screen and estimate project generated VMT and VMT reductions for land use projects in San Mateo County. The types of land use projects include residential, office, and industrial land uses, those land uses in combination with each other, and those land uses with or without ancillary retail space. The VMT Estimation Tool is modular such that C/CAG, along with the cities in San Mateo County and the County of San Mateo can include their specific VMT screening requirements or model data within the VMT Estimation Tool.

[4] Major transit stop" is defined in Public Resources Code 21064.3 as 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.

Table 1: Summary of Common VMT Metrics

VMT Metric[1]	Definition	Recommended by OPR[2]	VMT used for other CEQA Sections?
Total VMT	Daily VMT of all vehicle trips, vehicle types, and trip purposes for all project land uses, presented as a total VMT.	Yes, for land use plans, and discussed in Appendix 1 of the OPR *Technical Advisory*.	Yes
Total VMT per Service Population[3,4] (also "Total VMT Rate")	Daily VMT of all vehicle trips, vehicle types, and trip purposes for all project land uses, divided by the sum of residents plus employees in the analysis area generating the VMT.	No, although may be helpful for mixed-use projects and comparing land use scenarios, particularly when using a travel forecasting model.	Yes
Partial Home-Based VMT per Resident (also "Home-Based VMT Rate")	VMT generated by light-duty vehicles (i.e., private cars and trucks) for all trips that begin or end at a residential land use, divided by residents.	Yes, for residential projects on page 5 and Appendix 1 of OPR *Technical Advisory*.	No
Partial Home-Based Work VMT per Employee (also "Home-Based Work VMT Rate")	VMT by light-duty vehicles only for work trips (that is, trips that have one end at a workplace and one end at a residence), divided by number of employees.	Yes, for office projects on page 6 and Appendix 1 of OPR *Technical Advisory*.	No
Project's Effect on VMT within the Boundary of a Specific Area (also "Boundary VMT")	VMT that occurs within a selected geographic boundary (e.g., Town, County, or Region) by any type of vehicle. This captures all vehicle travel on a roadway network for any purpose and includes local trips as well as trips that pass through the area without stopping.	Yes, for retail projects and transportation projects on pages 5, 6 and 23 and Appendix 1 of the OPR *Technical Advisory*.	Yes

1. Each VMT metric is an option for baseline and/or cumulative impact analysis.
2. With the exception of Total VMT per Service Population, each VMT metric listed in this table is described in the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018). See pages 5, 6, and 23, and Appendix 1 of the OPR *Technical Advisory*.
3. Total VMT is derived from this VMT rate.
4. The total VMT accounting is similar to an origin-destination accounting used for many Climate Action Plans.

Source: Fehr & Peers, 2022.

Absolute VMT or per Capita VMT

VMT metrics fall into two general categories: absolute VMT and per capita VMT. Absolute VMT is the total value of VMT, while per capita VMT is an efficiency metric that normalizes the absolute VMT based on a population metric so that VMT can be readily compared across projects of varying sizes. For example, if Project A generates 100 daily trips at an average of five miles per

trip, the *absolute* project generated VMT is 500 vehicle miles per day. If that project is a small office employing 25 people, the per capita VMT is 20 vehicle miles per employee (500 VMT / 25 employees = 20 VMT per employee). Similarly, if Project B for example generates 200 daily trips at an average of five miles per trip, the *absolute* project generated VMT is 1,000 vehicle miles per day. If that project employs 50 people, the per capita VMT is also 20 vehicle miles per employee (1,000 VMT / 50 employees = 20 VMT per employee). Thus, even though Project B is larger and generates more absolute VMT, both example projects generate the same VMT per capita.

Total VMT or Partial VMT

Total VMT metrics include all types of VMT, regardless of the trip's purpose or the type of vehicle. For example, a person makes many trips from their home throughout the day (from home to coffee shop, to office, to lunch, back to office, to grocery store, back home, etc.) and total VMT captures all the trips and their associated trip lengths. Partial VMT refers to the use of only particular trip purposes and/or vehicle types. For example, partial VMT may only account for the trips and trip lengths associated with a person driving to and from work, and not all the trips in between (to lunch, to grocery store, etc.). The efficiency metrics recommended by OPR for use in analyzing office and residential projects are partial VMT metrics, because they include only light-duty passenger vehicles and only trips for a specific purpose or made by a specific population.

For some, the benefit of partial VMT metrics is that they are relatively easy to understand and visualize. In addition, partial VMT can be particularly useful when evaluating a project that is similar to existing development patterns nearby. Where current conditions lead to VMT-efficient residential or workplace activity, it can be relatively straightforward to conclude that adding similar land uses to those areas would create similar levels of VMT efficiency. One risk of using a partial VMT metric is that one could argue that it is not complete analysis of a project's VMT.

Project Generated VMT or Project's Effect on VMT

VMT metrics can differentiate between project generated VMT and a project's effect on VMT.

- **Project Generated VMT:** The sum of the VMT associated with travel from, to, and within a project site.
- **Project's Effect on VMT (within a selected geographic boundary):** The total vehicle travel within a geographic area boundary, compared between the no project and with project scenarios. The boundary should be selected based on project characteristics such as size and location; this analysis might be done at a townwide, countywide, or regional scale.

In its most basic form, project generated VMT is estimated by multiplying the project's daily trips by the average distance traveled by each vehicle trip. By contrast, the project's effect on VMT

evaluates the change in total travel within a defined geographic area boundary before and after the project is built (referred to as boundary VMT in this document).

An often-cited example of how a project can affect boundary VMT is the addition of a grocery store in a food desert. Residents of a neighborhood without a grocery store have to travel some distance to do their grocery shopping. Adding a grocery store to the neighborhood will shorten many of those grocery shopping trips and reduce the total VMT to/from the neighborhood. While the new store itself will "generate" many daily trips, in that there will be many cars coming in and out of the store's driveway, it will generally attract those trips *away* from other grocery stores located farther away. Thus, if the boundary VMT in the area served by all the local grocery stores were to be assessed, it is likely that the total VMT in that area will decrease after completion of the new grocery store project, since those trips to the new grocery store are shorter in distance than those to the grocery store in a different neighborhood.

Figure 1 presents a generic representation of both project generated VMT[5] and boundary VMT. Both metrics are needed for a comprehensive view of a project's VMT effects.

Town of Portola Valley Selection

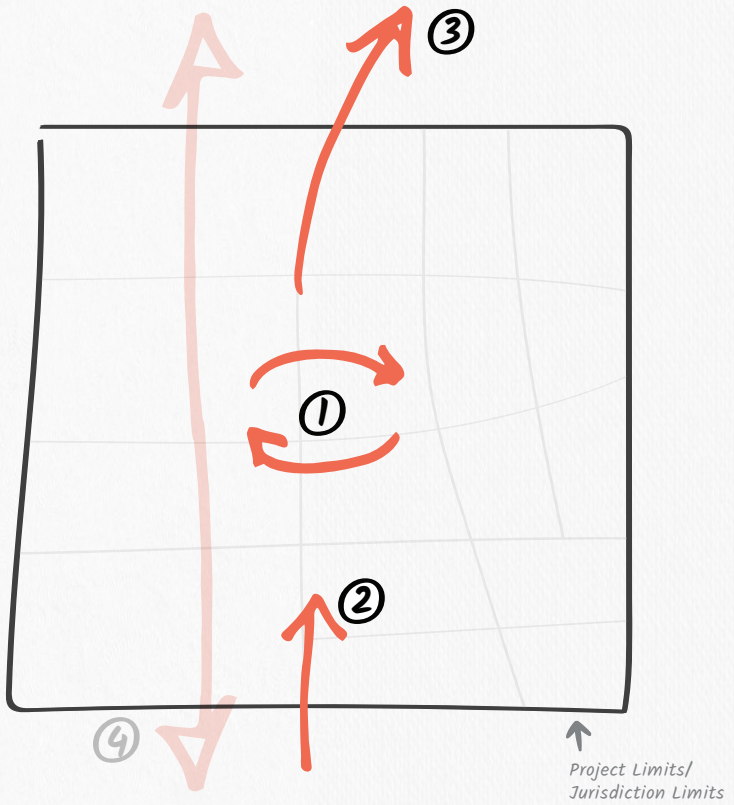
To present a complete VMT analysis, we the Town of Portola Valley has selected the following metrics for evaluation of the Housing Element Update:

- Total VMT
- Total VMT per service population
- Home-based VMT per resident
- Project's Effect on VMT (using Boundary VMT) within the Bay Area Region (San Francisco County, San Mateo County, Santa Clara County, Alameda County, Contra Costa County, Solano County, Napa County, Sonoma County, and Marin County) (this information will also be used in the air quality, GHG, and energy analysis)

These metrics address all the VMT metrics discussed above, including absolute VMT, Per capita VMT, Total VMT, Partial VMT, in addition to project generated and the project's effect on VMT.

[5] In this instance, project generated VMT refers to total VMT, home-based VMT, and home-based work VMT as a group of VMT metrics.

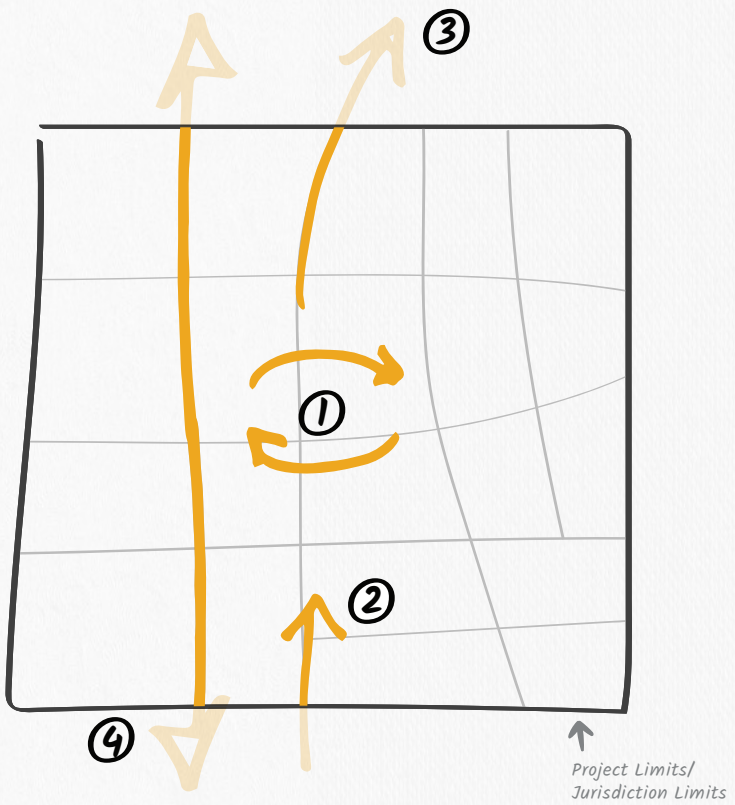
Project Generated VMT



① 2x Internal to Internal (2xII) VMT
② External to Internal (XI) VMT
③ Internal to External (IX) VMT
④ External to External (XX) VMT

Notes: External to External (XX) trips (shown as transparent arrow 4) are excluded from this VMT metric. Adjustments to project generated VMT made to include the full length of trips that leave the jurisdiction to capture inter-jurisdiction travel.

Project Effect on VMT
(Boundary VMT)



① Internal to Internal VMT
② External to Internal (XI) VMT
③ Internal to External (IX) VMT
④ External to External (XX) VMT

Notes: Boundary VMT is all the VMT on the streets within the Project Limits / Jurisdiction Limits. Transparent portions of arrows 2, 3 and 4 are not included in the VMT metric.

Figure 1

Measuring Vehicle Miles Traveled (VMT)

VMT Modeling Tools

VMT can be calculated using travel forecasting models, GIS tools, spreadsheet tools, or other sketch planning tools. The most common method of calculating the VMT metrics listed in **Table 1** 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 roadway elements in a large area. Using a travel forecasting model has some advantages over sketch planning tools and spreadsheets, because a travel model is able to account for both project generated VMT and the project's effect on total area-wide VMT; spreadsheet tools and most sketch planning tools can only evaluate project generated VMT (and not the project's effect on VMT). Thus, we recommend the Town use a travel forecasting model for their VMT evaluation. The two travel forecasting models most commonly used to evaluate projects in and around the Town are the following:

- Metropolitan Transportation Commission (MTC) Travel Demand Model
- Santa Clara Valley Transportation Authority (VTA)-City/County Association of Governments of San Mateo County (C/CAG) Bi-County Model (C/CAG-VTA Travel Model)[6]

There are other possible tools available, such as a statewide model developed by Caltrans and several sketch planning tools or spreadsheets. The MTC and Caltrans models are intended for very large-scale applications, with the statewide model having a specific focus on the evaluation of interregional travel and freight movements, and thus neither model is appropriate for a local land use project, like the Portola Valley Housing Element Update.

An ideal tool for a CEQA VMT analysis is a travel forecasting model that has been appropriately calibrated and validated for local project size and scale, and has trip length data that accounts for trips that extend beyond the model boundary.[7] In Portola Valley it is also important for a travel forecasting model to account for travel patterns due to congestion, public transit, non-motorized transit (walking and biking), and transportation demand management policies in different parts of the Town.

Our scope of work assumes the Town of Portola Valley has selected the C/CAG-VTA Travel Model to use for the purposes of this project.

Town of Portola Valley Selection

Practically speaking, the use of a travel model is desirable for projects large enough to be accurately represented in that travel model. Given the characteristics of the Town of Portola

[6] Based on recent practice by C/CAG, we have assumed that the fee to acquire the model is zero dollars; however, any fee to acquire the model will be paid by the Town separate from the approved scope.

[7] The National Cooperative Highway Research Program *(NCHRP) Report 765, Analytical Travel Forecasting Approaches for Project-Level Planning and Design*, Transportation Research Board (TRB) (2014) is a detailed resource with many applicable sections.

Valley, ability to capture the effects of a project on the VMT in its surrounding area, and to be consistent with regional transportation planning assumptions, the Town of Portola Valley has selected the C/CAG-VTA Travel Model to use of the purposes of this Housing Element Update. For discussion purposes, **Attachment B** shows the Transportation Analysis Zones (TAZs)[8] and roadway network in the C/CAG-VTA Travel Model compared to the Town of Portola Valley Boundary. The C/CAG-VTA Travel Model would likely require some refinements to be fully sensitive to the land use and transportation demand management policies in Portola Valley.

VMT Impact Significance Thresholds

Baseline VMT Screening Thresholds

As of September 2022, the Town of Portola Valley has not adopted screening criteria or VMT thresholds. The concept of project screening criteria is that some projects have characteristics that readily lead to the conclusion that they would not cause a VMT impact. Lead agencies are responsible for deciding if projects may screen themselves from further analysis, determining which screening criteria they want to use for which project types, and where to set a screening "threshold". Some types of screening criteria include (with specific definitions the screening criteria with an asterisk mark are included in the *CEQA Statute & Guidelines*):

- Small developments*
- Projects in low-VMT areas
- Projects in proximity to transit priority areas (TPAs)/major transit stops and high-quality transit corridor (HQTC)*
- Affordable housing projects*
- Local-serving retail projects
- Transportation projects that do not add vehicle capacity

The Town of Portola Valley could consider adopting baseline VMT screening criteria for small- to medium-size land use projects using the C/CAG VMT Estimation Tool. For projects meeting the baseline VMT screening criteria, no additional VMT analysis would be needed.

Cumulative VMT Thresholds

An impact under CEQA begins with a change to the existing environment, and, therefore, Existing (or Baseline) Conditions must be evaluated. Because VMT will fluctuate with population and employment growth, changes in economic activity, and changes in travel modes including the expansion of new vehicle travel choices (i.e., the emergence of transportation network companies such as Uber and Lyft, autonomous vehicles, etc.), an impact analysis must also take into account

[8] Land use and socioeconomic data are represented in models by Transportation Analysis Zones, or TAZs.

the cumulative effects of the proposed project, these changes, and all other projects. Therefore, evaluations of Cumulative Conditions and Cumulative with Project Conditions are needed to identify potential cumulative impacts.

A cumulative VMT threshold should be able to evaluate both the direct, indirect, and cumulative effects of a project on VMT and consider uncertainty of new travel trends. Below is a brief summary of three possible cumulative VMT threshold options:

- **Fair share of Regional VMT Allocation:** Use a regional model to analyze the "project's effect on VMT" based on RTP/SCS consistency and set threshold that the project should not increase the total project generated regional VMT forecast used to support the RTP/SCS air quality conformity and SB 375 GHG targets.
- **Baseline and Cumulative VMT Thresholds**: A lead agency can use the same threshold for Baseline and Cumulative Conditions if there is evidence that the VMT efficiency metric is trending downward over time. While it is difficult for a lead agency to determine what level of VMT change is unacceptable when viewed solely through a transportation lens, there are several possible options, depending upon if the Town chooses to set a threshold based on local or state policies. Options include the following:
    - Set thresholds based on state goals.
        - Rely on the OPR Technical Advisory suggestion to set thresholds consistent with state goals for air quality, greenhouse gas and energy conservation.
            - OPR 15% below baseline average of a town or region (light-duty vehicles only).
    - Use a threshold adopted or recommended by another public agency consistent with lead agency air quality, GHG reduction, and energy conservation goals.
        - CARB 14.3% below baseline (2018) average of jurisdiction (all vehicles, presuming that MPOs meet SB 375 targets).
        - CARB 16.8% below baseline (2018) average of jurisdiction (light-duty vehicles only, presuming that MPOs meet SB 375 targets).
        - CARB: 25% below baseline (2018) average of jurisdiction (all vehicles, presuming that MPOs do not meet SB 375 targets).
        - Net zero VMT.[9]

[9] Caltrans has released guidance on "Transportation Analysis under CEQA (First Edition): Evaluating Transportation Impacts of State Highway System Projects" (September 2020) that recommends that any increase in VMT would constitute a significant impact. This has been referred to as the "Net Zero VMT threshold". Caltrans has thus far signaled that this threshold would be applied only to transportation projects.

    - Set jurisdiction-specific threshold consistent with existing General Plan.
        - Set jurisdiction-specific VMT threshold based on substantial evidence.
        - Set thresholds based on baseline VMT performance.

- **Long-Term Air-Quality and GHG Expectations**: Establish a VMT reduction threshold for Cumulative Conditions consistent with long-term air pollution and GHG reduction expectations.

Discussion

In describing a threshold, the Town is making several methodological decisions:

- **VMT Metric:** Defining the VMT metric(s) to be used in expressing a project's impacts (VMT metrics were described in detail earlier in this memo).
- **Selecting the VMT Reduction to Apply to the VMT Metric:** Once the VMT metric is selected, the next decision is to define a percent reduction in the VMT metric that will be required to avoid triggering a significant impact. As discussed above, the percent reduction could be based on state or existing General Plan long-term expectations for greenhouse gas, air quality, and energy conservation.
- **Selecting the Geographic Area of the VMT Metric:** The final decision is to decide on what geographic area (e.g., Town-level, County-level, or Region-level) will be used to define the average value that a project should be compared to.

The C/CAG-VTA Travel Model will be used to prepare Baseline (2015) and Cumulative (2040) VMT estimates. Specifically, the total VMT metric will be evaluated at the Town-level, County-level and Region-level under Existing Conditions, Cumulative without Project and Cumulative with Project Conditions scenarios. In all cases, and consistent with the recommendations in the OPR *Technical Advisory*, adjustments will be applied to account for the distance of travel outside of the model area.

The following VMT metrics will be reported for the Town-level, County-level, and Region-level for each of the three study scenarios.

- **Total VMT:** Daily VMT of all vehicle trips, vehicle types, and trip purposes for all project land uses, presented as a total project generated VMT.
- **Total VMT per Service Population:** Daily VMT of all vehicle trips, vehicle types, and trip purposes for all project land uses, divided by the sum of residents plus employees in the analysis area generating the VMT.
- **Home-Based VMT per Resident**: VMT generated by light-duty vehicles (i.e., private cars and trucks) for all trips that begin or end at a residential land use, divided by residents.

- **Project's Effect on VMT within the Boundary of a Specific Area (Boundary VMT):** VMT that occurs within a selected geographic boundary (e.g., town, county, or region) by any type of vehicle. This captures all on-road vehicle travel on a roadway network for any purpose and includes local trips as well as trips that pass through the area without stopping.

Overall, the evaluation of the project's effect on land use and VMT should use the most appropriate forecasting model and consider all substantial evidence including the California Air Resources Board *2017 Scoping Plan-Identified VMT Reductions and Relationships to State Climate Goals*, CARB and current research on the long-term effects of transportation network companies (TNCs), new mobility options, and autonomous vehicles. Any cumulative VMT forecasting should acknowledge that land use projects and plans typically do not influence regional land use control totals and that modeling scenarios should carefully consider the land use allocation between scenarios and/or the VMT metric used to establish the cumulative VMT threshold.

Town of Portola Valley Selection

The Town of Portola Valley will analyze the project's effect on land supply and VMT using the C/CAG-VTA Model. The actual thresholds will be selected after using the C/CAG-VTA Model to prepare and summarize the cumulative (baseline) and cumulative with project VMT estimates listed in the discussion section.

Based on discussions with Town staff, cumulative thresholds for the Housing Element Update will include the following:

- Project Impact: A significant impact would occur if the townwide total VMT per service population would exceed the cumulative (baseline) VMT rate for the town.
- Project Impact: A significant impact would occur if the townwide home-based VMT per resident would exceed the cumulative (baseline) VMT rate for the town.
- Project Effect: A significant impact would occur if growth in the plan area increases total (boundary) regionwide VMT per service population compared to cumulative without project conditions.[10, 11]

VMT Mitigation Actions

For land use plans such as housing element updates and specific plans, mitigation will typically focus on physical design elements related to the ultimate built environment, such as the density

[10] This threshold is designed to address the different land use totals between the Cumulative without Project Conditions and the Cumulative with Project Conditions.

[11] The region is defined as the 9 Bay Area counties: San Francisco County, San Mateo County, Santa Clara County, Alameda County, Contra Costa County, Solano County, Napa County, Sonoma County, and Marin County.

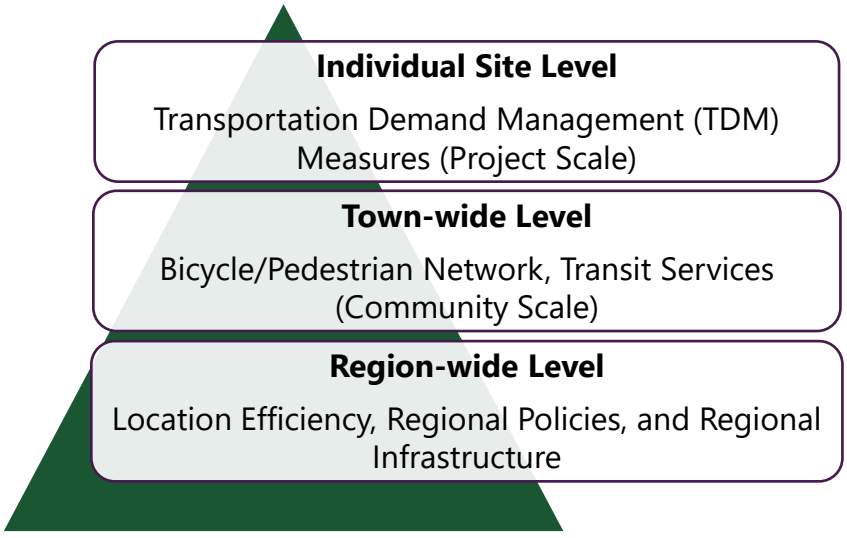
and mix of land uses as well as the availability and quality of the transportation network related to transit, walking, and bicycling.

For individual development projects, the primary methods of mitigating a VMT impact are to:

1. change the project in a way that reduces VMT; and/or
2. implement a program designed to reduce VMT, such as a Transportation Demand Management (TDM) program.

The available research indicates that the effectiveness of TDM measures varies substantially depending on the context in which they are applied. TDM is most effective in urban areas where urban character (land use and built environment) and land use mix are most supportive of vehicle trip reduction. TDM programs are less effective in rural and suburban areas where the built environment and transportation network are more dispersed and where modes are typically limited to personal vehicles. Additionally, an important consideration for the mitigation effectiveness is the scale for TDM strategy implementation. The biggest effects of TDM strategies on VMT (and resultant emissions) derive from regional policies related to land use location efficiency and infrastructure investments that support transit, walking, and bicycling. While there are many measures that can influence VMT and emissions that relate to site design and building operations, they have smaller effects that are often dependent on final building tenants. **Figure 2** presents a conceptual illustration of the relative importance of scale.

Figure 2: Transportation-Related GHG Reduction Measures



Of these strategies, only a few are likely to be effective in a rural and suburban setting such as Portola Valley. The Town of Portola Valley could consider identifying a menu of built environment and TDM mitigation strategies contained in the California Air Pollution Control Officer Association

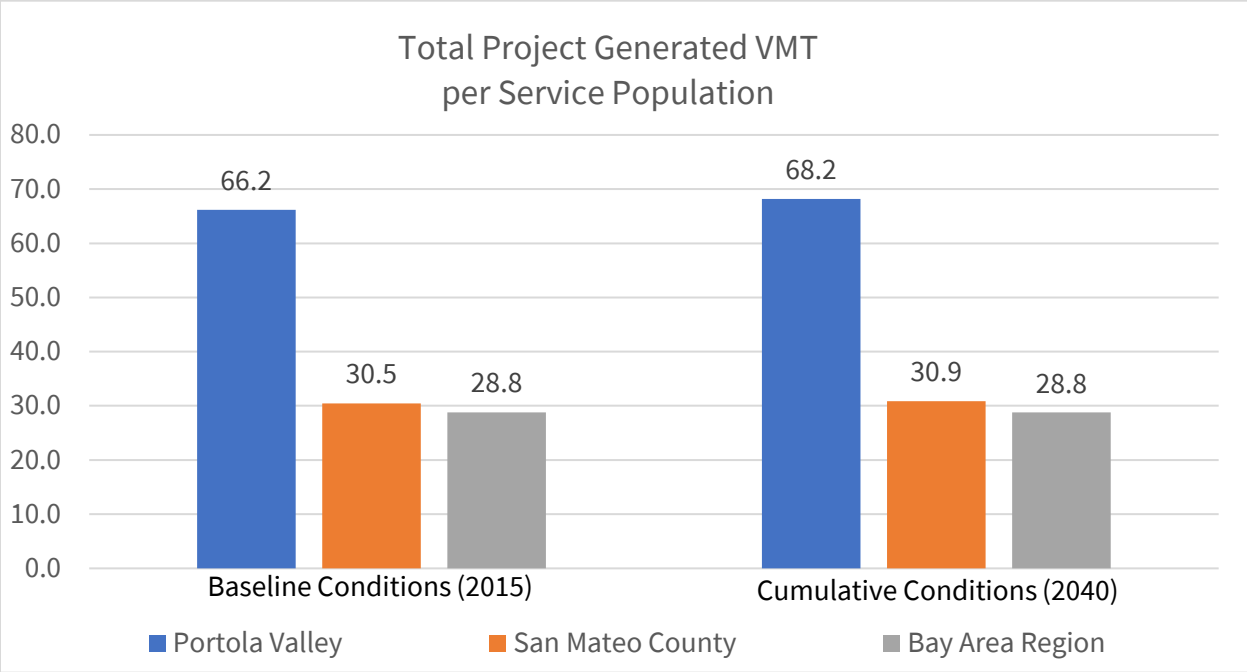
(CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (December 2021) based on how the land use context, and potential land use changes, in Portola Valley could influence each strategy's effectiveness.

Town of Portola Valley Selection

Apply VMT reduction measures such as TDM with a Transportation Management Association (TMA), Town-wide strategies, and regional policies (location efficiency, regional land use policies, and regional infrastructure) to reduce VMT on Portola Valley streets. In the long-term, consider emerging VMT mitigation options such as a VMT cap, VMT fee, VMT bank, and/or VMT exchange.

Attachments

Attachment A: Town of Portola Valley VMT Quick-Reference Summary
Attachment B: C/CAG-VTA Travel Model Roadway Network and Transportation Analysis Zones in Portola Valley



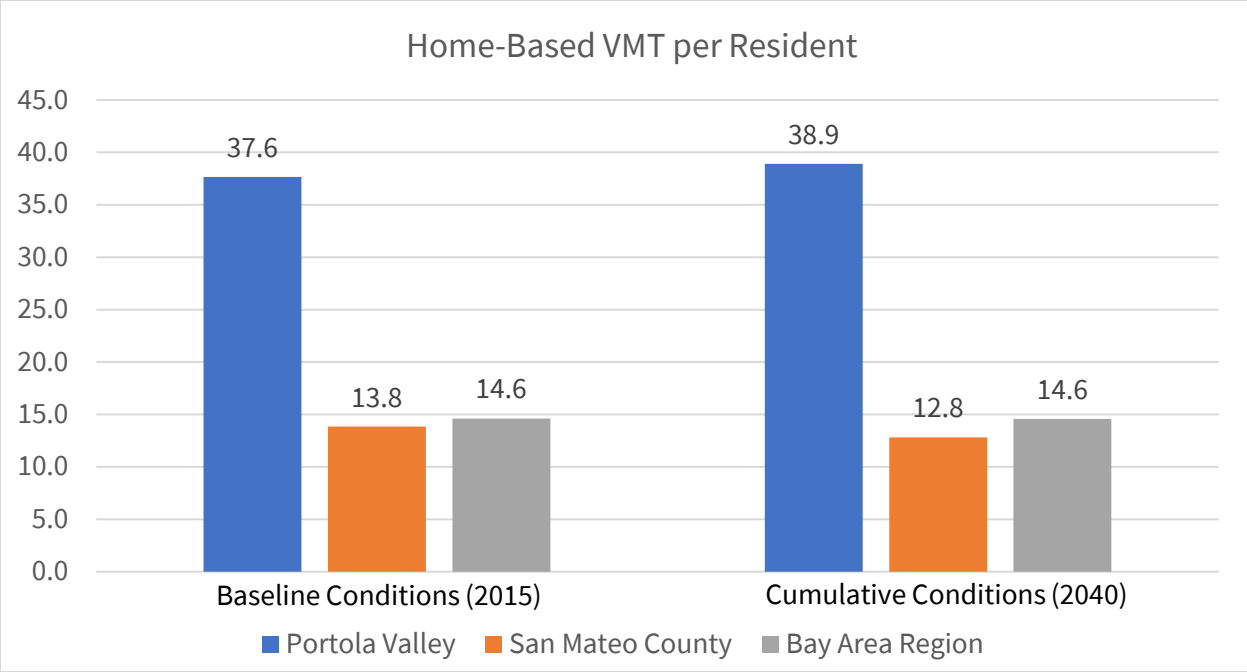
Total Project Generated VMT

Jurisdiction	Baseline (Existing) Conditions 2015			Cumulative Conditions 2040			Percent Change[1]
	Total Project Generated VMT	Service Population	Total VMT per Service Population	Total Project Generated VMT	Service Population	Total VMT per Service Population	
Portola Valley	395,130	5,970	66.2	447,150	6,560	68.2	3.0%
San Mateo County	34,532,300	1,134,030	30.5	43,425,560	1,407,320	30.9	1.3%
Bay Area Region	324,552,740	11,272,480	28.8	413,599,660	14,379,630	28.8	0.0%

Notes: Population and VMT values rounded to nearest 10.

1. Percent change is between 2015 and 2040 total VMT per service population VMT metric values and is rounded to the nearest tenth of a percent.

Source: Fehr & Peers, 2021.



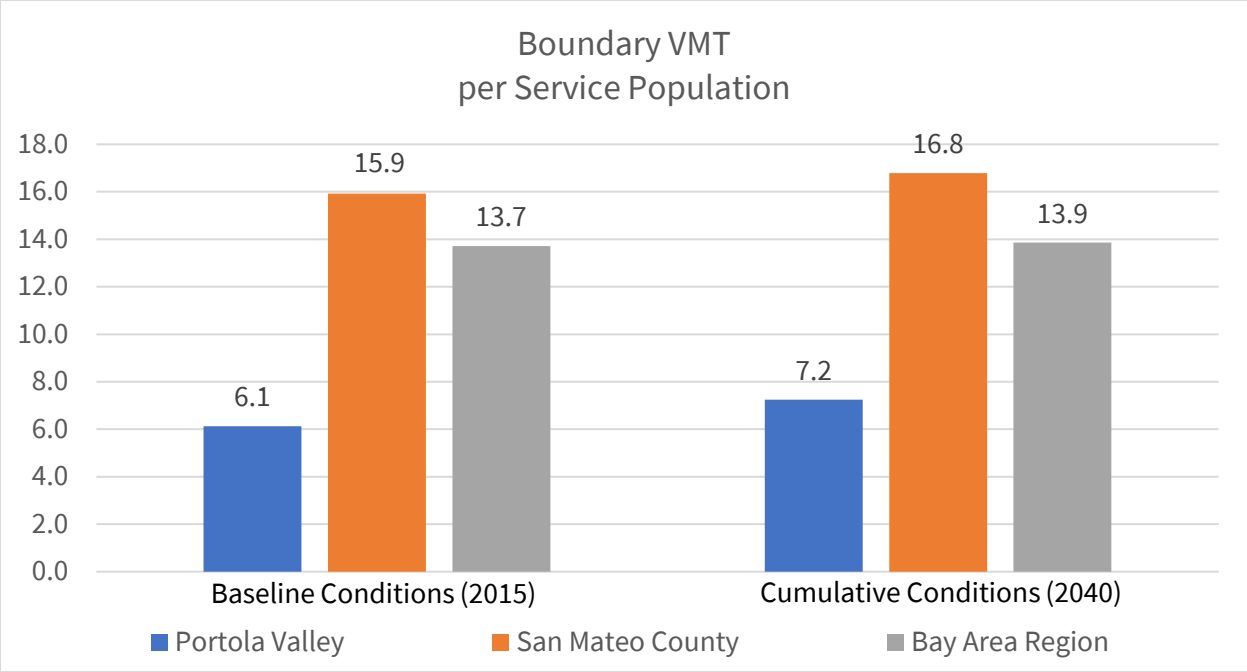
Home-Based VMT per Resident

Jurisdiction	Baseline (Existing) Conditions 2015			Cumulative Conditions 2040			Percent Change[1]
	Home-Based VMT	Residents	Home-Based VMT per Resident	Home-Based VMT	Residents	Home-Based VMT per Resident	
Portola Valley	178,080	4,730	37.6	191,880	4,930	38.9	3.5%
San Mateo County	10,564,320	762,860	13.8	11,907,300	928,940	12.8	-7.2%
Bay Area Region	109,839,580	7,509,900	14.6	140,833,730	9,662,100	14.6	0.0%

Notes: Population and VMT values rounded to nearest 10.

1. Percent change is between 2015 and 2040 home-based VMT per resident VMT metric values and is rounded to the nearest tenth of a percent.

Source: Fehr & Peers, 2021.



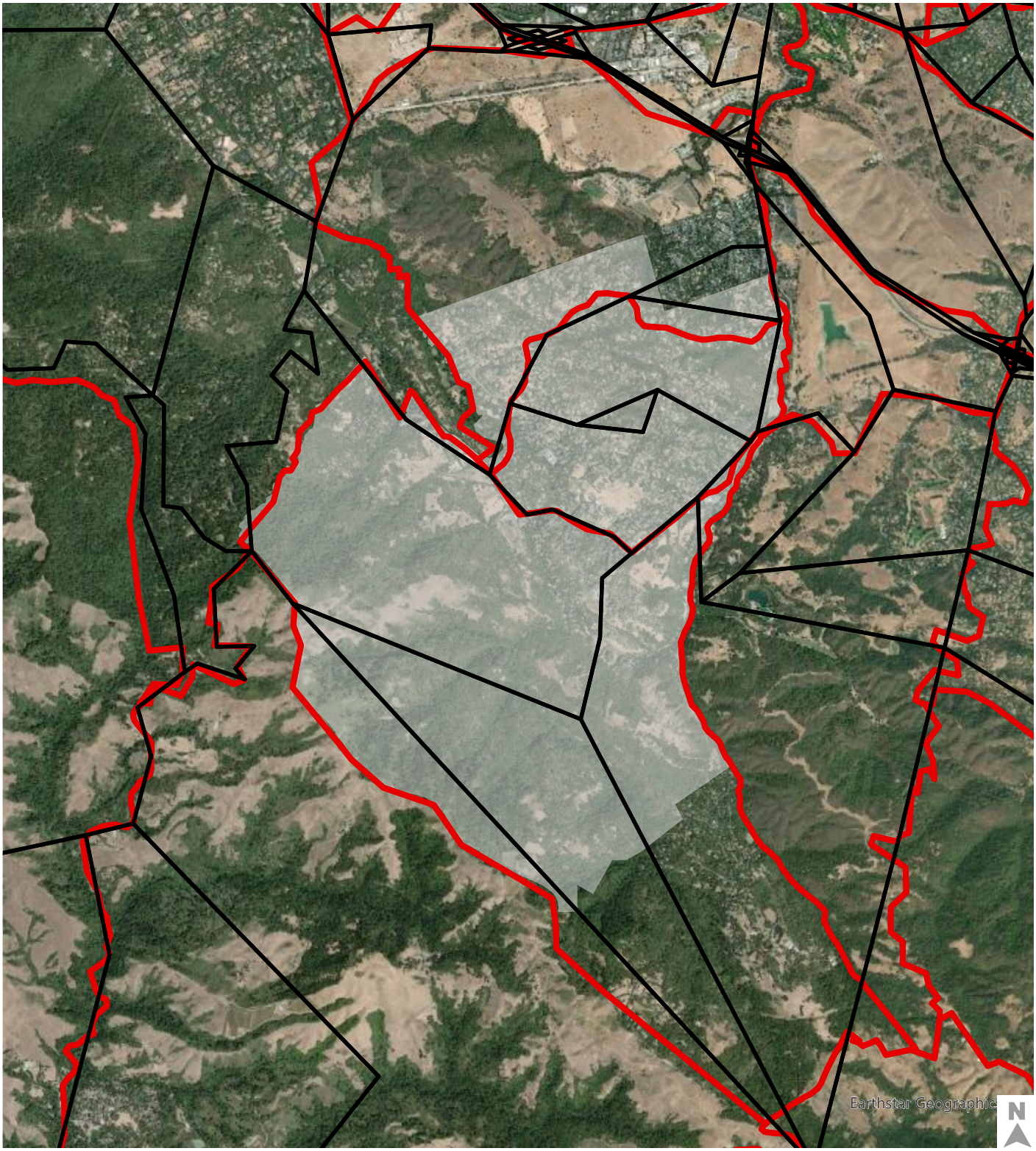
Boundary VMT

Jurisdiction[1]	Baseline (Existing) Conditions 2015			Cumulative Conditions 2040			Percent Change[2]
	Boundary VMT	Service Population	Boundary VMT per Service Population	Boundary VMT	Service Population	Boundary VMT per Service Population	
Portola Valley	36,610	5,970	6.1	47,530	6,560	7.2	29.8%
San Mateo County	18,053,040	1,134,030	15.9	23,619,710	1,407,320	16.8	30.8%
Bay Area Region	154,598,560	11,272,480	13.7	199,295,450	14,379,630	13.9	28.9%

Notes: Population and VMT values rounded to nearest 10.

1. Boundary VMT for local streets (including centroid connectors) and freeways within each jurisdiction.
2. Percent change is between 2015 and 2040 boundary VMT values and is rounded to the nearest tenth of a percent.

Source: Fehr & Peers, 2021.



Portola Valley C/CAG-VTA Travel Forecasting Model Transportation Analysis Zones (TAZs)
Model Roadway Network
Town of Portola Valley Boundary

Attachment B

C/CAG-VTA Travel Model Roadway Network and Transportation Analysis Zones in Portola Valley