Agenda Report

MEETING DATE: **Tuesday, September 27, 2022**

TO: **City Council**

FROM: **COMMUNITY DEVELOPMENT DIRECTOR MERRIAM**
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THROUGH: **CITY MANAGER MENDEZ**

SUBJECT: **RESOLUTION APPROVING VEHICLE MILES TRAVELED POLICY**

STATEMENT OF ISSUES

On September 6, 2022, the Planning Commission of the City of Watsonville adopted Resolution No. 14-22 (PC), recommending the City Council adopt a Vehicle Miles Traveled (VMT) Policy establishing VMT as the appropriate metric for evaluating transportation-related impacts under the California Environmental Quality Act (CEQA).

RECOMMENDED ACTION

Staff recommends that the City Council adopt a Resolution:

1) Approving a VMT Policy inclusive of establishing VMT as the appropriate metric for evaluating transportation-related impacts under CEQA, establishing VMT thresholds of significance, establishing screening criteria, establishing Transportation Demand Management (TDM) strategies, and establishing a VMT Mitigation Banking Program; and
2) Authorizing the Community Development Director to update the VMT thresholds of significance for land use projects and plans; and
3) Finding the approval of a VMT Policy, including the VMT Mitigation Banking Program is not a "project" under CEQA, or if a "project," exempt under the "common sense" exception (14 Cal. Code Regs. § 15061(b)(3)).

BACKGROUND

The California Environmental Quality Act requires public agencies responsible for approval of land use projects and construction of transportation projects to assess their anticipated environmental impacts and to select project alternatives or implement mitigation measures that lessen those impacts where feasible.[1] Known as a "lead agency" under CEQA, a public agency with the discretionary authority to approve or deny a project (or to carry it out

[1] Cal. Pub. Res. Code § 21100 *et seq.* See 14 Cal. Code Regs. §§ 15000 *et seq.* (CEQA Guidelines).

directly) generally must analyze the proposed project's impacts to the physical environment, identify alternatives and mitigation measures, and approve a project alternative and/or mitigation measures that substantially reduce significant impacts, unless those measures are infeasible due to economic, social, or other conditions.[2]

In 2013, state law was changed with the passage Senate Bill (SB) 743 (Steinberg) to update the way transportation impacts are analyzed under CEQA for new land use and transportation projects. Previously, transportation analyses had been based on automobile delay, typically measured as "level of service," or LOS. SB 743 also required the Governor's Office of Planning and Research (OPR) to develop a new metric for evaluating transportation impacts other than LOS to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

In 2018, after five years and over 200 public meetings and other outreach events, OPR released updates to the state's CEQA Guidelines to implement SB 743 by replacing LOS with VMT as the most appropriate measure of a project's transportation impacts; this update was formally certified and adopted by the California Natural Resources Agency and codified as section 15064.3 of the CEQA Guidelines (Attachment 1). Simultaneously, OPR released a Technical Advisory on Evaluating Transportation Impacts in CEQA (Attachment 2). The Technical Advisory includes recommendations for thresholds of significance for evaluating impacts of office, residential and retail developments, and provides screening criteria for identifying the types of projects that can be presumed to have a less than significant impact.

In order to comply with SB 743, the City of Watsonville joined the Cities of Capitola, Santa Cruz, and Scotts Valley and the County of Santa Cruz to collectively approach this new paradigm of measuring transportation impacts for the purposes of conducting environmental review. The Cities and County hired Kimley Horn & Associates, a transportation consulting firm, to assist with the necessary work, including updating baseline traffic conditions, updating and running the county-wide Travel Demand Model, creating screening maps, and producing thresholds of significance for the Santa Cruz region. This work forms the foundation of the City's proposed VMT Policy, and was used by other jurisdictions within our region that have adopted VMT thresholds of significance and SB 743 guidelines in conformance of with section 15064.3 of the CEQA Guidelines and OPR's Technical Advisory.

In preparation for adopting a VMT Policy, staff gave an informational presentation to the Planning Commission in March 2020 (presentation slides, minutes) and maintains a website on the topic (link). On September 6, 2022, staff introduced the proposed VMT Policy for consideration by the Planning Commission. At the conclusion of the public hearing, the Planning Commission adopted Resolution No. 14-22 (PC), recommending the City Council adopt a VMT Policy inclusive of establishing VMT as the appropriate metric for evaluating transportation-related impacts under CEQA, establishing VMT thresholds of significance, establishing screening criteria, establishing TDM strategies, and establishing a VMT Mitigation Banking Program.

[2] Cal. Pub. Res. Code §§ 21100 (state agencies), 21151 (local agencies); Cal. Pub. Res. Code § 21002.1 (project selection and feasibility).

DISCUSSION

SB 743 Intent

The intent of SB 743 is to bring CEQA transportation analyses into closer alignment with other statewide policies regarding greenhouse gases, complete streets, and smart growth. As of July 1, 2020, automobile delay and LOS may no longer be used as the performance measure to determine the transportation impacts of land development projects under CEQA. Using VMT as a performance measure instead of LOS is intended to discourage suburban sprawl, reduce greenhouse gas emissions, and encourage the development of smart growth, complete streets, and multimodal transportation networks. Previously, when using LOS, the environmental impact analysis process could impede infill and other beneficial projects.

In changing the way that transportation impacts are measured under CEQA, SB 743 is removing a hurdle to building new development in a way that allows Californians more options to drive less. This change should help achieve the state's climate commitments, discourage greenfield development, preserve more of the environment, improve health and safety, and boost local economies by prioritizing co-located jobs, services, and housing. On average, it should also reduce the time spent driving to get places and foster more choices for how people travel, which would help to promote business, provide access to opportunity, and improve quality of life in one's community and across the state.

LOS and VMT

"Level of service," or LOS, is a measure of delay or congestion. It is based on a road's volume-to-capacity and measures a driver's perception of convenience. As shown in Table 1, a road that has free-flowing traffic—i.e., no delay—is given a LOS of "A"; whereas, a road where drivers experience a delay of 80 second or more is graded LOS "F." Previously, a project's contribution to a roadway's LOS was treated as an *environmental* impact. And if a project was determined to generate a large number of new trips, that say reduced the LOS of an intersection from "C" to "D," it would often have to *mitigate* this impact by increasing the capacity of the intersection or nearby roadway segments. Increasing a roadway's capacity, however, has the unintended effect of often *inducing* further driving without reducing congestion because of pent up desire for travel known as *latent demand*.[3,4]

[3] "Induced travel" refers to an increase in total vehicle mileage due to roadway improvements that increase vehicle trip frequency and distance, but exclude travel shifted from other times and routes. For more information, see *Generated Traffic: Implications for Transport Planning* by Todd Litman.

[4] "Latent demand" refers to additional trips that would be made if travel conditions improve (i.e., less congested roads, higher design speeds, lower vehicle costs or tolls). For more information, see *Generated Traffic: Implications for Transport Planning* by Todd Litman

TABLE 1 LOS Criteria for Signalized Intersections[1]

LOS	Control Delay (seconds/vehicle)	Travel Speed at % Free-Flow Speed
A	≤ 10	> 85
B	> 10 and ≤ 20	> 67 and ≤ 85
C	> 20 and ≤ 35	> 50 and ≤ 67
D	> 35 and ≤ 55	> 40 and ≤ 50
E	> 55 and ≤ 80	> 30 and ≤ 40
F	> 80	> 30

Notes:
1. Adapted from the 2000 and 2010 *Highway Capacity Manual* for urban streets.

"Vehicle Miles Traveled," or VMT, is a measure of the amount and distance people travel by car. Therefore, switching from LOS to VMT changes the transportation impact analysis from people's perception of convenience to an evaluation of the amount and distance that a project might cause people to drive and the associated greenhouse gas emissions released into the environment.

VMT Policy

Now that the primary consideration in transportation environmental analysis under CEQA must be the amount and distance that the project might cause people to drive, any Environmental Impact Report (EIR) and Negative Declaration circulated for public review are required to consider VMT when determining whether a project may cause a significant impact. Staff has proposed a VMT Policy document setting forth guidelines for how the City shall implement SB 743 in compliance with the updated CEQA Guidelines (Attachment 3).

A description of key provisions are summarized below.

Thresholds of Significance

Lead agencies under CEQA may establish thresholds of significance for the purpose of determining whether a project may cause a significant effect.[5] When adopting or using thresholds of significance, a lead agency may consider recommendations by other public agencies or experts, provided that they are supported by substantial evidence. For land use projects, the Technical Advisory states, "OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold" based on substantial evidence related to the state's greenhouse gas reduction goals.[6,7] The proposed VMT Policy includes establishing the following thresholds of significance based on OPR's recommendations:

[5] 14 Cal. Code Regs. 14 §§ 15064(b)(2), 15064.7(b).
[6] OPR (2018), *OPR Technical Advisory on Evaluating Transportation Impacts in CEQA*, p. 10. For additional information, refer to pages 10-12 in Attachment 2.
[7] In its document *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals* (2019), CARB assessed VMT reduction per capita consistent with its evidence-based modeling scenario that would achieve State climate goals of 40 percent GHG emissions reduction from 1990 levels by 2030 and 80 percent GHG emissions reduction levels from 1990 by 2050. CARB found that overall per-capita vehicle travel would need to be approximately 14.3 percent

- **Residential projects:** 15% below existing county-wide average VMT per capita[8]
- **Office projects:** 15% below existing county-wide average Work VMT per employee[9]
- **Retail projects:** No net increase (based on county-wide VMT)[10]
- **Other customers:** No net increase (based on county-wide VMT for similar land uses)
- **Other employment:** 15% below existing county-wide average Work VMT per employee for similar uses

As shown in Table 2, currently the per employee average VMT for work-related commute trips to office land uses is 7.4 miles. The per capita average VMT for residents is a little greater at 8.9 miles. While VMT thresholds will remain the same, the VMT averages will be updated periodically based on additional available travel data, improved VMT modeling, and changes in driving behavior (e.g., shifting modes from driving far distances or alone to shorter distances or using an alternative mode of transportation, such as walking, bicycling and taking transit).

TABLE 2 VMT for Residential and Office Land Uses

Land Use	VMT	Basis
Residential	8.9 VMT/capita[11]	15% below existing county-wide average VMT per capita
Office	7.4 Work VMT/employee[12]	15% below existing county-wide average Work VMT per employee

If a project is not screened out with the criteria outlined, as further described below, then it is subject to a detailed VMT analysis. Should a project exceed the threshold of significance, a menu of accepted Transportation Demand Management (TDM) strategies are available to reduce the project's VMT to an acceptable level, which are described in detail in Appendix C of Attachment 3. Since TDM measures may feasibly reduce VMT up to 15 percent, there will be times when a project will need additional options for mitigating its VMT impacts. Therefore, the VMT Policy also includes a VMT Mitigation Banking Program to help address the need for additional VMT mitigation.

Screening Criteria

The proposed VMT Policy includes screening criteria for determining whether certain types of projects may be presumed to not result in a significant impact. Projects that meet one or more of these criteria would be "screened out" from having to conduct further detailed VMT

lower than existing levels. Therefore, below this level, a project could be considered low VMT and would, on that metric, be consistent with 2017 Scoping Plan Update assumptions that achieve state climate goals.

[8] OPR recommends using a 15 percent below existing VMT per capita as a threshold of significance, because a residential project measured in this way should not cumulatively exceed the population or number of units specified for Watsonville in the MTP/SCS. Conversely, projects that result in greater-than-planned development above the county-wide threshold would undermine the VMT containment needed to achieve regional targets under SB 375. For additional information, refer to VMT Thresholds of Significance on page 8 in Attachment 3 and Recommended Numeric Thresholds for Residential, Office, and Retail Projects on page 15 in Attachment 2.

[9] Similarly, OPR recommends using a 15 percent below existing VMT per employee as a threshold of significance, because office projects that would generate vehicle travel above this threshold would likely indicate a significant transportation impact. For additional information, refer to VMT Thresholds of Significance on page 8 in Attachment 3 and Recommended Numeric Thresholds for Residential, Office, and Retail Projects on page 16 in Attachment 2.

[10] Because new retail development typically redistributes shopping trips rather than create new trips, basing a threshold of significance on the total change in VMT—i.e., the difference in total VMT in area affected with and without the project—is recommended by OPR as the way to analyze a retail project's transportation impacts. For additional information, refer to Recommended Numeric Thresholds for Residential, Office, and Retail Projects on page 16 in Attachment 2.

[11] Residential VMT specifically applies to all home-based trips as represented in the Travel Demand Model. Refer to Appendix A in Attachment 3 for additional information.

[12] Work VMT specifically applies to commute trips as represented in the Travel Demand Model. Refer to Appendix A in Attachment 3 for additional information.

analysis. The following is a summary of the screening criteria based on project size, maps, transit availability, local-serving retail, and provision of affordable housing. These criteria were developed in accordance with OPR's Technical Advisory on evaluating transportation impacts in CEQA.

- **Small Projects.** If a project generates or attracts less than 110 trips per day, and is consistent with the General Plan and Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), that project may be presumed to cause a less-than-significant transportation impact.

- **Proximity to Transit Stations.** Lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within ½ mile of an existing major transit stop[13] or an existing stop along a high-quality transit corridor[14] will have a less-than-significant impact on VMT. This presumption would not apply, however, if project-specific or location-specific information indicates that the project will still generate significant levels of VMT, as might be the case if the project has a floor area ratio (FAR)[15] of less than 0.75, includes parking in excess of requirements, is inconsistent with local and regional plans (i.e., the General Plan and MTP/SCS), or replaces affordable units with a smaller number of market rate units.

- **Local-Serving Retail.** If a project includes a retail component with a floor area[16] up to 50,000 square feet and is considered local serving, the project would result in a net decrease in VMT and may be presumed to cause a less-than-significant transportation impact. New retail development typically *redistributes* shopping trips rather than *create* new trips. Because of this fact, adding retail opportunities will often shorten the distance people drive to shop and, thereby, reduce VMT. Generally, however, retail development consisting of stores larger than 50,000 square feet are considered regional-serving. Unlike local-serving retail development, regional-serving retail development often leads to the substitution of shorter trips for longer ones, resulting in a net increase in VMT.

- **Affordable Residential Development.** Adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT. Projects that are 100% affordable residential development, or the residential component of a mixed-use development, in infill locations are presumed to have a less than significant impact on transportation under CEQA. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units.

[13] A "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 (Cal. Pub. Res. Code § 21064.3).
[14] 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 (Cal. Pub. Res. Code § 21155).
[15] "Floor area ratio," or FAR, means the total area of a building on a lot divided by the total area of the lot (Watsonville 2005 General Plan Glossary, p. 210; WMC § 14-18.362).
[16] "Floor area" is defined as the total gross footage of a building or structure, but not including any area within the building used for required off-street parking (Watsonville 2005 General Plan Glossary, p. 210; WMC § 14-18.358).

- **Local Essential Service.** Similar to local-serving retail, the addition of necessary local in-person services will reduce VMT given that trips to these locations will be made irrespective of distance given their inelastic, non-discretionary nature. The following types of projects are presumed to cause a less-than-significant transportation impact: day care centers, public K-12 schools, police or fire facilities, medical/dental offices, assisted living/memory care facilities, and government offices.

- **Map-Based Screening (Development in Low-VMT Areas).** Maps showing existing VMT values within a city are referred to as heat maps. These maps display colors representing the level of variation from a local or regional VMT reference average for a jurisdiction. The purpose of these heat maps is to determine if a project could be located in an area with low existing VMT.
  OPR's Technical Advisory indicates that residential and office projects in areas of low VMT, which are compatible with surrounding development in terms of density, mix of uses, and transit accessibility, will exhibit similarly low VMT. Therefore, these projects are presumed to have a less-than-significant VMT impact. OPR's Technical Advisory also recommends using regional as opposed to citywide geographies for reviewing office development, as employees often commute from outside the city boundary to their jobs. Under the recommended approach for map-based screening, projects located in low-VMT areas (zones with VMT that is at least 15% below the regional average VMT) would be presumed to have a less-than-significant transportation impact under CEQA.

The OPR Technical Advisory includes further detailed discussion on each of these screening criteria that are presumed to have a less-than-significant transportation impact (Attachment 2).

VMT Mitigation Banking Program

The proposed VMT Policy includes a VMT Mitigation Banking Program to provide an additional VMT mitigation option. A mitigation bank creates a monetary value for VMT reduction such that a developer could purchase VMT reduction credits, which would allow a project's transportation impacts to be reduced below applicable VMT thresholds. The underlying VMT Banking Projects identified in the proposed Policy may be either regionally or locally beneficial to the area in which the project is located. This option is needed because TDM measures often have limited effectiveness in suburban settings like Watsonville, which has fairly low-density development patterns and limited transit service.

The City will set up a separate account for the purpose of tracking the collection of payments into the VMT Mitigation Banking Program. This account will be monitored by the City Engineer to ensure purchased VMT credits are used for constructing appropriate projects to achieve the intended VMT reduction. As part of the annual Capital Improvement Program (CIP) reporting to Planning Commission and City Council, the City Engineer shall include a progress report on any funds accumulated in the VMT Mitigation Banking Program and expenditures on constructing or improving active transportation facilities providing additional VMT-reducing investments that would not have occurred if this funding

were not available. The VMT Banking Projects identified in the proposed VMT Policy will also be periodically updated.

Planning Commission Comments

During the September 6th Planning Commission meeting, the Commissioners all reviewed the proposed VMT Policy and provided comments. Of particular note where comments from Commissioner Rojas and Kammer.

Commissioner Rojas inquired about the VMT Mitigation Banking Program and posed a hypothetical example to understand whether a developer would be charged a fee if the transportation impact analysis for a new project was determined to be above the relevant VMT threshold. In response, staff clarified that the VMT Mitigation Banking Program provided another *option* for mitigating transportation-related impacts. A developer may choose to purchase VMT reduction credits for mitigating the project's VMT impact, which in turn would serve as a new funding source for building new trails identified in the City's Trails & Bicycle Master Plan (2012).

In responding to Commissioner Rojas' follow-up question about whether or not a developer agrees to pay a fee for mitigating transportation-related impacts, staff noted that not doing so and going the EIR route would be more expensive, take more time, and may have other CEQA related implications (e.g., having to make findings of significant and unavoidable impact).

Commissioner Kammer recommended that Planning Commissioners and City Council members review the proposed trails and bicycle network map in the Trails & Bicycle Master Plan.[17] Commissioner Kammer further noted that she supports the establishment of a VMT Mitigation Banking Program that could fund trail projects, which would both provide a better connected trail network and help meet the City's climate goals.

Public Comments

No public comments were received at the Planning Commission hearing relating to the proposed VMT Policy.

Subsequent Updates

The City may update the VMT thresholds and methodology on an as needed basis to reflect changes in CEQA requirements, new methodological refinements, or other process improvements moving forward. As such, the City should periodically review these SB 743 implementation guidelines and project developers and transportation consultants should contact the City to ensure that they are applying current City requirements for evaluating VMT impacts under CEQA.

Environmental Review

The proposed VMT Policy, including the VMT Mitigation Banking Program, is consistent with state law, in that it would allow the City to implement SB 743 in accordance with OPR's

[17] See Figure 3-1: Greater Watsonville Trail Master Plan on page 39 of the City's *Trails & Bicycle Master Plan for the Watsonville Scenic Trail Network* (2012), which is available on the City's website at: https://www.cityofwatsonville.org/774/Urban-Greening-Plan.

technical guidelines on evaluating transportation impacts in CEQA. The adoption of a VMT Policy is not a "project" as defined in section 15378 of the CEQA Guidelines and Public Resources Code section 21065, as this is not a "project" that may cause a direct, or reasonably foreseeable indirect, physical change in the environment. The VMT Policy is an administrative activity of the City, providing guidance to property owners, project developers, applicants and proponents for determining the significance of transportation impacts of land use projects. The VMT Policy would not approve any specific development and would therefore not lead to any particular physical change to the environment. Moreover, even if found to be a "project," the VMT Policy is exempt under the "common sense" exception (14 Cal. Code Regs. § 15061(b)(3)) because it can be seen with certainty that there is no possibility that the action of adopting the Policy would have a significant effect on the environment.

CONCLUSION

SB 743 changed the way that transportation impacts are evaluated under CEQA. The Planning Commission adopted Resolution No. 15-22 (PC) recommending the City Council adopt the proposed VMT Policy for analyzing VMT in accordance with SB 743 and CEQA. The proposed VMT Policy provides guidelines for how a land use or transportation project would be evaluated in accordance with this state law and OPR's Technical Advisory on evaluating transportation impacts. The proposed VMT Policy removes automobile delay as a significant impact on the environment and replaces it with a VMT threshold for all CEQA environmental determinations.

STRATEGIC PLAN

The purpose of the City of Watsonville's 2021-2023 Strategic Plan is to help the City prioritize its efforts, allocating both fiscal and human resources to achieve a shared vision and goal. The 2021-23 Strategic Plan identifies seven goals, concerning housing, fiscal health, infrastructure and environment, economic development, community engagement and well-being, public safety, and efficient and well-performing government.

Approval of the VMT Policy is consistent with the City Council's goal for housing, infrastructure and environment, and economic development, in that the VMT Policy would remove barriers to affordable housing development and encourage infill development to increase the number of jobs, services, and housing in close proximity to one another.

FINANCIAL IMPACT

The VMT Policy would have no direct fiscal impact on the City. Indirect costs associated with staff time in coordinating the environmental review for land use projects would be covered under a reimbursement agreement with the developer. Indirect costs with administering the VMT Mitigation Banking Program would be borne by the Public Works and Utilities Department, as with any efforts involving infrastructure investments, such as trail improvement projects and other active transportation projects.

ALTERNATIVES

The City Council may choose to not adopt the proposed VMT Policy. However, SB 743 would still obligate the City to evaluate transportation-related impacts under CEQA using VMT as the appropriate metric instead of LOS. The City would also not have established a VMT Mitigation Banking Program to provide an additional option for projects needing to reduce VMT impacts below applicable thresholds.

ATTACHMENTS

1. Section 15064.3 of the CEQA Guidelines
2. Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, December 2018)
3. Analyzing VMT for CEQA Compliance: SB 743 Implementation Guidelines for the City of Watsonville (City of Watsonville, September 27, 2022)
4. Resolution No. 14-22 (PC)

An electronic copy of the VMT Policy will be available on the City's website at: https://www.cityofwatsonville.org/DocumentCenter/Index/157

REFERENCES

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Note: Authority cited: Sections 21083, 21083.05, Public Resources Code. Reference: Sections 21003, 21065, 21068, 21080, 21082, 21082.1, 21082.2, 21083, 21083.05, and 21100, Public Resources Code; *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68; *San Joaquin Raptor/Wildlife Center v. County of Stanislaus* (1996) 42 Cal.App.4th 608; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359; *Laurel Heights Improvement Assn. v. Regents of the University of California* (1993) 6 Cal.4th 1112; *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal. App. 4th 1099; and *Rominger v. County of Colusa* (2014) 229 Cal.App.4th 690.

SECTION 15064.3. DETERMINING THE SIGNIFICANCE OF TRANSPORTATION IMPACTS

(a) Purpose.

This section describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.

(b) Criteria for Analyzing Transportation Impacts.

(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.

(c) Applicability. The provisions of this section shall apply prospectively as described in section 15007. A lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide.

Note: Authority cited: Sections 21083 and 21099, Public Resources Code. Reference: Sections 21099 and 21100, Public Resources Code; Cleveland National Forest Foundation v. San Diego Association of Governments (2017) 17 Cal.App.5th 413; Ukiah Citizens for Safety First v. City of Ukiah (2016) 248 Cal.App.4th 256; California Clean Energy Committee v. City of Woodland (2014) 225 Cal. App. 4th 173.

15064.4. DETERMINING THE SIGNIFICANCE OF IMPACTS FROM GREENHOUSE GAS EMISSIONS

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

(1) Quantify greenhouse gas emissions resulting from a project; and/or

(2) Rely on a qualitative analysis or performance based standards.

(b) In determining the significance of a project's greenhouse gas emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. A lead agency should consider the following factors, among others, when determining the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (see, e.g., section 15183.5(b)). Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

(c) A lead agency may use a model or methodology to estimate greenhouse gas emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection of a

TECHNICAL ADVISORY

ON EVALUATING TRANSPORTATION IMPACTS IN CEQA

December 2018

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A. Introduction

This technical advisory is one in a series of advisories provided by the Governor's Office of Planning and Research (OPR) as a service to professional planners, land use officials, and CEQA practitioners. OPR issues technical assistance on issues that broadly affect the practice of land use planning and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). (Gov. Code, § 65040, subds. (g), (l), (m).) The purpose of this document is to provide advice and recommendations, which agencies and other entities may use at their discretion. This document does not alter lead agency discretion in preparing environmental documents subject to CEQA. This document should not be construed as legal advice.

Senate Bill 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. As one appellate court recently explained: "During the last 10 years, the Legislature has charted a course of long-term sustainability based on denser infill development, reduced reliance on individual vehicles and improved mass transit, all with the goal of reducing greenhouse gas emissions. Section 21099 is part of that strategy . . . ." (*Covina Residents for Responsible Development v. City of Covina* (2018) 21 Cal.App.5th 712, 729.) Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (*Id.*, subd. (b)(1); see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, in developing the criteria, OPR has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).)

This advisory contains technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. Again, OPR provides this Technical Advisory as a resource for the public to use at their discretion. OPR is not enforcing or attempting to enforce any part of the recommendations contained herein. (Gov. Code, § 65035 ["It is not the intent of the Legislature to vest in the Office of Planning and Research any direct operating or regulatory powers over land use, public works, or other state, regional, or local projects or programs."].)

This December 2018 technical advisory is an update to the advisory it published in April 2018. OPR will continue to monitor implementation of these new provisions and may update or supplement this advisory in response to new information and advancements in modeling and methods.

B. Background

VMT and Greenhouse Gas Emissions Reduction. Senate Bill 32 (Pavley, 2016) requires California to reduce greenhouse gas (GHG) emissions 40 percent below 1990 levels by 2030, and Executive Order B-16-12 provides a target of 80 percent below 1990 emissions levels for the transportation sector by 2050. The transportation sector has three major means of reducing GHG emissions: increasing vehicle efficiency, reducing fuel carbon content, and reducing the amount of vehicle travel. The California Air Resources Board (CARB) has provided a path forward for achieving these emissions reductions from the transportation sector in its 2016 Mobile Source Strategy. CARB determined that it will not be possible to achieve the State's 2030 and post-2030 emissions goals without reducing VMT growth. Further, in its 2018 Progress Report on California's Sustainable Communities and Climate Protection Act, CARB found that despite the State meeting its 2020 climate goals, "emissions from statewide passenger vehicle travel per capita [have been] increasing and going in the wrong direction," and "California cannot meet its [long-term] climate goals without curbing growth in single-occupancy vehicle activity."[1] CARB also found that "[w]ith emissions from the transportation sector continuing to rise despite increases in fuel efficiency and decreases in the carbon content of fuel, California will not achieve the necessary greenhouse gas emissions reductions to meet mandates for 2030 and beyond without significant changes to how communities and transportation systems are planned, funded, and built."[2]

Thus, to achieve the State's long-term climate goals, California needs to reduce per capita VMT. This can occur under CEQA through VMT mitigation. Half of California's GHG emissions come from the transportation sector[3], therefore, reducing VMT is an effective climate strategy, which can also result in co-benefits.[4] Furthermore, without early VMT mitigation, the state may follow a path that meets GHG targets in the early years, but finds itself poorly positioned to meet more stringent targets later. For example, in absence of VMT analysis and mitigation in CEQA, lead agencies might rely upon verifiable offsets for GHG mitigation, ignoring the longer-term climate change impacts resulting from land use development and infrastructure investment decisions. As stated in CARB's 2017 Scoping Plan:

> "California's future climate strategy will require increased focus on integrated land use planning to support livable, transit-connected communities, and conservation of agricultural and other lands. Accommodating population and economic growth through travel- and energy-efficient land use provides GHG-efficient growth, reducing GHGs from both transportation and building energy use. GHGs can be further reduced at the project level through implementing energy-efficient construction and travel demand management approaches."[5] (*Id.* at p. 102.)

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[1] California Air Resources Board (Nov. 2018) *2018 Progress Report on California's Sustainable Communities and Climate Protection Act*, pp. 4, 5, available at https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf.
[2] *Id.*, p. 28.
[3] See https://ca50million.ca.gov/transportation/
[4] Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*.
[5] California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 102, available at https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

In light of this, the 2017 Scoping Plan describes and quantifies VMT reductions needed to achieve our long-term GHG emissions reduction goals, and specifically points to the need for statewide deployment of the VMT metric in CEQA:

> "Employing VMT as the metric of transportation impact statewide will help to ensure GHG reductions planned under SB 375 will be achieved through on-the-ground development, and will also play an important role in creating the additional GHG reductions needed beyond SB 375 across the State. Implementation of this change will rely, in part, on local land use decisions to reduce GHG emissions associated with the transportation sector, both at the project level, and in long-term plans (including general plans, climate action plans, specific plans, and transportation plans) and supporting sustainable community strategies developed under SB 375."[6]

VMT and Other Impacts to Health and Environment. VMT mitigation also creates substantial benefits (sometimes characterized as "co-benefits" to GHG reduction) in both in the near-term and the long-term. Beyond GHG emissions, increases in VMT also impact human health and the natural environment. Human health is impacted as increases in vehicle travel lead to more vehicle crashes, poorer air quality, increases in chronic diseases associated with reduced physical activity, and worse mental health. Increases in vehicle travel also negatively affect other road users, including pedestrians, cyclists, other motorists, and many transit users. The natural environment is impacted as higher VMT leads to more collisions with wildlife and fragments habitat. Additionally, development that leads to more vehicle travel also tends to consume more energy, water, and open space (including farmland and sensitive habitat). This increase in impermeable surfaces raises the flood risk and pollutant transport into waterways.[7]

VMT and Economic Growth. While it was previously believed that VMT growth was a necessary component of economic growth, data from the past two decades shows that economic growth is possible without a concomitant increase in VMT. (Figure 1.) Recent research shows that requiring development projects to mitigate LOS may actually reduce accessibility to destinations and impede economic growth.[8,9]

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[6] *Id.* at p. 76.

[7] Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*, available at https://ncst.ucdavis.edu/wp-content/uploads/2017/03/NCST-VMT-Co-Benefits-White-Paper_Fang_March-2017.pdf.

[8] Haynes et al. (Sept. 2015) *Congested Development: A Study of Traffic Delays, Access, and Economic Activity in Metropolitan Los Angeles*, available at http://www.its.ucla.edu/wp-content/uploads/sites/6/2015/11/Haynes_Congested-Development_1-Oct-2015_final.pdf.

[9] Osman et al. (Mar. 2016) *Not So Fast: A Study of Traffic Delays, Access, and Economic Activity in the San Francisco Bay Area*, available at http://www.its.ucla.edu/wp-content/uploads/sites/6/2016/08/Taylor-Not-so-Fast-04-01-2016_final.pdf.

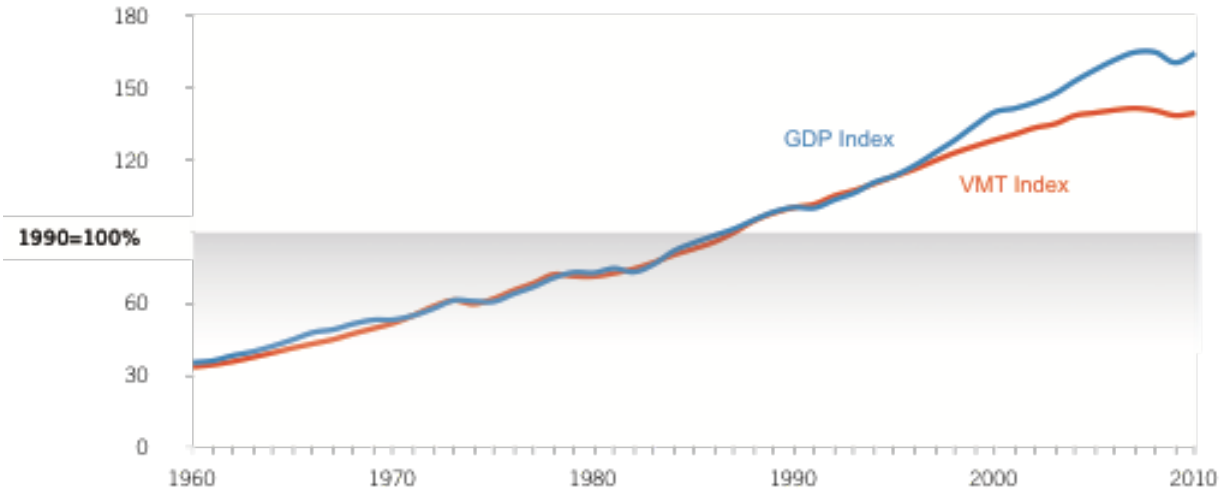

Figure 1. Kooshian and Winkelman (2011) *VMT and Gross Domestic Product (GDP), 1960-2010*.

C. Technical Considerations in Assessing Vehicle Miles Traveled

Many practitioners are familiar with accounting for VMT in connection with long-range planning, or as part of the CEQA analysis of a project's greenhouse gas emissions or energy impacts. This document provides technical information on how to assess VMT as part of a transportation impacts analysis under CEQA. Appendix 1 provides a description of which VMT to count and options on how to count it. Appendix 2 provides information on induced travel resulting from roadway capacity projects, including the mechanisms giving rise to induced travel, the research quantifying it, and information on additional approaches for assessing it.

1. Recommendations Regarding Methodology

Proposed Section 15064.3 explains that a "lead agency may use models to estimate a project's vehicle miles traveled . . . ." CEQA generally defers to lead agencies on the choice of methodology to analyze impacts. (*Santa Monica Baykeeper v. City of Malibu* (2011) 193 Cal.App.4th 1538, 1546; see *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 409 ["the issue is not whether the studies are irrefutable or whether they could have been better" … rather, the "relevant issue is only whether the studies are sufficiently credible to be considered" as part of the lead agency's overall evaluation].) This section provides suggestions to lead agencies regarding methodologies to analyze VMT associated with a project.

Vehicle Types. Proposed Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT). For an apples-to-apples

comparison, vehicle types considered should be consistent across project assessment, significance thresholds, and mitigation.

Residential and Office Projects. Tour- and trip-based approaches[10] offer the best methods for assessing VMT from residential/office projects and for comparing those assessments to VMT thresholds. These approaches also offer the most straightforward methods for assessing VMT reductions from mitigation measures for residential/office projects. When available, tour-based assessment is ideal because it captures travel behavior more comprehensively. But where tour-based tools or data are not available for all components of an analysis, a trip-based assessment of VMT serves as a reasonable proxy.

Models and methodologies used to calculate thresholds, estimate project VMT, and estimate VMT reduction due to mitigation should be comparable. For example:

- A tour-based assessment of project VMT should be compared to a tour-based threshold, or a trip-based assessment to a trip-based VMT threshold.
- Where a travel demand model is used to determine thresholds, the same model should also be used to provide trip lengths as part of assessing project VMT.
- Where only trip-based estimates of VMT reduction from mitigation are available, a trip-based threshold should be used, and project VMT should be assessed in a trip-based manner.

When a trip-based method is used to analyze a residential project, the focus can be on home-based trips. Similarly, when a trip-based method is used to analyze an office project, the focus can be on home-based work trips.

When tour-based models are used to analyze an office project, either employee work tour VMT or VMT from all employee tours may be attributed to the project. This is because workplace location influences overall travel. For consistency, the significance threshold should be based on the same metric: either employee work tour VMT or VMT from all employee tours.

For office projects that feature a customer component, such as a government office that serves the public, a lead agency can analyze the customer VMT component of the project using the methodology for retail development (see below).

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.

[10] See Appendix 1, *Considerations About Which VMT to Count,* for a description of these approaches.
[11] See Appendix 1, *Considerations About Which VMT to Count, "*Assessing Change in Total VMT" section, for a description of this approach.

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 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.

Combining land uses for VMT analysis is not recommended. Different land uses generate different amounts of VMT, so the outcome of such an analysis could depend more on the mix of uses than on their travel efficiency. As a result, it could be difficult or impossible for a lead agency to connect a significance threshold with an environmental policy objective (such as a target set by law), inhibiting the CEQA imperative of identifying a project's significant impacts and providing mitigation where feasible. Combining land uses for a VMT analysis could streamline certain mixes of uses in a manner disconnected from policy objectives or environmental outcomes. Instead, OPR recommends analyzing each use separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold. Recommendations for methods of analysis and thresholds are provided below. In the analysis of each use, a mixed-use project should take credit for internal capture.

Any project that includes in its geographic bounds a portion of an existing or planned Transit Priority Area (i.e., the project is within a ½ mile of an existing or planned major transit stop or an existing stop along a high quality transit corridor) may employ VMT as its primary metric of transportation impact for the entire project. (See Pub. Resources Code, § 21099, subds. (a)(7), (b)(1).)

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).) When using an absolute VMT metric, i.e., total VMT (as recommended below for retail and transportation projects), analyzing the combined impacts for a cumulative impacts analysis may be appropriate. However, metrics such as VMT per capita or VMT per employee, i.e., metrics framed in terms of efficiency (as recommended below for use on residential and office projects), cannot be summed because they employ a denominator. A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance. (See *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 219, 223; CEQA Guidelines, § 15064, subd. (h)(3).)

D. General Principles to Guide Consideration of VMT

SB 743 directs OPR to establish specific "criteria for determining the significance of transportation impacts of projects[.]" (Pub. Resources Code, § 21099, subd. (b)(1).) In establishing this criterion, OPR was guided by the general principles contained within CEQA, the CEQA Guidelines, and applicable case law.

To assist in the determination of significance, many lead agencies rely on "thresholds of significance." The CEQA Guidelines define a "threshold of significance" to mean "an identifiable **quantitative, qualitative[12] or performance level** of a particular environmental effect, non-compliance with which means the effect will ***normally*** be determined to be significant by the agency and compliance with which means the effect ***normally*** will be determined to be less than significant." (CEQA Guidelines, § 15064.7, subd. (a) (emphasis added).) Lead agencies have discretion to develop and adopt their own, or rely on thresholds recommended by other agencies, "provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." (*Id*. at subd. (c); *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1068.) Substantial evidence means "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached." (*Id*. at § 15384 (emphasis added); *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1108-1109.)

Additionally, the analysis leading to the determination of significance need not be perfect. The CEQA Guidelines describe the standard for adequacy of environmental analyses:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to **make a decision which intelligently takes account of environmental consequences**. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is **reasonably feasible**. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The **courts have looked not for perfection** but for **adequacy**, **completeness**, and a **good faith effort** at full disclosure.

(CEQA Guidelines, § 15151 (emphasis added).)

These general principles guide OPR's recommendations regarding thresholds of significance for VMT set forth below.

[12] Generally, qualitative analyses should only be conducted when methods do not exist for undertaking a quantitative analysis.

E. Recommendations Regarding Significance Thresholds

As noted above, lead agencies have the discretion to set or apply their own thresholds of significance. (*Center for Biological Diversity v. California Dept. of Fish & Wildlife* (2015) 62 Cal.4th 204, 218-223 [lead agency had discretion to use compliance with AB 32's emissions goals as a significance threshold]; *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th at p. 1068.) However, Section 21099 of the Public Resources Code states that the criteria for determining the significance of transportation impacts must promote: (1) reduction of greenhouse gas emissions; (2) development of multimodal transportation networks; and (3) a diversity of land uses. It further directed OPR to prepare and develop criteria for determining significance. (Pub. Resources Code, § 21099, subd. (b)(1).) This section provides OPR's suggested thresholds, as well as considerations for lead agencies that choose to adopt their own

The VMT metric can support the three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, ***and*** a diversity of land uses." (Pub. Resources Code, § 21099, subd. (b)(1), emphasis added.) However, in order for it to promote and support all three, lead agencies should select a significance threshold that aligns with state law on all three. State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development, but does not mandate a particular depth of implementation that could translate into a particular threshold of significance. Meanwhile, the State has clear quantitative targets for GHG emissions reduction set forth in law and based on scientific consensus, and the depth of VMT reduction needed to achieve those targets has been quantified. Tying VMT thresholds to GHG reduction also supports the two other statutory goals. Therefore, to ensure adequate analysis of transportation impacts, OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so.

Various legislative mandates and state policies establish quantitative greenhouse gas emissions reduction targets. For example:

- Assembly Bill 32 (2006) requires statewide GHG emissions reductions to 1990 levels by 2020 and continued reductions beyond 2020.

- Senate Bill 32 (2016) requires at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.

- Pursuant to Senate Bill 375 (2008), the California Air Resources Board GHG emissions reduction targets for metropolitan planning organizations (MPOs) to achieve based on land use patterns and transportation systems specified in Regional Transportation Plans and Sustainable Community Strategies (RTP/SCS). Current targets for the State's largest MPOs call for a 19 percent reduction in GHG emissions from cars and light trucks from 2005 emissions levels by 2035.

- Executive Order B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.

- Executive Order S-3-05 (2005) sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050.

- Executive Order B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation.

- Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, "The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal."

- Senate Bill 391 requires the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050.

- The *California Air Resources Board Mobile Source Strategy* (2016) describes California's strategy for containing air pollutant emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.

- The California Air Resources Board's *2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 Greenhouse Gas Target* describes California's strategy for containing GHG emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.

Considering these various targets, the California Supreme Court observed:

> Meeting our statewide reduction goals does not preclude all new development. Rather, the Scoping Plan … assumes continued growth and depends on increased efficiency and conservation in land use and transportation from all Californians.

(*Center for Biological Diversity v. California Dept. of Fish & Wildlife*, *supra*, 62 Cal.4th at p. 220.) Indeed, the Court noted that when a lead agency uses consistency with climate goals as a way to determine significance, particularly for long-term projects, the lead agency must consider the project's effect on meeting long-term reduction goals. (*Ibid*.) And more recently, the Supreme Court stated that "CEQA requires public agencies . . . to ensure that such analysis stay in step with evolving scientific knowledge and state regulatory schemes." (*Cleveland National Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497, 504.)

Meeting the targets described above will require substantial reductions in existing VMT per capita to curb GHG emissions and other pollutants. But targets for overall GHG emissions reduction do not translate directly into VMT thresholds for individual projects for many reasons, including:

- Some, but not all, of the emissions reductions needed to achieve those targets could be accomplished by other measures, including increased vehicle efficiency and decreased fuel carbon content. The CARB's *First Update to the Climate Change Scoping Plan* explains:

"Achieving California's long-term criteria pollutant and GHG emissions goals will require four strategies to be employed: (1) improve vehicle efficiency and develop zero emission technologies, (2) reduce the carbon content of fuels and provide market support to get these lower-carbon fuels into the marketplace, (3) **plan and build communities to reduce vehicular GHG emissions and provide more transportation options, and (4) improve the efficiency and throughput of existing transportation systems.**"[13] CARB's *2018 Progress Report on California's Sustainable Communities and Climate Protection Act* states on page 28 that "California cannot meet its climate goals without curbing growth in single-occupancy vehicle activity." In other words, vehicle efficiency and better fuels are necessary, but insufficient, to address the GHG emissions from the transportation system. Land use patterns and transportation options also will need to change to support reductions in vehicle travel/VMT.

- New land use projects alone will not sufficiently reduce per-capita VMT to achieve those targets, nor are they expected to be the sole source of VMT reduction.

- Interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT.

- Because location within the region is the most important determinant of VMT, in some cases, streamlining CEQA review of projects in travel efficient locations may be the most effective means of reducing VMT.

- When assessing climate impacts of some types of land use projects, use of an efficiency metric (e.g., per capita, per employee) may provide a better measure of impact than an absolute numeric threshold. (*Center for Biological Diversity*, *supra*.)

Public Resources Code section 21099 directs OPR to propose criteria for determining the significance of transportation impacts. In this Technical Advisory, OPR provides its recommendations to assist lead agencies in selecting a significance threshold that may be appropriate for their particular projects. While OPR's Technical Advisory is not binding on public agencies, CEQA allows lead agencies to "consider thresholds of significance . . . recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence." (CEQA Guidelines, § 15064.7, subd. (c).) Based on OPR's extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State's long-term climate goals, **OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold**.

Fifteen percent reductions in VMT are achievable at the project level in a variety of place types.[14]

Moreover, a fifteen percent reduction is consistent with SB 743's direction to OPR to select a threshold that will help the State achieve its climate goals. As described above, section 21099 states that the

[13] California Air Resources Board (May 2014) *First Update to the Climate Change Scoping Plan*, p. 46 (emphasis added).
[14] CAPCOA (2010) *Quantifying Greenhouse Gas Mitigation Measures*, p. 55, available at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

criteria for determining significance must "promote the reduction in greenhouse gas emissions." In its document *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*[15], CARB assesses VMT reduction per capita consistent with its evidence-based modeling scenario that would achieve State climate goals of 40 percent GHG emissions reduction from 1990 levels by 2030 and 80 percent GHG emissions reduction levels from 1990 by 2050. Applying California Department of Finance population forecasts, CARB finds per-capita light-duty vehicle travel would need to be approximately 16.8 percent lower than existing, and overall per-capita vehicle travel would need to be approximately 14.3 percent lower than existing levels under that scenario. Below these levels, a project could be considered low VMT and would, on that metric, be consistent with 2017 Scoping Plan Update assumptions that achieve climate state climate goals.

CARB finds per capita vehicle travel would need to be kept below what today's policies and plans would achieve.

CARB's assessment is based on data in the 2017 Scoping Plan Update and 2016 Mobile Source Strategy. In those documents, CARB previously examined the relationship between VMT and the state's GHG emissions reduction targets. The Scoping Plan finds:

> "While the State can do more to accelerate and incentivize these local decisions, local actions that reduce VMT are also necessary to meet transportation sector-specific goals and achieve the 2030 target under SB 32. Through developing the Scoping Plan, CARB staff is more convinced than ever that, in addition to achieving GHG reductions from cleaner fuels and vehicles, California must also reduce VMT. Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward needed reductions, but alone will not provide the VMT growth reductions needed; there is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals."[16]

Note that, at present, consistency with RTP/SCSs does not necessarily lead to a less-than-significant VMT impact.[17] As the Final 2017 Scoping Plan Update states,

> VMT reductions are necessary to achieve the 2030 target and must be part of any strategy evaluated in this Plan. Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward this goal, but alone will not provide all of the VMT growth reductions that will be needed. There is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals."[18]

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[15] California Air Resources Board (Jan. 2019) *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*, available at https://ww2.arb.ca.gov/resources/documents/carb-2017-scoping-plan-identified-vmt-reductions-and-relationship-state-climate.

[16] California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 101.

[17] California Air Resources Board (Feb. 2018) *Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets*, Figure 3, p. 35, available at https://www.arb.ca.gov/cc/sb375/sb375_target_update_final_staff_report_feb2018.pdf.

[18] California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 75.

Also, in order to capture the full effects of induced travel resulting from roadway capacity projects, an RTP/SCS would need to include an assessment of land use effects of those projects, and the effects of those land uses on VMT. (See section titled "*Estimating VMT Impacts from Transportation Projects"* below.) RTP/SCSs typically model VMT using a collaboratively-developed land use "vision" for the region's land use, rather than studying the effects on land use of the proposed transportation investments.

In summary, achieving 15 percent lower per capita (residential) or per employee (office) VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State's emissions goals.

1. Screening Thresholds for Land Use Projects

Many agencies use "screening thresholds" to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. (See e.g., CEQA Guidelines, §§ 15063(c)(3)(C), 15128, and Appendix G.) As explained below, this technical advisory suggests that lead agencies may screen out VMT impacts using project size, maps, transit availability, and provision of affordable housing.

Screening Threshold for Small Projects

Many local agencies have developed screening thresholds to indicate when detailed analysis is needed. Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day[19] generally may be assumed to cause a less-than-significant transportation impact.

Map-Based Screening for Residential and Office Projects

Residential and office projects that locate in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Maps created with VMT data, for example from a travel survey or a travel demand model, can illustrate areas that are

[19] CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

currently below threshold VMT (see recommendations below). Because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.

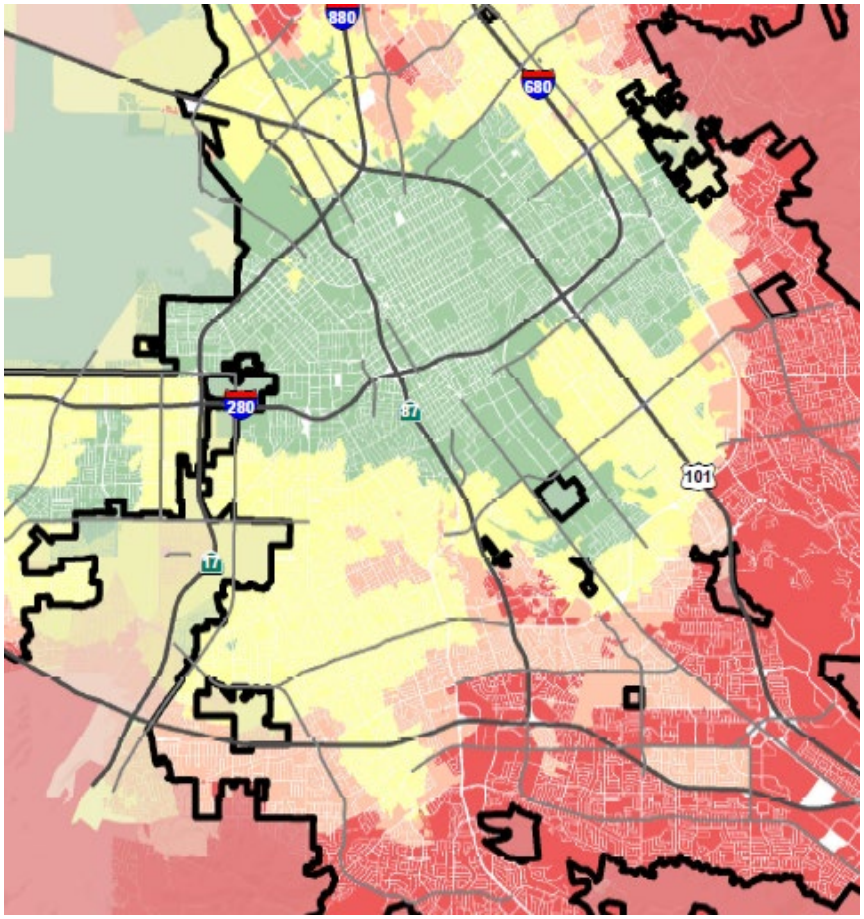


Figure 2. Example map of household VMT that could be used to delineate areas eligible to receive streamlining for VMT analysis. (Source: City of San José, Department of Transportation, draft output of City Transportation Model.)

Presumption of Less Than Significant Impact Near Transit Stations

Proposed CEQA Guideline Section 15064.3, subdivision (b)(1), states that lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within ½ mile of an existing major transit stop[20] or an existing stop

[20] 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.").

along a high quality transit corridor[21] will have a less-than-significant impact on VMT. 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:

- Has a Floor Area Ratio (FAR) of less than 0.75
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking)
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization)
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units

A project or plan near transit which replaces affordable residential units[22] with a smaller number of moderate- or high-income residential units may increase overall VMT because the increase in VMT of displaced residents could overwhelm the improvements in travel efficiency enjoyed by new residents.[23]

If any of these exceptions to the presumption might apply, the lead agency should conduct a detailed VMT analysis to determine whether the project would exceed VMT thresholds (see below).

Presumption of Less Than Significant Impact for Affordable Residential Development

Adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT.[24,25] Further, "… low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available."[26] In areas where existing jobs-housing match is closer to optimal, low income housing nevertheless generates less VMT than market-

[21] 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.").
[22] Including naturally-occurring affordable residential units.
[23] Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement,* Chapter 4, pp. 159-160, available at https://www.arb.ca.gov/research/apr/past/13-310.pdf.
[24] Karner and Benner (2016) *The convergence of social equity and environmental sustainability: Jobs-housing fit and commute distance* ("[P]olicies that advance a more equitable distribution of jobs and housing by linking the affordability of locally available housing with local wage levels are likely to be associated with reduced commuting distances").
[25] Karner and Benner (2015) *Low-wage jobs-housing fit: identifying locations of affordable housing shortages.*
[26] Karner and Benner (2015) *Low-wage jobs-housing fit: identifying locations of affordable housing shortages.*

rate housing.[27,28] Therefore, a project consisting of a high percentage of affordable housing may be a basis for the lead agency to find a less-than-significant impact on VMT. Evidence supports a presumption of less than significant impact for a 100 percent affordable residential development (or the residential component of a mixed-use development) in infill locations. Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed use projects) containing a particular amount of affordable housing, based on local circumstances and evidence. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units.

2. Recommended Numeric Thresholds for Residential, Office, and Retail Projects

Recommended threshold for residential projects: A proposed project exceeding a level of 15 percent below existing VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as regional VMT per capita or as city VMT per capita. Proposed development referencing a threshold based on city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the number of units specified in the SCS for that city, and should be consistent with the SCS.

Residential development that would generate vehicle travel that is 15 or more percent below the existing residential VMT per capita, measured against the region or city, may indicate a less-than-significant transportation impact. In MPO areas, development measured against city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the region-based threshold would undermine the VMT containment needed to achieve regional targets under SB 375.

For residential projects in unincorporated county areas, the local agency can compare a residential project's VMT to (1) the region's VMT per capita, or (2) the aggregate population-weighted VMT per capita of all cities in the region. In MPO areas, development in unincorporated areas measured against aggregate city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the regional threshold would undermine achievement of regional targets under SB 375.

[27] Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement*, available at https://www.arb.ca.gov/research/apr/past/13-310.pdf.
[28] CAPCOA (2010) *Quantifying Greenhouse Gas Mitigation Measures*, pp. 176-178, available at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

These thresholds can be applied to either household (i.e., tour-based) VMT or home-based (i.e., trip-based) VMT assessments.[29] It is critical, however, that the agency be consistent in its VMT measurement approach throughout the analysis to maintain an "apples-to-apples" comparison. For example, if the agency uses a home-based VMT for the threshold, it should also be use home-based VMT for calculating project VMT and VMT reduction due to mitigation measures.

Recommended threshold for office projects: A proposed project exceeding a level of 15 percent below existing regional VMT per employee may indicate a significant transportation impact.

Office projects that would generate vehicle travel exceeding 15 percent below existing VMT per employee for the region may indicate a significant transportation impact. In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live.

Office VMT screening maps can be developed using tour-based data, considering either total employee VMT or employee work tour VMT. Similarly, tour-based analysis of office project VMT could consider either total employee VMT or employee work tour VMT. Where tour-based information is unavailable for threshold determination, project assessment, or assessment of mitigation, home-based work trip VMT should be used throughout all steps of the analysis to maintain an "apples-to-apples" comparison.

Recommended threshold for retail projects: A net increase in total VMT may indicate a significant transportation impact.

Because new retail development typically redistributes shopping trips rather than creating new trips,[30] estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the best way to analyze a retail project's transportation impacts.

By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact. Regional-serving retail development, on the other hand, which can lead to substitution of longer trips for shorter ones, may tend to have a significant impact. Where such development decreases VMT, lead agencies should consider the impact to be less-than-significant.

Many cities and counties define local-serving and regional-serving retail in their zoning codes. Lead agencies may refer to those local definitions when available, but should also consider any project-

[29] See Appendix 1 for a description of these approaches.
[30] Lovejoy, et al. (2013) *Measuring the impacts of local land-use policies on vehicle miles of travel: The case of the first big-box store in Davis, California, The Journal of Transport and Land Use*.

specific information, such as market studies or economic impacts analyses that might bear on customers' travel behavior. Because lead agencies will best understand their own communities and the likely travel behaviors of future project users, they are likely in the best position to decide when a project will likely be local-serving. Generally, however, retail development including stores larger than 50,000 square feet might be considered regional-serving, and so lead agencies should undertake an analysis to determine whether the project might increase or decrease VMT.

Mixed-Use Projects

Lead agencies can evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

Other Project Types

Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described above for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types. In developing thresholds for other project types, or thresholds different from those recommended here, lead agencies should consider the purposes described in section 21099 of the Public Resources Code and regulations in the CEQA Guidelines on the development of thresholds of significance (e.g., CEQA Guidelines, § 15064.7).

Strategies and projects that decrease local VMT but increase total VMT should be avoided. Agencies should consider whether their actions encourage development in a less travel-efficient location by limiting development in travel-efficient locations.

Redevelopment Projects

Where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.

As described above, a project or plan near transit which replaces affordable[31] residential units with a smaller number of moderate- or high-income residential units may increase overall VMT, because

[31] Including naturally-occurring affordable residential units.

displaced residents' VMT may increase.[32] A lead agency should analyze VMT for such a project even if it otherwise would have been presumed less than significant. The assessment should incorporate an estimate of the aggregate VMT increase experienced by displaced residents. That additional VMT should be included in the numerator of the VMT per capita assessed for the project.

If a residential or office project leads to a net increase in VMT, then the project's VMT per capita (residential) or per employee (office) should be compared to thresholds recommended above. Per capita and per employee VMT are efficiency metrics, and, as such, apply only to the existing project without regard to the VMT generated by the previously existing land use.

If the project leads to a net increase in provision of locally-serving retail, transportation impacts from the retail portion of the development should be presumed to be less than significant. If the project consists of regionally-serving retail, and increases overall VMT compared to with existing uses, then the project would lead to a significant transportation impact.

RTP/SCS Consistency (All Land Use Projects)

Section 15125, subdivision (d), of the CEQA Guidelines provides that lead agencies should analyze impacts resulting from inconsistencies with regional plans, including regional transportation plans. For this reason, if a project is inconsistent with the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), the lead agency should evaluate whether that inconsistency indicates a significant impact on transportation. For example, a development may be inconsistent with an RTP/SCS if the development is outside the footprint of development or within an area specified as open space as shown in the SCS.

3. Recommendations Regarding Land Use Plans

As with projects, agencies should analyze VMT outcomes of land use plans across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography. And as with projects, VMT should be counted in full rather than split between origin and destination. (Emissions inventories have sometimes spit cross-boundary trips in order to sum to a regional total, but CEQA requires accounting for the full impact without truncation or discounting). Analysis of specific plans may employ the same thresholds described above for projects. A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the respective thresholds recommended above. Where the lead agency tiers from a general plan EIR pursuant to CEQA Guidelines sections 15152 and 15166, the lead agency generally focuses on the environmental impacts that are specific to the later project and were not analyzed as significant impacts in the prior EIR. (Pub. Resources Code, § 21068.5; Guidelines, § 15152, subd. (a).) Thus, in analyzing the later project, the lead agency

[32] Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement,* Chapter 4, pp. 159-160, available at https://www.arb.ca.gov/research/apr/past/13-310.pdf.

would focus on the VMT impacts that were not adequately addressed in the prior EIR. In the tiered document, the lead agency should continue to apply the thresholds recommended above.

Thresholds for plans in non-MPO areas may be determined on a case-by-case basis.

4. Other Considerations

Rural Projects Outside of MPOs

In rural areas of non-MPO counties (i.e., areas not near established or incorporated cities or towns), fewer options may be available for reducing VMT, and significance thresholds may be best determined on a case-by-case basis. Note, however, that clustered small towns and small town main streets may have substantial VMT benefits compared to isolated rural development, similar to the transit oriented development described above.

Impacts to Transit

Because criteria for determining the significance of transportation impacts must promote "the development of multimodal transportation networks" pursuant to Public Resources Code section 21099, subd. (b)(1), lead agencies should consider project impacts to transit systems and bicycle and pedestrian networks. For example, a project that blocks access to a transit stop or blocks a transit route itself may interfere with transit functions. Lead agencies should consult with transit agencies as early as possible in the development process, particularly for projects that are located within one half mile of transit stops.

When evaluating impacts to multimodal transportation networks, lead agencies generally should not treat the addition of new transit users as an adverse impact. An infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network.

Increased demand throughout a region may, however, cause a cumulative impact by requiring new or additional transit infrastructure. Such impacts may be adequately addressed through a fee program that fairly allocates the cost of improvements not just to projects that happen to locate near transit, but rather across a region to all projects that impose burdens on the entire transportation system, since transit can broadly improve the function of the transportation system.

F. Considering the Effects of Transportation Projects on Vehicle Travel

Many transportation projects change travel patterns. A transportation project which leads to additional vehicle travel on the roadway network, commonly referred to as "induced vehicle travel," would need to quantify the amount of additional vehicle travel in order to assess air quality impacts, greenhouse gas emissions impacts, energy impacts, and noise impacts. Transportation projects also are required to

examine induced growth impacts under CEQA. (See generally, Pub. Resources Code, §§ 21065 [defining "project" under CEQA as an activity as causing either a direct or reasonably foreseeable indirect physical change], 21065.3 [defining "project-specific effect" to mean all direct or indirect environmental effects], 21100, subd. (b) [required contents of an EIR].) For any project that increases vehicle travel, explicit assessment and quantitative reporting of the amount of additional vehicle travel should not be omitted from the document; such information may be useful and necessary for a full understanding of a project's environmental impacts. (See Pub. Resources Code, §§ 21000, 21001, 21001.1, 21002, 21002.1 [discussing the policies of CEQA].) A lead agency that uses the VMT metric to assess the transportation impacts of a transportation project may simply report that change in VMT as the impact. When the lead agency uses another metric to analyze the transportation impacts of a roadway project, changes in amount of vehicle travel added to the roadway network should still be analyzed and reported.[33]

While CEQA does not require perfection, it is important to make a reasonably accurate estimate of transportation projects' effects on vehicle travel in order to make reasonably accurate estimates of GHG emissions, air quality emissions, energy impacts, and noise impacts. (See, e.g., *California Clean Energy Com. v. City of Woodland* (2014) 225 Cal.App.4th 173, 210 [EIR failed to consider project's transportation energy impacts]; *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 Cal.App.4th 256, 266.) Appendix 2 describes in detail the causes of induced vehicle travel, the robust empirical evidence of induced vehicle travel, and how models and research can be used in conjunction to quantitatively assess induced vehicle travel with reasonable accuracy.

If a project would likely lead to a measurable and substantial increase in vehicle travel, the lead agency should conduct an analysis assessing the amount of vehicle travel the project will induce. Project types that would likely lead to a measurable and substantial increase in vehicle travel generally include:

- Addition of through lanes on existing or new highways, including general purpose lanes, HOV lanes, peak period lanes, auxiliary lanes, or lanes through grade-separated interchanges

Projects that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis, include:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such as median barriers and guardrails

[33] See, e.g., California Department of Transportation (2006) *Guidance for Preparers of Growth-related, Indirect Impact Analyses*, available at http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/GRI_guidance06May_files/gri_guidance.pdf.

- Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel
- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow
- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices
- Adoption of or increase in tolls
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

1. Recommended Significance Threshold for Transportation Projects

As noted in Section 15064.3 of the CEQA Guidelines, lead agencies for roadway capacity projects have discretion, consistent with CEQA and planning requirements, to choose which metric to use to evaluate transportation impacts. This section recommends considerations for evaluating impacts using vehicle miles traveled. Lead agencies have discretion to choose a threshold of significance for transportation projects as they do for other types of projects. As explained above, Public Resources Code section 21099, subdivision (b)(1), provides that criteria for determining the significance of transportation impacts must promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. (*Id.*; see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) With those goals in mind, OPR prepared and the Agency adopted an appropriate transportation metric.

Whether adopting a threshold of significance, or evaluating transportation impacts on a case-by-case basis, a lead agency should ensure that the analysis addresses:

- Direct, indirect and cumulative effects of the transportation project (CEQA Guidelines, § 15064, subds. (d), (h))
- Near-term and long-term effects of the transportation project (CEQA Guidelines, §§ 15063, subd. (a)(1), 15126.2, subd. (a))
- The transportation project's consistency with state greenhouse gas reduction goals (Pub. Resources Code, § 21099)[34]
- The impact of the transportation project on the development of multimodal transportation networks (Pub. Resources Code, § 21099)
- The impact of the transportation project on the development of a diversity of land uses (Pub. Resources Code, § 21099)

The CARB Scoping Plan and the CARB Mobile Source Strategy delineate VMT levels required to achieve legally mandated GHG emissions reduction targets. A lead agency should develop a project-level threshold based on those VMT levels, and may apply the following approach:

1. Propose a fair-share allocation of those budgets to their jurisdiction (e.g., by population);

[34] The California Air Resources Board has ascertained the limits of VMT growth compatible with California containing greenhouse gas emissions to levels research shows would allow for climate stabilization. (See *The 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* (p. 78, p. 101); *Mobile Source Strategy* (p. 37).) CARB's *Updated Final Staff Report on Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets* illustrates that the current Regional Transportation Plans and Sustainable Communities Strategies will fall short of achieving the necessary on-road transportation-related GHG emissions reductions called for in the 2017 Scoping Plan (Figure 3, p. 35). Accordingly, OPR recommends not basing GHG emissions or transportation impact analysis for a transportation project solely on consistency with an RTP/SCS.

2. Determine the amount of VMT growth likely to result from background population growth, and subtract that from their "budget";
3. Allocate their jurisdiction's share between their various VMT-increasing transportation projects, using whatever criteria the lead agency prefers.

2. Estimating VMT Impacts from Transportation Projects

CEQA requires analysis of a project's potential growth-inducing impacts. (Pub. Resources Code, § 21100, subd. (b)(5); CEQA Guidelines, § 15126.2, subd. (d).) Many agencies are familiar with the analysis of growth inducing impacts associated with water, sewer, and other infrastructure. This technical advisory addresses growth that may be expected from roadway expansion projects.

Because a roadway expansion project can induce substantial VMT, incorporating quantitative estimates of induced VMT is critical to calculating both transportation and other impacts of these projects. Induced travel also has the potential to reduce or eliminate congestion relief benefits. An accurate estimate of induced travel is needed to accurately weigh costs and benefits of a highway capacity expansion project.

The effect of a transportation project on vehicle travel should be estimated using the "change in total VMT" method described in *Appendix 1*. This means that an assessment of total VMT without the project and an assessment with the project should be made; the difference between the two is the amount of VMT attributable to the project. The assessment should cover the full area in which driving patterns are expected to change. As with other types of projects, the VMT estimation should not be truncated at a modeling or jurisdictional boundary for convenience of analysis when travel behavior is substantially affected beyond that boundary.

Transit and Active Transportation Projects

Transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapid transit projects, and bicycle and pedestrian infrastructure projects. Streamlining transit and active transportation projects aligns with each of the three statutory goals contained in SB 743 by reducing GHG emissions, increasing multimodal transportation networks, and facilitating mixed use development.

Roadway Projects

Reducing roadway capacity (for example, by removing or repurposing motor vehicle travel lanes) will generally reduce VMT and therefore is presumed to cause a less-than-significant impact on transportation. Generally, no transportation analysis is needed for such projects.

Building new roadways, adding roadway capacity in congested areas, or adding roadway capacity to areas where congestion is expected in the future, typically induces additional vehicle travel. For the types of projects previously indicated as likely to lead to additional vehicle travel, an estimate should be made of the change in vehicle travel resulting from the project.

For projects that increase roadway capacity, lead agencies can evaluate induced travel quantitatively by applying the results of existing studies that examine the magnitude of the increase of VMT resulting from a given increase in lane miles. These studies estimate the percent change in VMT for every percent change in miles to the roadway system (i.e., "elasticity").[35] Given that lead agencies have discretion in choosing their methodology, and the studies on induced travel reveal a range of elasticities, lead agencies may appropriately apply professional judgment in studying the transportation effects of a particular project. The most recent major study, estimates an elasticity of 1.0, meaning that every percent change in lane miles results in a one percent increase in VMT.[36]

To estimate VMT impacts from roadway expansion projects:

1. Determine the total lane-miles over an area that fully captures travel behavior changes resulting from the project (generally the region, but for projects affecting interregional travel look at all affected regions).
2. Determine the percent change in total lane miles that will result from the project.
3. Determine the total existing VMT over that same area.
4. Multiply the percent increase in lane miles by the existing VMT, and then multiply that by the elasticity from the induced travel literature:

[% increase in lane miles] x [existing VMT] x [elasticity] = [VMT resulting from the project]

A National Center for Sustainable Transportation tool can be used to apply this method: https://ncst.ucdavis.edu/research/tools

This method would not be suitable for rural (non-MPO) locations in the state which are neither congested nor projected to become congested. It also may not be suitable for a new road that provides new connectivity across a barrier (e.g., a bridge across a river) if it would be expected to substantially

[35] See U.C. Davis, Institute for Transportation Studies (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*; Boarnet and Handy (Sept. 2014) *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions*, California Air Resources Board Policy Brief, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf.
[36] See Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at http://www.nber.org/papers/w15376.

shorten existing trips. If it is likely to be substantial, the trips-shortening effect should be examined explicitly.

The effects of roadway capacity on vehicle travel can also be applied at a programmatic level. For example, in a regional planning process the lead agency can use that program-level analysis to streamline later project-level analysis. (See CEQA Guidelines, § 15168.) A program-level analysis of VMT should include effects of the program on land use patterns, and the VMT that results from those land use effects. In order for a program-level document to adequately analyze potential induced demand from a project or program of roadway capacity expansion, lead agencies cannot assume a fixed land use pattern (i.e., a land use pattern that does not vary in response to the provision of roadway capacity). A proper analysis should account for land use investment and development pattern changes that react in a reasonable manner to changes in accessibility created by transportation infrastructure investments (whether at the project or program level).

Mitigation and Alternatives

Induced VMT has the potential to reduce or eliminate congestion relief benefits, increase VMT, and increase other environmental impacts that result from vehicle travel.[37] If those effects are significant, the lead agency will need to consider mitigation or alternatives. In the context of increased travel that is induced by capacity increases, appropriate mitigation and alternatives that a lead agency might consider include the following:

- Tolling new lanes to encourage carpools and fund transit improvements
- Converting existing general purpose lanes to HOV or HOT lanes
- Implementing or funding off-site travel demand management
- Implementing Intelligent Transportation Systems (ITS) strategies to improve passenger throughput on existing lanes

Tolling and other management strategies can have the additional benefit of preventing congestion and maintaining free-flow conditions, conferring substantial benefits to road users as discussed above.

G. Analyzing Other Impacts Related to Transportation

While requiring a change in the methodology of assessing transportation impacts, Public Resources Code section 21099 notes that this change "does not relieve a public agency of the requirement to analyze a project's potentially significant transportation impacts related to air quality, noise, safety, or any other impact associated with transportation." OPR expects that lead agencies will continue to

[37] See National Center for Sustainable Transportation (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*, available at http://www.dot.ca.gov/newtech/researchreports/reports/2015/10-12-2015-NCST_Brief_InducedTravel_CS6_v3.pdf; see Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at http://www.nber.org/papers/w15376.

address mobile source emissions in the air quality and noise sections of an environmental document and the corresponding studies that support the analysis in those sections. Lead agencies should continue to address environmental impacts of a proposed project pursuant to CEQA's requirements, using a format that is appropriate for their particular project.

Because safety concerns result from many different factors, they are best addressed at a programmatic level (i.e., in a general plan or regional transportation plan) in cooperation with local governments, metropolitan planning organizations, and, where the state highway system is involved, the California Department of Transportation. In most cases, such an analysis would not be appropriate on a project-by-project basis. Increases in traffic volumes at a particular location resulting from a project typically cannot be estimated with sufficient accuracy or precision to provide useful information for an analysis of safety concerns. Moreover, an array of factors affect travel demand (e.g., strength of the local economy, price of gasoline), causing substantial additional uncertainty. Appendix B of OPR's General Plan Guidelines summarizes research which could be used to guide a programmatic analysis under CEQA. Lead agencies should note that automobile congestion or delay does not constitute a significant environmental impact (Pub. Resources Code, §21099(b)(2)), and safety should not be used as a proxy for road capacity.

H. VMT Mitigation and Alternatives

When a lead agency identifies a significant impact, it must identify feasible mitigation measures that could avoid or substantially reduce that impact. (Pub. Resources Code, § 21002.1, subd. (a).) Additionally, CEQA requires that an environmental impact report identify feasible alternatives that could avoid or substantially reduce a project's significant environmental impacts.

Indeed, the California Court of Appeal recently held that a long-term regional transportation plan was deficient for failing to discuss an alternative which could significantly reduce total vehicle miles traveled. In *Cleveland National Forest Foundation v. San Diego Association of Governments, et al.* (2017) 17 Cal.App.5th 413, the court found that omission "inexplicable" given the lead agency's "acknowledgment in its Climate Action Strategy that the state's efforts to reduce greenhouse gas emissions from on-road transportation will not succeed if the amount of driving, or vehicle miles traveled, is not significantly reduced." (*Cleveland National Forest Foundation*, *supra*, 17 Cal.App.5th at p. 436.) Additionally, the court noted that the project alternatives focused primarily on congestion relief even though "the [regional] transportation plan is a long-term and congestion relief is not necessarily an effective long-term strategy." (*Id.* at p. 437.) The court concluded its discussion of the alternatives analysis by stating: "Given the acknowledged long-term drawbacks of congestion relief alternatives, there is not substantial evidence to support the EIR's exclusion of an alternative focused primarily on significantly reducing vehicle trips." (*Ibid*.)

Several examples of potential mitigation measures and alternatives to reduce VMT are described below. However, the selection of particular mitigation measures and alternatives are left to the discretion of

the lead agency, and mitigation measures may vary, depending on the proposed project and significant impacts, if any. Further, OPR expects that agencies will continue to innovate and find new ways to reduce vehicular travel.

Potential measures to reduce vehicle miles traveled include, but are not limited to:

- Improve or increase access to transit.
- Increase access to common goods and services, such as groceries, schools, and daycare.
- Incorporate affordable housing into the project.
- Incorporate neighborhood electric vehicle network.
- Orient the project toward transit, bicycle and pedestrian facilities.
- Improve pedestrian or bicycle networks, or transit service.
- Provide traffic calming.
- Provide bicycle parking.
- Limit or eliminate parking supply.
- Unbundle parking costs.
- Provide parking cash-out programs.
- Implement roadway pricing.
- Implement or provide access to a commute reduction program.
- Provide car-sharing, bike sharing, and ride-sharing programs.
- Provide transit passes.
- Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services.
- Providing telework options.
- Providing incentives or subsidies that increase the use of modes other than single-occupancy vehicle.
- Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms.
- Providing employee transportation coordinators at employment sites.
- Providing a guaranteed ride home service to users of non-auto modes.

Notably, because VMT is largely a regional impact, regional VMT-reduction programs may be an appropriate form of mitigation. In lieu fees have been found to be valid mitigation where there is both a commitment to pay fees and evidence that mitigation will actually occur. (*Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 140-141; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727–728.) Fee programs are particularly useful to address cumulative impacts. (CEQA Guidelines, § 15130, subd. (a)(3) [a "project's incremental contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact"].) The mitigation program must undergo CEQA evaluation, either on the program as a whole, or the in-lieu fees or other mitigation must be evaluated

on a project-specific basis. (*California Native Plant Society v. County of El Dorado* (2009) 170 Cal.App.4th 1026.) That CEQA evaluation could be part of a larger program, such as a regional transportation plan, analyzed in a Program EIR. (CEQA Guidelines, § 15168.)

Examples of project alternatives that may reduce vehicle miles traveled include, but are not limited to:

- Locate the project in an area of the region that already exhibits low VMT.
- Locate the project near transit.
- Increase project density.
- Increase the mix of uses within the project or within the project's surroundings.
- Increase connectivity and/or intersection density on the project site.
- Deploy management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes.

Appendix 1. Considerations About Which VMT to Count

Consistent with the obligation to make a good faith effort to disclose the environmental consequences of a project, lead agencies have discretion to choose the most appropriate methodology to evaluate project impacts.[38] A lead agency can evaluate a project's effect on VMT in numerous ways. The purpose of this document is to provide technical considerations in determining which methodology may be most useful for various project types.

Background on Estimating Vehicle Miles Traveled

Before discussing specific methodological recommendations, this section provides a brief overview of modeling and counting VMT, including some key terminology.

Here is an illustrative example of some methods of estimating vehicle miles traveled. Consider the following hypothetical travel day (all by automobile):

1. Residence to Coffee Shop
2. Coffee Shop to Work
3. Work to Sandwich Shop
4. Sandwich Shop to Work
5. Work to Residence
6. Residence to Store
7. Store to Residence

Trip-based assessment of a project's effect on travel behavior counts VMT from individual trips to and from the project. It is the most basic, and traditionally the most common, method of counting VMT. A trip-based VMT assessment of the residence in the above example would consider segments 1, 5, 6 and 7. For residential projects, the sum of home-based trips is called *home-based* VMT.

A *tour-based* assessment counts the entire home-back-to-home tour that includes the project. A tour-based VMT assessment of the residence in the above example would consider segments 1, 2, 3, 4, and 5 in one tour, and 6 and 7 in a second tour. A tour-based assessment of the workplace would include segments 1, 2, 3, 4, and 5. Together, all tours comprise *household* VMT.

[38] The California Supreme Court has explained that when an agency has prepared an environmental impact report:

> [T]he issue is not whether the [lead agency's] studies are irrefutable or whether they could have been better. The relevant issue is only whether the studies are sufficiently credible to be considered as part of the total evidence that supports the [lead agency's] finding[.]

(*Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 409; see also *Eureka Citizens for Responsible Gov't v. City of Eureka* (2007) 147 Cal.App.4th 357, 372.)

Both trip- and tour-based assessments can be used as measures of transportation efficiency, using denominators such as per capita, per employee, or per person-trip.

Trip- and Tour-based Assessment of VMT

As illustrated above, a tour-based assessment of VMT is a more complete characterization of a project's effect on VMT. In many cases, a project affects travel behavior beyond the first destination. The location and characteristics of the home and workplace will often be the main drivers of VMT. For example, a residential or office development located near high quality transit will likely lead to some commute trips utilizing transit, affecting mode choice on the rest of the tour.

Characteristics of an office project can also affect an employee's VMT beyond the work tour. For example, a workplace located at the urban periphery, far from transit, can require an employee to own a car, which in turn affects the entirety of an employee's travel behavior and VMT. For this reason, when estimating the effect of an office development on VMT, it may be appropriate to consider total employee VMT if data and tools, such as tour-based models, are available. This is consistent with CEQA's requirement to evaluate both direct and *indirect* effects of a project. (See CEQA Guidelines, § 15064, subd. (d)(2).)

Assessing Change in Total VMT

A third method, estimating the *change in total VMT* with and without the project, can evaluate whether a project is likely to divert existing trips, and what the effect of those diversions will be on total VMT. This method answers the question, "What is the net effect of the project on area VMT?" As an illustration, assessing the total change in VMT for a grocery store built in a food desert that diverts trips from more distant stores could reveal a net VMT reduction. The analysis should address the full area over which the project affects travel behavior, even if the effect on travel behavior crosses political boundaries.

Using Models to Estimate VMT

Travel demand models, sketch models, spreadsheet models, research, and data can all be used to calculate and estimate VMT (see Appendix F of the preliminary discussion draft). To the extent possible, lead agencies should choose models that have sensitivity to features of the project that affect VMT. Those tools and resources can also assist in establishing thresholds of significance and estimating VMT reduction attributable to mitigation measures and project alternatives. When using models and tools for those various purposes, agencies should use comparable data and methods, in order to set up an "apples-to-apples" comparison between thresholds, VMT estimates, and VMT mitigation estimates.

Models can work together. For example, agencies can use travel demand models or survey data to estimate existing trip lengths and input those into sketch models such as CalEEMod to achieve more

accurate results. Whenever possible, agencies should input localized trip lengths into a sketch model to tailor the analysis to the project location. However, in doing so, agencies should be careful to avoid double counting if the sketch model includes other inputs or toggles that are proxies for trip length (e.g., distance to city center). Generally, if an agency changes any sketch model defaults, it should record and report those changes for transparency of analysis. Again, trip length data should come from the same source as data used to calculate thresholds to be sure of an "apples-to-apples" comparison.

Additional background information regarding travel demand models is available in the California Transportation Commission's "2010 Regional Transportation Plan Guidelines," beginning at page 35.

Appendix 2. Induced Travel: Mechanisms, Research, and Additional Assessment Approaches

Induced travel occurs where roadway capacity is expanded in an area of present or projected future congestion. The effect typically manifests over several years. Lower travel times make the modified facility more attractive to travelers, resulting in the following trip-making changes:

- **Longer trips.** The ability to travel a long distance in a shorter time increases the attractiveness of destinations that are farther away, increasing trip length and vehicle travel.
- **Changes in mode choice.** When transportation investments are devoted to reducing automobile travel time, travelers tend to shift toward automobile use from other modes, which increases vehicle travel.
- **Route changes.** Faster travel times on a route attract more drivers to that route from other routes, which can increase or decrease vehicle travel depending on whether it shortens or lengthens trips.
- **Newly generated trips.** Increasing travel speeds can induce additional trips, which increases vehicle travel. For example, an individual who previously telecommuted or purchased goods on the internet might choose to accomplish those tasks via automobile trips as a result of increased speeds.
- **Land Use Changes.** Faster travel times along a corridor lead to land development farther along that corridor; that new development generates and attracts longer trips, which increases vehicle travel. Over several years, this induced growth component of induced vehicle travel can be substantial, making it critical to include in analyses.

Each of these effects has implications for the total amount of vehicle travel. These effects operate over different time scales. For example, changes in mode choice might occur immediately, while land use changes typically take a few years or longer. CEQA requires lead agencies to analyze both short-term and long-term effects.

Evidence of Induced Vehicle Travel. A large number of peer reviewed studies[39] have demonstrated a causal link between highway capacity increases and VMT increases. Many provide quantitative estimates of the magnitude of the induced VMT phenomenon. Collectively, they provide high quality evidence of the existence and magnitude of the induced travel effect.

[39] See, e.g., Boarnet and Handy (Sept. 2014) Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions, California Air Resources Board Policy Brief, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf; National Center for Sustainable Transportation (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*, available at http://www.dot.ca.gov/research/researchreports/reports/2015/10-12-2015-NCST_Brief_InducedTravel_CS6_v3.pdf.

Most of these studies express the amount of induced vehicle travel as an "elasticity," which is a multiplier that describes the additional vehicle travel resulting from an additional lane mile of roadway capacity added. For example, an elasticity of 0.6 would signify an 0.6 percent increase in vehicle travel for every 1.0 percent increase in lane miles. Many of these studies distinguish "short run elasticity" (increase in vehicle travel in the first few years) from "long run elasticity" (increase in vehicle travel beyond the first few years). Long run elasticity is larger than short run elasticity, because as time passes, more of the components of induced vehicle travel materialize. Generally, short run elasticity can be thought of as excluding the effects of land use change, while long run elasticity includes them. Most studies find a long run elasticity between 0.6 and just over 1.0,[40] meaning that every increase in lanes miles of one percent leads to an increase in vehicle travel of 0.6 to 1.0 percent. The most recent major study finds the elasticity of vehicle travel by lanes miles added to be 1.03; in other words, each percent increase in lane miles results in a 1.03 percent increase in vehicle travel.[41] (An elasticity greater than 1.0 can occur because new lanes induce vehicle travel that spills beyond the project location.) In CEQA analysis, the long-run elasticity should be used, as it captures the full effect of the project rather than just the early-stage effect.

Quantifying Induced Vehicle Travel Using Models. Lead agencies can generally achieve the most accurate assessment of induced vehicle travel resulting from roadway capacity increasing projects by applying elasticities from the academic literature, because those estimates include vehicle travel resulting from induced land use. If a lead agency chooses to use a travel demand model, additional analysis would be needed to account for induced land use. This section describes some approaches to undertaking that additional analysis.

Proper use of a travel demand model can capture the following components of induced VMT:

- Trip length (generally increases VMT)
- Mode shift (generally shifts from other modes toward automobile use, increasing VMT)
- Route changes (can act to increase or decrease VMT)
- Newly generated trips (generally increases VMT)
    - Note that not all travel demand models have sensitivity to this factor, so an off-model estimate may be necessary if this effect could be substantial.

However, estimating long-run induced VMT also requires an estimate of the project's effects on land use. This component of the analysis is important because it has the potential to be a large component of

[40] See Boarnet and Handy (Sept. 2014) *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions*, California Air Resources Board Policy Brief, p. 2, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf.

[41] Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at http://www.nber.org/papers/w15376.

the overall induced travel effect. Options for estimating and incorporating the VMT effects that are caused by the subsequent land use changes include:

1. *Employ an expert panel.* An expert panel could assess changes to land use development that would likely result from the project. This assessment could then be analyzed by the travel demand model to assess effects on vehicle travel. Induced vehicle travel assessed via this approach should be verified using elasticities found in the academic literature.
2. *Adjust model results to align with the empirical research.* If the travel demand model analysis is performed without incorporating projected land use changes resulting from the project, the assessed vehicle travel should be adjusted upward to account for those land use changes. The assessed VMT after adjustment should fall within the range found in the academic literature.
3. *Employ a land use model, running it iteratively with a travel demand model.* A land use model can be used to estimate the land use effects of a roadway capacity increase, and the traffic patterns that result from the land use change can then be fed back into the travel demand model. The land use model and travel demand model can be iterated to produce an accurate result.

A project which provides new connectivity across a barrier, such as a new bridge across a river, may provide a shortened path between existing origins and destinations, thereby shortening existing trips. In rare cases, this trip-shortening effect might be substantial enough to reduce the amount of vehicle travel resulting from the project below the range found in the elasticities in the academic literature, or even lead a net reduction in vehicle travel overall. In such cases, the trip-shortening effect could be examined explicitly.

Whenever employing a travel demand model to assess induced vehicle travel, any limitation or known lack of sensitivity in the analysis that might cause substantial errors in the VMT estimate (for example, model insensitivity to one of the components of induced VMT described above) should be disclosed and characterized, and a description should be provided on how it could influence the analysis results. A discussion of the potential error or bias should be carried into analyses that rely on the VMT analysis, such as greenhouse gas emissions, air quality, energy, and noise.

Analyzing Vehicle Miles Traveled for CEQA Compliance

SB 743 IMPLEMENTATION GUIDELINES FOR THE CITY OF WATSONVILLE

Adopted September 27, 2022

Resolution No. ___-22 (CM)

Community Development Department | Public Works & Utilities Department
250 Main Street
Watsonville, CA 95076

Background

In 2013, SB 743 was signed into law by California Governor Jerry Brown with a goal of reducing Greenhouse Gas (GHG) emissions, promoting the development of infill land use projects and multimodal transportation networks, and to promote a diversity of land uses within developments. One significant outcome resulting from this statute is that automobile delay, as measured by "level of service" (LOS) and other similar metrics, generally no longer constitutes a significant environmental effect under the California Environmental Quality Act (CEQA). (Pub. Resources Code, § 21099(b)(2)). This change in the analysis of transportation impacts went into effect when the CEQA Guidelines were updated to make the revisions called for in SB 743 and were certified by the Natural Resources Agency in December, 2018.

The Governor's Office of Planning and Research (OPR) selected Vehicle Miles Traveled (VMT) as the principal measure to replace LOS for determining significant transportation impacts. VMT is a measure of total vehicular travel that accounts for the number of vehicle trips and the length of those trips. OPR selected VMT, in part, because jurisdictions are already familiar with this metric. VMT is already used in CEQA to study other potential impacts such as GHG, air quality, and energy impacts and is used in planning for regional Sustainable Communities Strategies (SCS). As of July 1, 2020, agencies analyzing the transportation impacts of new projects must look at VMT as a metric known as vehicle miles traveled (VMT) instead of LOS.

VMT also allows for an analysis of a project's impact throughout the jurisdiction rather than only in the vicinity of the proposed project allowing for a better understanding of the full extent of a project's transportation-related impact.

As California has a number of regulations regarding GHG emissions that are often confused with each other, Appendix G provides additional background information on two key laws – AB 32 and SB 375 – and how they align with strategies for the Association of Monterey Bay Area Governments (AMBAG) region to reduce VMT regionally.

Use of this Document

This document has been developed to serve both as the basis of SB 743 implementation and VMT analysis within the City. While this document includes footnotes and references to other documents, the use of this document does not require the reader to reference the footnotes unless they are interested in understanding the technical basis of elements of this document's preparation. The analysis guidelines are separated into two distinct approaches, those that relate to *land use* projects and those that relate to *transportation improvement* projects. If a project includes both land use and transportation improvement elements, analysis would be required to be carried out for both. Projects not subject to CEQA are not required to follow these guidelines. This includes projects that are reviewed under existing ministerial or administrative processes, site plan review, and other actions that do not require environmental review.

This policy shall be administered by the Zoning Administrator and City Engineer, who shall be responsible for all determinations required as part of its implementation. For example, the Zoning Administrator would make a determination whether a land use project meets any of the screening criteria listed in Exhibit 2. Whereas, the City Engineer would decide on whether a transportation project has been prescreened, as further discussed on page 11. Generally speaking, the Zoning Administrator would address questions concerning land use projects, and the City Engineer would address questions

concerning transportation improvement projects. The City Engineer would also be responsible for making determinations on technical questions, such appropriate Institute of Transportation Engineers (ITE) trip generation rates.

Land Use Projects

The approach included within this document identify transportation impacts under CEQA for land-use projects that closely align with guidance provided within the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* (2018).

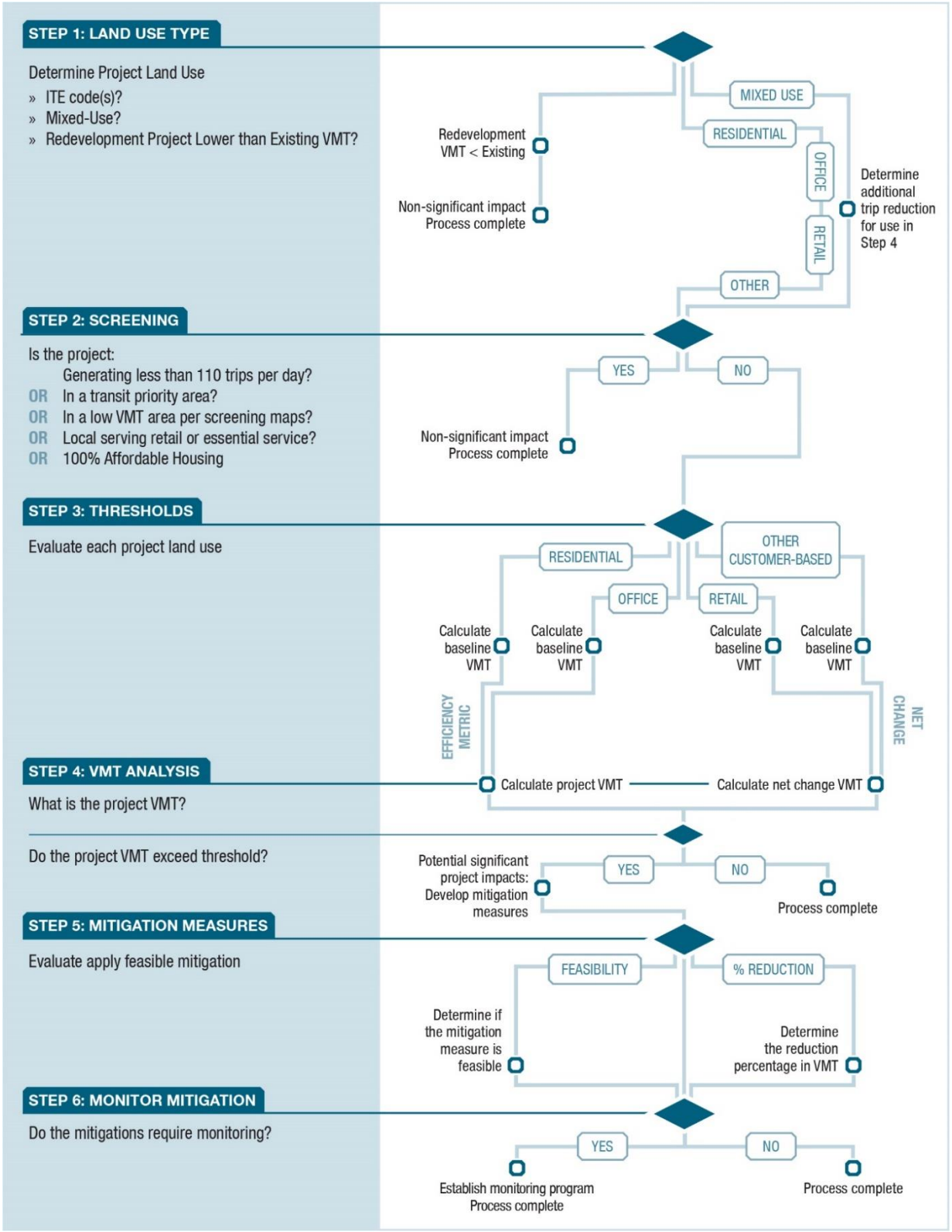
While the OPR guidance related to SB 743 has been a helpful introduction to using VMT to evaluate projects, it does not provide a complete solution. There are a multitude of complex practical issues that are not addressed by the OPR guidance. OPR Guidance does not specifically address land uses beyond residential, office and retail, and it provides latitude on some elements of implementation. In response to this, a specific series of analytical steps for SB 743 project evaluation have been developed to clarify requirements and reduce potential confusion. **Exhibit 1** provides a graphical representation of this analytical process.

Step 1: Evaluate Land Use Type

During the initial step, a land use project will need to be evaluated for the following considerations:

- ***Land use type.*** For the purposes of analysis, the ITE land use codes serve as the basis of land use definitions. Although it is recognized that VMT evaluation tools and methodologies are typically not fully sensitive to some of the distinctions between some ITE categories, the use of ITE land use codes is useful for maintaining consistency across analyses, determining trip generation for other planning level tools, and maintaining a common understanding of trip making characteristics amongst transportation professionals. The ITE land use code is also used as an input into the sketch planning tool.
- ***Mixed use.*** If there are multiple distinct land uses within the project (residential, office, retail, etc.), they will be required to be analyzed separately unless they are determined to be insignificant to the total VMT. Mixed use projects are permitted to account for internal capture which depending on the methodology may require a distinct approach not covered in this documentation.
- ***Redevelopment projects.*** As described under the Non-Significant Screening Criteria section, redevelopment projects which have lower VMT than the existing on-site use can be determined to have a non-significant impact.

Exhibit 1 – Process for CEQA VMT Analysis for Land Use Projects



Step 2: Screen for Non-Significant Transportation Impact

The purpose of this step is to determine if a presumption of a non-significant transportation impact can be made on the facts of the project. The guidance in this section is primarily intended to avoid unnecessary analysis and findings that would be inconsistent with the intent of SB 743. A detailed CEQA transportation analysis will not be required for land use projects that meet the screening criteria shown in **Exhibit 2**. If a project is mixed use in nature, only those elements of the project that do not meet any of the criteria in **Exhibit 2** would require further evaluation to determine transportation significance for CEQA purposes.

Exhibit 2 – Land Use Project Screening Criteria

Screening Criteria[1]	Impact Analysis
SMALL PROJECTS[2]	**Presumed to cause a less-than-significant impact:** ▪ Project generation is less than 110 trips per day **Unless:** ▪ It is inconsistent with the current General Plan and Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)
PROJECTS NEAR HIGH QUALITY TRANSIT[3]	**Presumed to cause a less-than-significant impact:** ▪ Within a ½ mile of an existing major transit stop, which maintains a service interval frequency of 15 minutes or less during the morning and afternoon peak commute periods. **Unless:** ▪ Has a Floor Area Ratio (FAR) of less than 0.75 ▪ Includes more parking for use by residents, customers, or employees of the project than required by the City of Watsonville ▪ It is inconsistent with the current General Plan and MTP/SCS ▪ Replaces affordable residential units with a smaller number of moderate- or high-income residential units

[1] When the Screening Criteria are met no further transportation analysis of VMT impacts under CEQA is necessary.
[2] Office of Planning and Research (2018), *OPR Technical Advisory on Evaluating Transportation Impacts in CEQA*, p. 12, available at https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf.
[3] *Ibid.*, p. 13.

Screening Criteria	Impact Analysis
LOCAL-SERVING RETAIL[4]	**Presumed to cause a less-than-significant impact:** ▪ No single store on-site exceeds 50,000 square feet ▪ Project is local-serving **Unless:** ▪ If the nature of the service is regionally focused[5]
AFFORDABLE HOUSING[6]	**Presumed to cause a less-than-significant impact:** ▪ The residential component of a project consists of 100-percent affordable residential units **Unless:** ▪ The percentage of affordable housing is less than 100 percent of the residential element of a project
LOCAL ESSENTIAL SERVICE[7]	**Presumed to cause less-than-significant impact:** ▪ Day care center ▪ Public K-12 School ▪ Police or Fire facility ▪ Medical/Dental office building ▪ Assisted living / memory care facility ▪ Government offices (in-person services such as post office, library, and utilities) **Unless:** ▪ The nature of the service is regionally focused

[4] *Ibid.*, p. 16. For purposes of these Guidelines, "Local Serving" shall mean retail operations that primarily serve nearby residential neighborhoods within the City of Watsonville. A determination that a project is "Local Serving" may be supported by a market study or other studies of similar uses elsewhere in the City.

[5] For purposes of these Guidelines, "Regionally Focused" shall mean retail operations that primarily serve a regional customer base. A determination that a project is "Regionally Focused" may be supported by a market study or other studies of similar uses elsewhere in the region surrounding the City.

[6] OPR (2018), p. 14. As described, "Evidence supports a presumption of less than significant impact for a 100 percent affordable residential development (or the residential component of a mixed-use development) in infill locations. Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed-use projects) containing a particular amount of affordable housing, based on local circumstances and evidence."

[7] Based on assumption that, like local-serving retail, the addition of necessary local in-person services will reduce VMT given that trips to these locations will be made irrespective of distance given their non-discretionary nature.

Screening Criteria	Impact Analysis
MAP-BASED SCREENING[8]	**Presumed to cause a less-than-significant impact:** ▪ Area of development is under threshold as shown on a screening map included in Appendix B **Unless:** ▪ Represent significant growth as to substantially change regional travel patterns
REDEVELOPMENT PROJECTS[9]	**Presumed to cause a less-than-significant impact:** ▪ Project replaces an existing VMT-generating land use and does not result in a net overall increase in VMT **Unless:** ▪ Project replaces an existing VMT-generating land use and results in a net overall increase in VMT

Step 3: Significance Threshold and Methodology

The purpose of this step is to determine the appropriate threshold of significance for a land use project. Significance thresholds are based on land use type and are broadly grouped into two categories: efficiency and net change metrics. Efficiency metrics include VMT/capita and Work VMT/employee.[10] As shown in **Exhibit 1**, projects involving residential and office land uses would be evaluated using efficiency metrics; whereas, projects that include a significant customer/user base, such as retail and other commercial uses, would be evaluated based on the net change in regional VMT based on customer/user trips. **Exhibit 3** provides a few examples of the variety of uses that have similar characteristics for using Efficiency or Net Change metrics.

Exhibit 3 - Significance Threshold and Methodology

Threshold Basis	Efficiency	Net Change
Example Land Uses	Residential, Professional Office, Industrial	Retail, Medical Office, Sports Venue
Example VMT Thresholds	Per capita, per employee	Regional VMT change
Customer/User Component (Primary source of VMT)	No	Yes

[8] OPR (2018), p. 12.
[9] *Ibid.*, p. 18.
[10] Work VMT specifically applies to commute trips as represented by the attractions in the Travel Demand Model. Refer to Appendix A for additional information.

Threshold Basis	Efficiency	Net Change
Allowable Methods	Non-Significant Screening Criteria, The City of Watsonville Sketch Planning Tool, Travel Demand Model	Non-Significant Screening Criteria, Travel Demand Model

For projects with a large customer/user base, it is typically appropriate to separate employee trip characteristics from the customer base trip characteristics. Under these circumstances, it is most appropriate to evaluate the total of the delta in regional VMT resulting from the customer base plus the delta of VMT resulting from employees based on the following formula:

(number of employees) x (estimated VMT/employee – threshold VMT/employee)

The threshold of significance will accordingly correspond to the "Net Change" threshold as described in **Exhibit 3**. Under these circumstances, it is most appropriate to evaluate this total Net Change as the basis for evaluating the outcome of mitigations. As with mixed use projects, each element of the project should be tallied and evaluated separately.

VMT Thresholds of Significance

OPR recommends a 15 percent VMT reduction relative to existing development may be a reasonable threshold. While OPR's Technical Advisory is not binding on public agencies, CEQA allows lead agencies to "consider thresholds of significance . . . recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence."[11]

According to OPR, achieving 15 percent lower per capita (for residential development) or per employee (for office development) VMT compared with VMT resulting from existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State's emissions goals.[12] The thresholds of significance recommended by OPR, as they relate to the City of Watsonville, are summarized in **Exhibit 4**.

Exhibit 4 - OPR suggested VMT Thresholds of Significance

Land Use	OPR Guidance[13]
Residential	15% below existing county-wide average VMT per capita
Office	15% below existing county-wide average VMT per employee
Retail	Net increase in total VMT

Exhibit 5 provides the City's VMT thresholds of significance for residential, office, retail, and related land use projects based on these criteria.

[11] CEQA Guidelines, § 15064.7(c).
[12] OPR (2018), pp. 10-12.
[13] *Ibid.*, pp. 15-16.

Exhibit 5 - VMT Thresholds of Significance

Land Use	VMT Threshold	Basis
Residential	8.9 VMT/capita[14]	15% below existing county-wide average VMT per capita
Office	7.4 Work VMT/employee[15]	15% below existing county-wide average Work VMT per employee
Retail	No net increase	Using the county-wide VMT as the basis
Other Customer	No net increase	Using the county-wide VMT as the basis for similar land uses
Other Employment	Work VMT/employee[16]	15% below existing county-wide average Work VMT per employee for similar land uses

Note that the inclusion of "Other Employment" and "Other Customer" refers to all other service and goods providers that are not included in the basic office/retail categories. As shown, they follow a similar approach to the office/retail categories with the principal difference being that the average/basis for the threshold would be the aggregation of the specific "other" land use across the County (i.e., an industrial project would use industrial uses, etc.).

Based on improvements to methods and data as well as other modeling modifications there will be periodic updates to the numerical threshold values shown, however the relative approach for calculating them should remain the same. The values in the current sketch planning tool, discussed in the next section, will supersede the information provided in the table above. Additional thresholds for various employment types are also provided in the sketch planning tool.

Sketch Planning Tool

The City of Watsonville has developed a sketch planning tool for use in SB 743 land use project analysis. The purpose of the tool is to enable staff to calculate VMT for a land use project. The sketch planning tool allows the user to enter project information, such as a land use type, amount of development (in terms of units for residential projects and square feet for commercial or other types of non-residential projects), and then generate a VMT output. If above a VMT threshold of significance, applicable Transportation Demand Management (TDM) strategies (from **Appendix C**) can be applied to reduce the project's overall VMT and evaluate their effectiveness. The tool also includes presumption overrides for land use projects that meet screening criteria in **Exhibit 2**, such as projects that provide affordable housing units or local serving retail space up to but not exceeding 50,000 square feet in floor area.

As with any sketch planning tool, there are distinct limitations in terms of its application including limits on the type and size of development that the tool can be applied to. Note that this tool is intended for

[14] Residential VMT specifically applies to all Home-Based trips as represented in the Travel Demand Model. Refer to Appendix A for additional information.
[15] Work VMT specifically applies to commute trips as represented in the Travel Demand Model. Refer to Appendix A for additional information.
[16] Work VMT specifically applies to commute trips as represented in the Travel Demand Model. Refer to Appendix A for additional information.

projects involving up to 2,000 trips. (For projects involving more than 2,000 trips, the Travel Demand Model would need to be run to accurately estimate VMT.) Note further that it is anticipated that the tool will continue to evolve in response to data or methodological changes and as such, it is important that the most current version of the tool be utilized. Broadly, the sketch planning tool provides the following information:

- Institute of Transportation Engineers (ITE) Trip Generation
- Vehicle Miles Traveled (VMT) Threshold Analysis
- Greenhouse Gas (GHG) Estimation
- Transportation Demand Management (TDM) Evaluation

The VMT Analysis methodology utilized by the sketch planning tool is summarized in **Appendix A.**

Agreement Prior to Conducting a VMT Analysis

Prior to undertaking VMT analysis, a scope of work that is compliant with the City of Watsonville's requirements should be prepared and submitted by the Applicant for approval by City staff. Given the potential complexities of some uses, particularly those not identified as residential, retail, or office, an agreement regarding the threshold and methodology is important to avoid analysis that is not compliant with CEQA and the City of Watsonville's standards.

Step 4: VMT Analysis

If a proposed project does not meet one of the screening criteria in **Exhibit 2**, a VMT analysis shall be conducted for the project in accordance with the City's requirements. During this step, the analysis agreed to under Step 3 would be completed. Along with the results of the VMT analysis, relevant documentation must be provided with enough detail to understand assumptions used in conducting the analysis and confirm and/or replicate the methods used in performing the analysis for the proposed project.

Step 5: Mitigation Measures

If a significant transportation impact is identified, the City of Watsonville, as lead agency, must consider mitigation or alternatives. CEQA requires that the mitigation measures or alternatives be included in the project's environmental assessment analysis. OPR provides a list of potential measures to reduce VMT but gives a lead agency full discretion in the selection of mitigation measures.

The type and size of the project will determine the most appropriate mitigation strategies for VMT impacts. For large projects such as general plans or specific plans, VMT mitigations should concentrate on the project's density and land use mix, site design, regional policies, and availability of transit, bicycle, and pedestrian facilities. For smaller projects such as an individual development project, VMT mitigations will typically require the preparation of a TDM program. A TDM program is a combination of strategies to reduce VMT. The program is created by an applicant for their land use project based on a list of strategies agreed to by the Zoning Administrator and City Engineer.

The City of Watsonville has developed a list of potential TDM strategies appropriate for the City and quantifies the magnitude of VMT reduction that could be achieved. The selection process was guided by the California Air Pollution Control Officers Association (CAPCOA) recommendations found in the 2010

publication *Quantifying Greenhouse Gas Mitigation Measures*. The area context of the City of Watsonville also influenced the type of TDM strategies that were selected. CAPCOA has found strategies with the largest VMT reduction in suburban areas include vanpools, telecommute or alternative work schedules, and master planned communities with design and land-use diversity to encourage intra-community travel. Based on empirical evidence, CAPCOA found the cross-category maximum for all transportation-related mitigation measures is 15% for suburban settings.

Appendix C summarizes available TDM strategies, along with the maximum VMT reduction, applicable land use application, and complementary strategies. The City of Watsonville's sketch planning tool includes the TDMs summarized in **Appendix C**.

Step 6: Monitoring Mitigation

As required by CEQA, the City of Watsonville will require ongoing mitigation monitoring and reporting when mitigation measures are adopted as part of an approved project. The specifics of this will be developed on a project-by-project basis. As an example, the City may require the determination of a "trip cap" (the number of vehicle trips entering/existing the site that would correspond with the threshold VMT estimate) as part of the mitigation plan. Subsequently, the project could be required to provide annual reporting of driveway counts collected by an acceptable third party to demonstrate the effectiveness of the adopted mitigation measures.

Transportation Projects

Depending on the specific nature of a transportation project it can alter trip patterns, trip lengths, and even trip generation. Research has determined that capacity-enhancing projects can and often do increase VMT. This phenomenon is commonly referred to as "induced demand". While methods are generally less developed for the analysis of induced demand compared to other areas of transportation analysis, there is still the need to quantify and understand its impact to the transportation system considering the requirements of SB 743.

Similar to land use projects, the approach to transportation project analysis closely aligns with the 2018 OPR Guidance. In terms of analysis, the analyst should first determine whether the transportation project has been prescreened and determined to have a non-significant impact as described in the following section.

Screen for Non-Significant Transportation Impact

The following non-significant impact examples are provided directly from the 2018 OPR Guidance[17]:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways, roadways, bridges, culverts);
- Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity;
- Roadside safety devices or hardware installation such as median barriers and guardrails;

[17] OPR (2018), p. 20.

- Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes;
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety;
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes;
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit;
- Conversion of existing general-purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel;
- Addition of a new lane that is permanently restricted to use only by transit vehicles;
- Reduction in number of through lanes ("road diet");
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles;
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features;
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow;
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow;
- Installation of roundabouts or traffic circles;
- Installation or reconfiguration of traffic calming devices;
- Adoption of or increase in tolls;
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase;
- Initiation of new transit service;
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes;
- Removal or relocation of off-street or on-street parking spaces;
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs);
- Addition of traffic wayfinding signage;
- Rehabilitation and maintenance projects that do not add motor vehicle capacity;

- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way;
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel;
- Installation of publicly available alternative fuel/charging infrastructure; and
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor.

Significance Threshold and Methodology

For projects that increase roadway capacity and are not identified under the Non-Significant Screening Criteria in the prior section, the significance criterion should be "Net Change" in regional VMT. A finding of a significant impact would be determined if a transportation project results in a net increase in regional VMT.

VMT Mitigation Banking Program

This section discusses a programmatic approach to respond to the need for feasible VMT mitigation within the City of Watsonville. In suburban areas such as the City of Watsonville, VMT impact analyses can result in a finding of a significant adverse transportation impact, particularly in undeveloped areas, due to a lack of land use density and diversity. In addition, with fewer transportation options compared to more urbanized areas, mitigating impacts in suburban areas can prove to be more difficult than under the former LOS methodology for analyzing traffic impacts. For many jurisdictions like the City of Watsonville, the switch to the VMT methodology under SB 743 is resulting in a reversal in the results of transportation impact significance findings as compared to the analyses conducted under the former LOS-based methodology.

As a practical matter, the new VMT methodology is also a more restrictive approach to identifying transportation impacts both because of the basis for setting an impact threshold and limited mitigation opportunities. In terms of the threshold of significance, OPR recommends that projects consisting of residential or general employment category land uses effectively need to be located in an area where they are 15 percent less than the average VMT for similar uses.[18] Effectively this means that new projects must be located in an area where they are more efficient than 65-percent of similar uses from a VMT standpoint. Given the suburban nature of Watsonville and elsewhere in the region, there is a need for additional feasible mitigation solutions.

To date, VMT mitigation across the State has relied heavily on TDM measures. These measures generally represent two basic approaches: infrastructure and policy. The documents produced by CAPCOA regarding VMT mitigation represent the primary bases for estimating the effectiveness of TDM mitigation in California.[19,20] Although CAPCOA is an invaluable resource, many of the TDM mitigation options

[18] OPR (2018), pp. 12 & 15.
[19] CAPCOA (2010), *Quantifying Greenhouse Gas Mitigation Measures*.
[20] CAPCOA (2021), *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health & Equity*.

provided have questionable efficacy in suburban and rural settings, as they are more effective in urban settings with high quality transit and a mix of land uses in close proximity to one another. TDMs can also be challenging from the standpoint of mitigation monitoring and are often unpopular with project applicants because they may need to be managed and paid for in perpetuity. These limitations have led jurisdictions, including the City of Watsonville, to increasingly consider programmatic approaches, in addition to TDMs, for VMT mitigation. Programmatic approaches can allow for collectively funding larger mitigation projects such that a development or transportation project can obtain an amount of mitigation commensurate with their impact with a single monetary payment. Programmatic approaches can also provide a public benefit in terms of funding transportation improvements that would not otherwise be constructed, resulting in improvements to congestion, GHG emissions, increased transportation choices, and additional opportunities for active transportation.

The City of Watsonville has developed a VMT Mitigation Banking Program to help address the need for additional VMT mitigation. A mitigation bank attempts to create a monetary value for VMT reduction such that a developer could purchase VMT reduction credits—i.e., these credits are purchased for the purposes of mitigating VMT in excess of determined impact thresholds. The underlying projects may be either regionally or locally beneficial to the area in which the project is located.

VMT Mitigation Need

The locations of future development, the quantity of development, and the extent of mitigation needs based on individual Traffic Analysis Zone (TAZ) output are invaluable input into determining the magnitude of VMT mitigation needed in the future. This type of dataset is both invaluable to understanding potential revenue and the amount that differing spatial areas may require in mitigation terms.

Using Santa Cruz County's Travel Demand Model and the thresholds established within this document for the City of Watsonville, the total potential VMT to be mitigated was calculated by calculating the difference between the VMT per capita and VMT per employee for each Traffic Analysis Zone (TAZ) that is over the established thresholds. The difference was then multiplied by the population and total employees for each TAZ to develop a total VMT per TAZ to be mitigated, which then allows for a City-wide total to be calculated. Based on these forecasts, **Exhibit 6** below presents an estimate of the amount of VMT that will need to be mitigated through 2040. More detailed mapping showing the spatial location of VMT mitigation needs is provided in **Appendix D**. Although this data does not account for the potential level of site specific VMT mitigation that will occur, it does present a clear need for mitigation more than what can be achieved through TDMs or similar site-based mitigation approaches.

Exhibit 6 – VMT Summary for Anticipated Growth and Needed Mitigation through 2040

Category	#
Future Households over Threshold	678
Future Employment over Threshold	8,997
2040 Total Residential VMT	476,757
2040 Total Employment-Based VMT	333,755
2040 Total Residential VMT for VMT/capita over threshold	237,613
2040 Total Employment-Based VMT for VMT/employee over threshold	333,755

Feasible Mitigation

This section discusses how CEQA and the State of California treat cases in which a project has a significant transportation impact and therefore is required to provide feasible mitigation. Based on research conducted by CAPCOA, the maximum reduction in VMT that can be feasibly attained using exclusively site-specific mitigation measures in a suburban context such as the City of Watsonville, is 15-percent.[21] Site-specific solutions most often rely on TDM measures, as discussed in the previous section, although project land use modifications can also be utilized to mitigate impacts. Therefore, projects that exceed the VMT significant impact thresholds by more than 15-percent must rely on non-site-specific approaches if full mitigation is to be achieved. If full mitigation is not possible, CEQA nonetheless requires that feasible mitigation measures be imposed to reduce the severity of the impact even if the impact remains significant with the mitigation.

Based on this, if a project exceeds the City's VMT threshold by more than 15 percent, it will require a combination of site-specific measures and non-site-specific measures, including the VMT Mitigation Bank as discussed in the next section, in order to achieve mitigation. This could mean using only site-specific mitigation measures to reach the 15-percent threshold, using only the VMT Mitigation Bank to reach the 15-percent threshold, or using both to reach the 15-percent threshold, such as using TDM measures to reduce VMT by 6-percent and then using the VMT Mitigation Bank to reduce VMT by the remaining 9 percent.

VMT Banking Projects

Exhibit 7 below provides information on the VMT banking projects that development and transportation projects can contribute funds for the purpose of mitigating their VMT impacts. The primary focus of these projects is to construct or improve active transportation facilities that will replace vehicular trips thereby reducing VMT. Note that the City may, at its discretion, add additional projects to this list which may alter the then current fee structure discussed in the Maximum Banking Credit Rate provided later in this document. Cost estimate details are provided in **Appendix E**.

[21] CAPCOA (2010), *Quantifying Greenhouse Gas Mitigation Measures*.

Exhibit 7 – VMT Banking Projects

Trail ID	Type	Name of Project	Description	Length/Number of Improvements	Cost Estimate
8.2	Bike/Ped	Lower Watsonville Slough Loop	Provide a new slough trail at the following segments to create a new loop: - Main Street to Ford Street - San Luis Avenue to the existing Watsonville slough loop	0.11 mi	$9,475,000
8.5	Bike/Ped	La Brisas Connector Trail	Provide connection along San Luis Avenue & Santa Victoria Avenue to the existing trail	0.13 mi	$4,000
8.7	Bike/Ped	Manabe-Ow Connector Trail	Provide bridge from Manabe-Ow to existing trail	0.10 mi	$16,400,000
9.1	Bike/Ped	Upper Struve Slough Trail	Slough trail connecting Pennsylvania Drive to South Green Valley Road	0.47 mi	$2,410,000
9.3	Bike/Ped	Rolling Hills Connector Trail	Trail loop along Eileen Street, SR 152, South Green Valley Road, and Melwood Court	0.33 mi	$720,000
9.4	Bike/Ped	Upper Watsonville Slough	Slough trail from Main Street to Freedom Boulevard	1.05 mi	$15,790,000
				Total	**$44,799,000**

Maximum VMT Banking Credit Rate and Nexus:

The four steps to identify the VMT Mitigation Banking projects and calculate the VMT Banking credit rate are as follows:

1. Identify appropriate mitigation projects;
2. Determine the cost of construction of the mitigation projects;
3. Determine the total VMT that can be mitigated by the projects; and
4. Calculate the maximum mitigation credit rate per VMT by dividing total cost of the mitigation projects by the total VMT mitigated by the projects to determine the rate per unit of VMT.

The approach outlined above results in a calculation of the maximum rate per VMT mitigated based on the list of projects identified above. The full cost of funding these improvements is used to calculate the maximum VMT Mitigation Banking credit rate per VMT the City could apply to all new residential and non-residential development in the City between 2022 and 2032 that result in VMT impacts.

As part of this analysis, a nexus evaluation was undertaken to support the basis of the VMT Mitigation Bank's development and credit rate. Consistent with California's Mitigation Fee Act, to develop a fee program a local agency must identify the purpose of the fee (Gov't Code § 66001(a)(1)). The City of Watsonville's policy is that new development shall contribute to the VMT banking credit rate, if needed for mitigation of their VMT impacts. In addition, the costs of constructing the improvements to help mitigate VMT citywide will be implemented through the VMT Mitigation Banking Program administered by the City of Watsonville.

As noted above, the projects that are included in the City of Watsonville's VMT Mitigation Banking Program will fund the construction of facilities that support active transportation (cycling and walking) to

mitigate VMT impacts from new development by moving trips from automobiles to bike or pedestrian facilities. As these projects' benefit could not be sufficiently analyzed using the Travel Demand Model given limitations within the model related to the representation of bike and pedestrian facilities, the projects were analyzed using off-model techniques. Specifically, bicycle improvements were evaluated based on *NCHRP 552 Guidelines for Analysis of Investments in Bicycle Facilities.* This approach relies on spatial analysis techniques to determine the likely number of new active transportation users resulting from the introduction of a new bicycle improvement. This approach also removes the number of new users who will use the facility for exercising as exercise will not replace vehicle trips and thus, will not reduce existing VMT. Based on survey data of bicyclists throughout the United States, both for adults and children, the percentage of those cycling for commute purposes was estimated to be 11-percent of all riders and those cycling for exercise was estimated to be 28-percent of all riders. Child cyclists are included in the analysis as they may use the new facility to access schools, friends, or stores among other destinations that previously they would need a parent to drive them to. Thus, with the removal of riders for exercise, only riders that would use the facilities to replace vehicle trips were included in the analysis.

The resultant bike ridership estimates are provided in **Appendix F**. Note that although the projects will provide benefits to pedestrians, those were not quantified for the purposes of this analysis given that the nature and location of these projects is not anticipated to significantly result in walking trips replacing vehicle-based trips. **Exhibit 8** shows the comparison between the existing ridership and future induced riders based on the construction of the projects.

Exhibit 8 – Existing and Future Daily Bicycle Ridership

Demand (facility users)	Existing Riders	Induced Riders	Total Future Riders (existing + induced)
Adult Bicyclists	5,264	5,606	10,870
Child Bicyclists	1,629	1,743	3,372
Total	**6,893**	**7,349**	**14,242**

As shown in **Exhibit 8**, the bicycle improvement projects could add almost 7,350 bicycle riders per day throughout the City in the future (by model year 2032), which would roughly double existing bicycle ridership to over 14,000 bicycle trips throughout the City and provide an alternative to congested vehicular travel along with significant health and recreational benefits. While not related to VMT mitigation, it should also be noted that construction of the pedestrian and bicycle improvements will result in additional safety benefits by reducing the potential for vehicle-bicycle and vehicle-pedestrian conflicts.

Total VMT Reduction

The total VMT reduction per project for the bicycle and pedestrian projects was calculated by multiplying the average bicycle trip length taken by new riders induced by the construction of a project by the total number of new riders and the project's lifecycle. For the purposes of this analysis, the average trip length used was four miles, based on industry standard assumptions. In addition, the project lifecycle was assumed to be ten years to cover the analysis period between 2022 and 2032. The number of new bicycle riders for each project was multiplied by the average trip length to obtain the total daily VMT reduction

for each project. Each project's VMT reduction was added together to determine the total VMT reduction for all bicycle and pedestrian projects, which for the projects listed in **Exhibit 7** total 29,392.

Maximum Banking Credit Rate

To determine the maximum overall credit rate, the total project costs of $44,799,000 was divided by the total VMT reduction of 29,392 daily VMT. This calculation resulted in a maximum cost per VMT reduction of $1,524.21. Note that this rate does not include any non-fee funding sources (grants, etc.). The addition of any funding sources for these projects could reduce the cost to fully implement projects included in **Exhibit 7**.

VMT Mitigation Banking Program Administration and Monitoring

The City of Watsonville shall set up a separate account for the purpose of tracking the collection of payments into the VMT Mitigation Banking Program. This account shall be monitored by the City Engineer to ensure purchased VMT credits are used for constructing appropriate projects, as identified in **Exhibit 7**, to achieve the intended VMT reduction. As part of the annual Capital Improvement Program (CIP) reporting to Planning Commission and City Council, the City Engineer shall include a progress report on any funds accumulated in the VMT Mitigation Banking Program and expenditures on constructing or improving active transportation facilities providing additional VMT-reducing investments that would not have occurred if bank funding were not available.

Appendix A

VMT Analysis Methodology

Travel Demand Models are broadly considered to be amongst the most accurate of available tools to assess regional and sub-area VMT. While the Association of Monterey Bay Area Governments (AMBAG) maintains the regional travel demand model as a part of the Metropolitan Transportation Plan/Sustainable Communities Strategy program (MTP/SCS), the jurisdictions in Santa Cruz County maintain their own travel demand model (SCC TDM) for the analysis of local conditions. The latest available version of the SCC TDM was developed in 2020.

The 2019 Base Year model scenario from this model was used for the baseline conditions and 2040 Future Year model scenario is used for cumulative conditions analysis. The four incorporated cities included in the model (City of Capitola, City of Santa Cruz, City of Scotts Valley, and the City of Watsonville) are major contributors of the trips throughout the County during a typical weekday.

As many of the County's daily trips originate from or are destined for areas outside of the County such as the Bay area and Monterey County (external trips), their total length could not be computed solely using the SCC TDM, additional analysis was required. The length of these trips was determined using two main processes, using Big Data and SCC TDM output files. The Big Data firm from which data was obtained was Teralytics, which uses triangulated cell phone data to determine origin-destination locations for vehicle trips, aggregated at the Census Tract level. The data that was obtained from Teralytics summarized the number of trips to and from the County to the surrounding counties at the Census Tract level for the entire month of October 2019. The distance between each Census Tract in the County and the surrounding counties was determined by using the TransCAD software, the modeling platform the SCC TDM runs on. The multipath analysis function within the TransCAD software was used to determine the point to point distance between the centroid of each Census Tract using the internal pathing algorithm that determines the shortest path along the roadway network between the centroid of each Census Tract pair. The shortest path between each individual Santa Cruz County Census Tract and every non-Santa Cruz County Census Tract that contained at least one trip was multiplied by the share of the total trips to and from each individual Santa Cruz County Census Tract to determine the average trip length to and from the individual County Census Tract. The average trip length was applied to each SCC TDM TAZ within the individual Santa Cruz County Census Tract and multiplied by the number of external trips to and from that TAZ to determine the total external VMT by TAZ.

To calibrate the external distance calculated using the Teralytics data, the distance between the internal Santa Cruz County Census Tracts was calculated. The distances were calculated using the process outlined above which included using the TransCAD pathing algorithm to determine the shortest path between Census Tract centroids. The distances between the internal Santa Cruz County Census Tracts were aggregated down to the SCC TDM TAZs to allow for comparison with the SCC TDM data. One of the SCC TDM output files is the peak-period skim file in which the shortest path between two SCC TDM TAZs is calculated during congested (peak) periods of the day.

To determine a calibration factor for the external trip distances, the distance between TAZs calculated by the SCC TDM was compared to the distances calculated using the Teralytics data. The comparison was completed on a TAZ by TAZ basis and the calibration factor was calculated at the County level by averaging

the difference in distances between the Teralytics data and the SCC TDM data. It was determined that the distances calculated using the Teralytics data were, on average, 16-percent longer than the distance calculated by the SCC TDM. Therefore, the external trip distances were reduced by 16-percent when calculating the VMT for the external trips.

Model Zone Structure

VMT was computed at Traffic Analysis Zone (TAZ) level to determine the thresholds as well as to allow for comparisons among different areas throughout the County. There are 696 TAZs within the County, including 364 TAZs within the unincorporated parts of the County.

Socio-Economic Data

Socioeconomic data (SED) and other model inputs are associated with each TAZ. Out of several different variables in the model SED, the VMT analysis mainly focused on population, the number of households, the number of students, and types of employment that are used in the trip generation component of the model. VMT computation was focused on the number of households in each TAZ and employment variables by 6 industries to determine rest of the trips. Employment variables used in the model are listed below.

Employment by Industry type:

1. Agriculture
2. Construction
3. Industrial and Manufacturing
4. Retail and Food
5. Service (White Collar, non-government jobs)
6. Public Administration (Government jobs)

Trip Generation

The SCC TDM runs a series of complex steps to estimate daily trip productions and attractions by various trip purposes for each TAZ. The trip purposes are listed below.

Model Trip Purpose:

1. Home-Based Work (HW)
2. Home-Based Other (HO)
3. Home-Based School, K-12 (HK)
4. Home-Based College (HC)
5. Home-Based Shopping (HS)
6. Work-Based Other (WO)
7. Other-Based Other (OO)

The production model uses several variables such as number of workers, household income, age, household size and car availability depending on the trip purpose. Trip productions for every TAZ in the model were compiled separately by each trip purpose. The attraction model uses employment categories for the HW trip purpose, whereas it uses the employment categories and number of students (K-12 and University) for all non-HW trip purposes. The attraction model estimates trip attractions to each TAZ by regression coefficients that vary by employment type. Trip attractions for every TAZ were compiled by each purpose and by each employment type based on these regression coefficients.

Person Trips, Vehicle Occupancy, Trip Distance

Trip productions and attractions were compiled after the mode choice step, and only auto trips were used for the analysis. After the vehicle trip productions and attractions were computed for each trip purpose, trip lengths were applied for each zone pair from the skim matrices in the model to compute the production and attraction VMT by purpose.

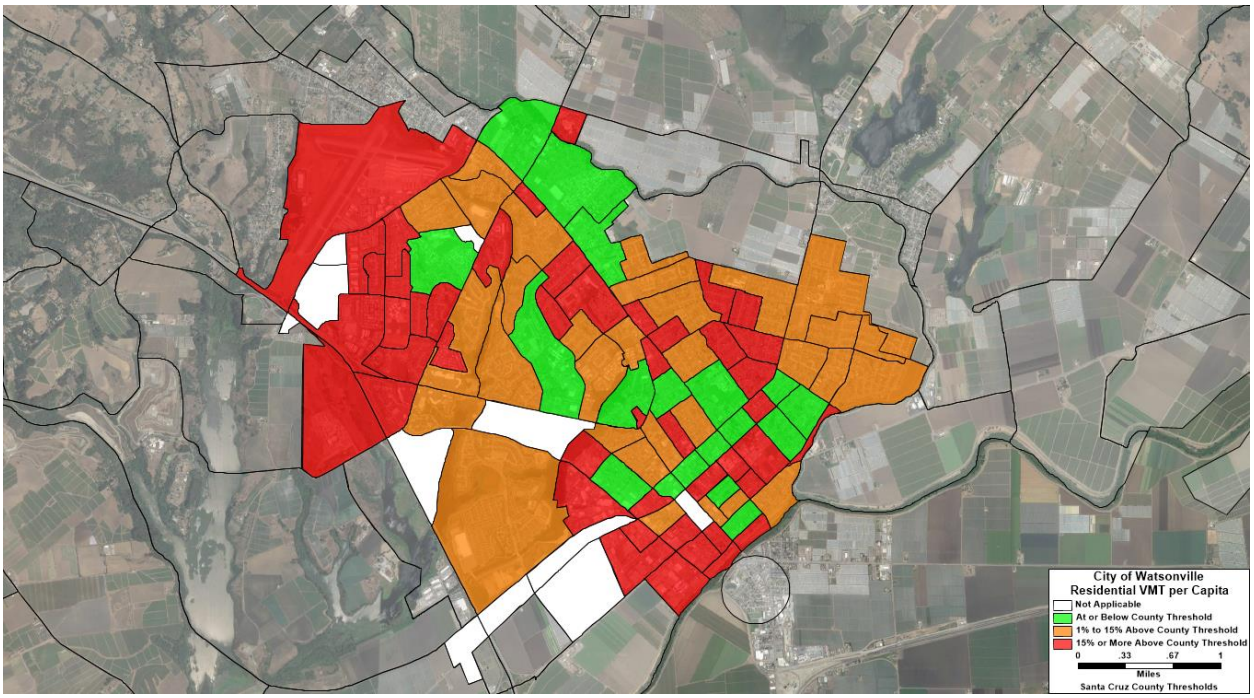
VMT by Land Use Type

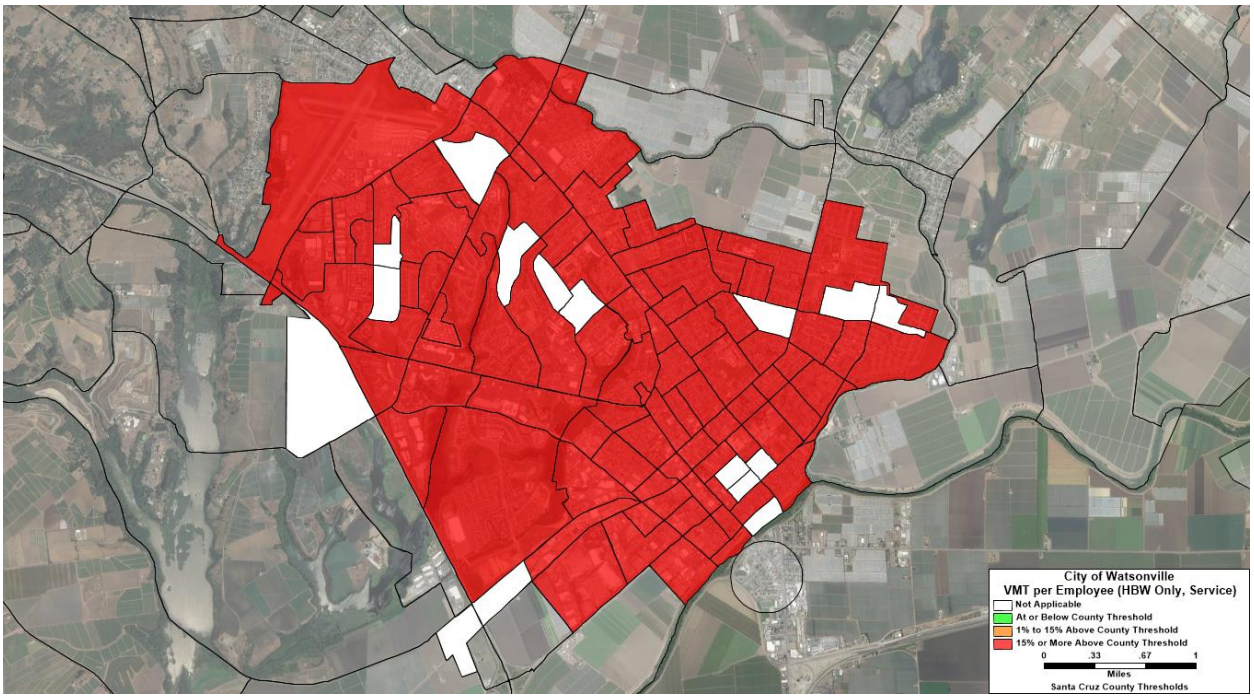
The residential VMT was computed by combining the production VMT for all the Home-Based trip purposes. VMT for non-residential land uses was computed from the attraction VMT by appropriate trip purposes and regression coefficients used in the attraction model.

Residential and non-residential VMT by each TAZ were computed and average VMT were determined by City, County and Region levels to determine City's thresholds.

Appendix B

Screening Maps





Appendix C

City of Watsonville | Transportation Demand Management (TDM) Measures					
#	**TDM Measure**	**Description**	**TDM Type**	**Max VMT Reduction**	**VMT Reduction Type**
Transit Strategies					
1	Transit Stops	Coordinate with local transit agency to provide bus stop near the site. Real time transportation information displays support on-the-go decision making to support sustainable trip making. Only get a reduction on a non-HQT line, cannot get both.	Infrastructure	3%	All
2	Safe and Well-Lit Access to Transit	Enhance the route for people walking or bicycling to nearby transit (typically off-site). Provide Emergency 911 phones along these routes to enhance safety.	Infrastructure	1%	All
3	Implement Neighborhood Shuttle	Implement project-operated or project-sponsored neighborhood shuttle serving residents, employees, and visitors of the project site.	Incentive	5%	All
4	Transit Subsidies	Involves the subsidization of transit fare for residents and employees of the project site. This strategy assumes transit service is already present in the project area. Pays for employees to use local transit. This could either be a discounted ticket or a full-reimbursed transit ticket.	Incentive	5%	All

City of Watsonville | Transportation Demand Management (TDM) Measures					
#	**TDM Measure**	**Description**	**TDM Type**	**Max VMT Reduction**	**VMT Reduction Type**
Communication & Information Strategies					
5	Mandatory Travel Behavior Change Program	Involves the development of a travel behavior change program that targets individuals' attitudes, goals, and travel behaviors, educating participants on the impacts of their travel choices and the opportunities to alter their habits. Provide a web site that allows employees to research other modes of transportation for commuting. Employee-focused travel behavior change program that targets individuals attitudes, goals, and travel behaviors, educating participants on the impacts of their travel choices and the opportunities to alter their habits.	Incentive	4%	All
6	Promotions & Marketing	Involves the use of marketing and promotional tools to educate and inform travelers about site-specific transportation options and the effects of their travel choices with passive educational and promotional materials. Marketing and public information campaign to promote awareness of TDM program with an on-site coordinator to monitor program.	Incentive		All

City of Watsonville | Transportation Demand Management (TDM) Measures					
#	TDM Measure	Description	TDM Type	Max VMT Reduction	VMT Reduction Type
Commuting Strategies					
7	Employer Sponsored Vanpool or Shuttle	Implementation of employer-sponsored employee vanpool or shuttle providing new opportunities for access to connect employees to the project site.	Incentive / Infrastructure	5%	Commute
8	Preferential Carpool / Vanpool Parking Spaces	Reserved carpool / vanpool spaces closer to the building entrance.	Infrastructure	1%	
9	Passenger Loading Zones for Carpool / Vanpool	Provide easy access for carpools or vanpools.	Infrastructure	1%	
10	On-site Carts or Shuttles or bikes	Provide on-site cart or shuttle for employees to travel across campus.	Incentive / Infrastructure	2%	All
11	Emergency Ride Home (ERH) Program	Provides an occasional subsidized ride to commuters who use alternative modes. Guaranteed ride home for people if they need to go home in the middle of the day due to an emergency or stay late and need a ride at a time when transit service is not available. Ecology Action is preferred vendor. This supplemental to the other trip reduction strategies. ADD to 5 and 6.	Incentive	4%	Commute
12	On-site Childcare	Provides on-site childcare to remove the need to drive a child to daycare at a separate location.	Infrastructure	4%	All

City of Watsonville | Transportation Demand Management (TDM) Measures					
#	**TDM Measure**	**Description**	**TDM Type**	**Max VMT Reduction**	**VMT Reduction Type**
13	Telecommuting	Four-Ten work schedule results in 20% weekly VMT reduction, 10% trip reduction equals 15% VMT reduction		10%	
14	Alternative work schedule	Alternative Fridays off (Nine-Ten schedule)		10%	
Shared Mobility Strategies					
15	Mandatory Ride Amigos-Share Program	Increases vehicle occupancy by providing ride-share matching services, designating preferred parking for ride-share participants, designing adequate passenger loading/unloading and waiting areas for ride-share vehicles, and providing a website or message board to connect riders and coordinate rides. Need a point person form the business on-site	Incentive	10%	Commute
16	Employee/Employer Car Share	Implement car sharing to allow people to have on-demand access to a vehicle, as-needed. This may include providing membership to an existing program located within 1/4 mile, contracting with a third-party vendor to extend membership-based service to an area, or implementing a project-specific fleet that supports the residents and employees on -site.	Incentive	0.7%	All

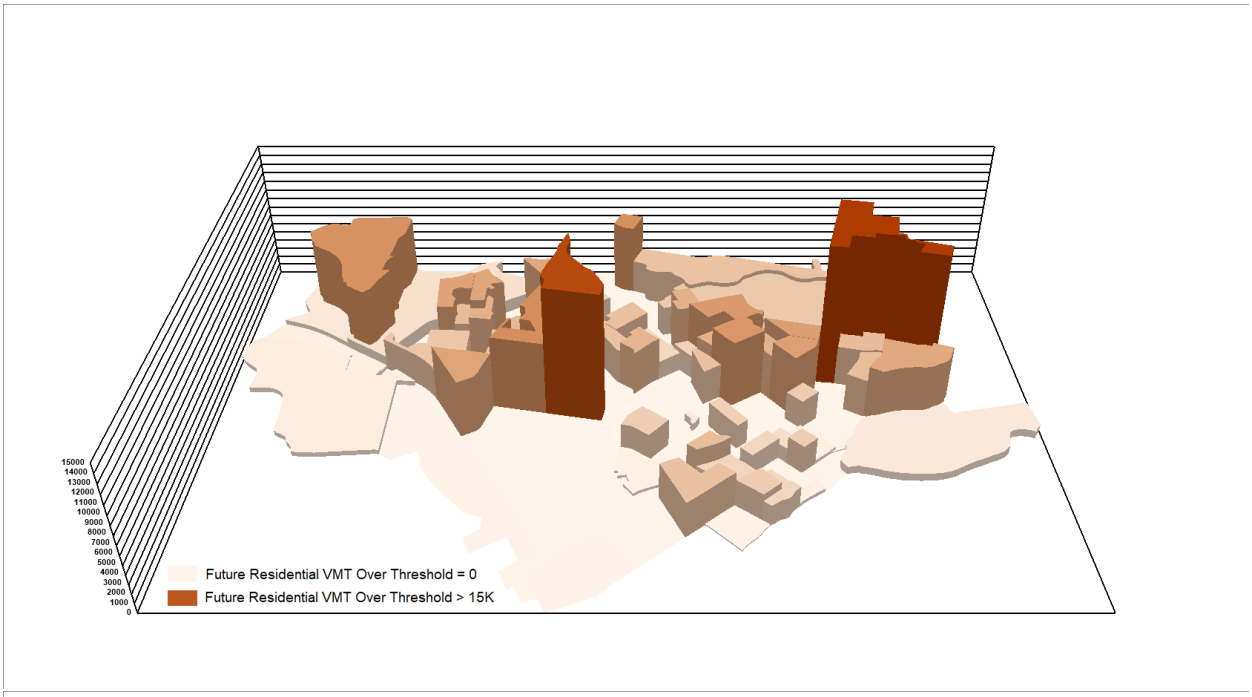
City of Watsonville | Transportation Demand Management (TDM) Measures					
#	**TDM Measure**	**Description**	**TDM Type**	**Max VMT Reduction**	**VMT Reduction Type**
		Provide an on-site car vehicle for employees to use for short trips. This allows for employees to run errands or travel for lunch.	Incentive	2%	Commute
17	School Carpool Program	Implements a school carpool program to encourage ride-sharing for students.	Incentive	15%	School
Bicycle Infrastructure Strategies					
18	Bike Share	Sign up for shared bikes.	Incentive / Infrastructure	7%	All
19	Implement/Improve On-street Bicycle Facility	Implements or provides funding for improvements to corridors and crossings for bike networks identified within a one-half mile buffer area of the project boundary, to support safe and comfortable bicycle travel.	Infrastructure	4%	All
20	Include Bike Parking in excess of City Code	Implements long-term bicycle parking to support safe and comfortable bicycle travel by providing parking facilities at destinations	Infrastructure	2%	All
21	Include Secure Bike Parking and Showers in excess of City Code	Implements additional end-of-trip bicycle facilities to support safe and comfortable bicycle travel.	Infrastructure		
22	Bicycle Repair Station / Services	On-site bicycle repair tools and space to use them supports on-going use of bicycles for transportation.	Infrastructure		

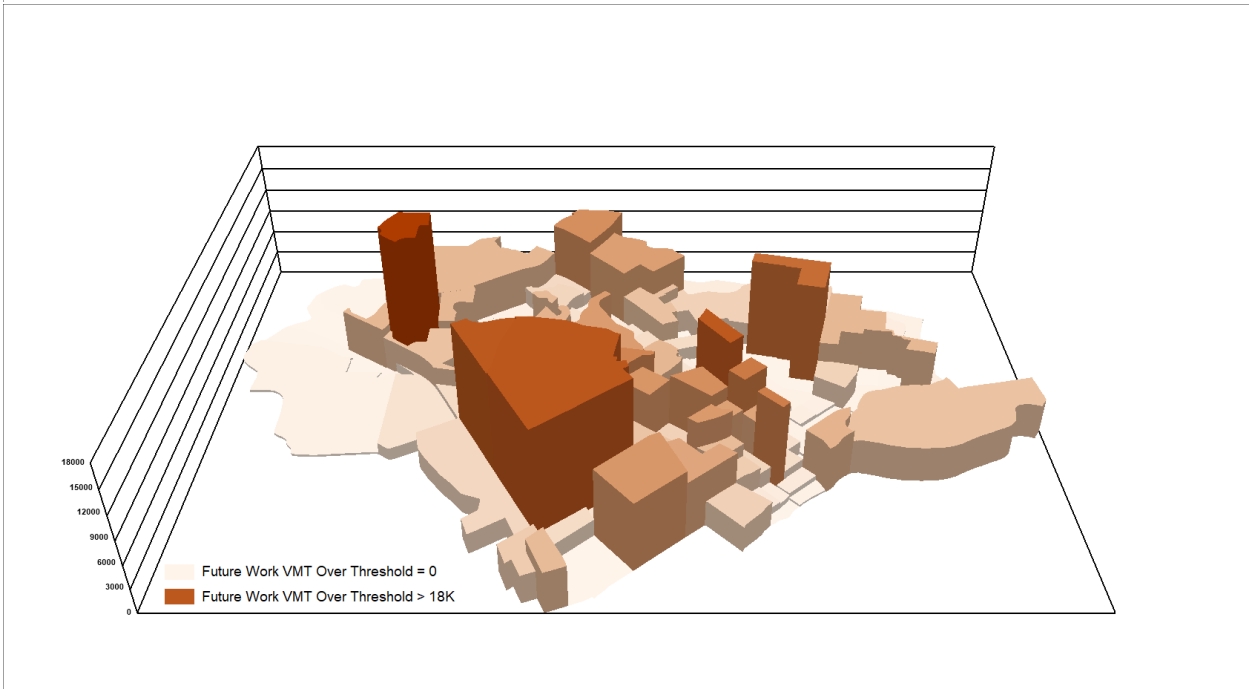
City of Watsonville | Transportation Demand Management (TDM) Measures					
#	**TDM Measure**	**Description**	**TDM Type**	**Max VMT Reduction**	**VMT Reduction Type**
Neighborhood Enhancement Strategies					
23	Traffic Calming Improvements	Implements traffic calming measures throughout and around the perimeter of the project site that encourage people to walk, bike, or take transit within the development and to the development from other locations.	Infrastructure	1%	All
24	Pedestrian Network Improvements	Implements pedestrian network improvements throughout and around the project site that encourages people to walk.	Infrastructure	2%	All
Miscellaneous Strategies					
25	Virtual Care Strategies for Hospitals/Health care providers/MOB/Clinic	Resources to allow patients to access healthcare services or communicate with healthcare staff through online or off-site programs.	Infrastructure	5%	Hospital Visitors
26	On-site Affordable Housing	Provides on-site affordable housing in excess of inclusionary rates % of units is the % reduction developer can get.	Infrastructure	4%	All
Parking Strategies					
27	Reduce Parking Supply	Changes on-site parking supply to provide less than the amount required by municipal code. Permitted reductions could utilize mechanisms such as TOC, Density Bonus, Bike Parking ordinance, or locating in a Specific Plan Area.	Infrastructure	10%	All

City of Watsonville | Transportation Demand Management (TDM) Measures					
#	**TDM Measure**	**Description**	**TDM Type**	**Max VMT Reduction**	**VMT Reduction Type**
28	Unbundle Parking	Unbundles parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. Implementation of residential permit parking zones for long-term use of on-street parking in residential area at the expense to the developer.	Incentive	10%	Residential
29	Parking Cash-Out	Provide employees a choice of forgoing current parking for a cash payment to be determined by the employer. The higher the cash payment, the higher the reduction.	Incentive	5.0%	Commercial Only
30	Residential Area Parking Permits		Incentive	0.25%	Only in non-Coastal Commission areas
31	Parking Management Strategies	Strategies to encourage efficiency in parking facilities and improve the quality of service to parking users	Incentive	1%	Valet

Appendix D

2040 VMT Mitigation Needs for Residential and Employee-Based VMT Projects





Appendix E

VMT Banking Project Costs

City of Watsonville

Estimate of Conceptual Project Costs

8.2 Lower Watsonville Slough Loop Bridge

From West and North Side to West and South Side

Kimley»Horn

Date Prepared: April 20, 2022

	Item	Unit	Quantity	Unit Cost	Total Cost	Notes
	Slough Bridge					
1	Bridge	SF	3,360	$900	$3,024,000	Assumes a 12' path over the bridge
	Main to Ford St					
3	Trail (14' Width)	LF	295	$325	$95,900	
4	Retaining Wall	SF	1,770	$250	$442,500	Assumes a 6' wall
	SUB-TOTAL MAJOR CONSTRUCTION ITEMS				**$3,562,400**	**Notes**
	Utility Work	% of sub-total major construction items		3.0%	$106,900	
	Landscaping	% of sub-total major construction items		5.0%	$178,200	
	Erosion Control	% of sub-total major construction items		5.0%	$178,200	
	Drainage	% of sub-total major construction items		5.0%	$178,200	
	Traffic Control / Detour	% of sub-total major construction items		0.0%	$0	
	Traffic - Signage & Striping	% of sub-total major construction items		0.0%	$0	
	Mobilization	% of sub-total major construction items		8.0%	$285,000	
	Misc. - Lighting/Commercial Signs	% of sub-total major construction items		0.0%	$0	
	Minor Contract Revisions	% of sub-total major construction items		5.0%	$178,200	
	SUB-TOTAL CONSTRUCTION COSTS				**$4,667,100**	**Notes**
	Environmental Review	% of sub-total construction costs		15.0%	$700,100	
	Design Engineering	% of sub-total construction costs		15.0%	$700,100	
	Construction Management/Materials Testing	% of sub-total construction costs		15.0%	$700,100	
	SUB-TOTAL DESIGN AND PROJECT ADMIN				**$2,100,300**	
				SUB-TOTAL	**$6,767,400**	**Notes**
	Contingency (40%)	% of sub-total		40.0%	$2,707,000	
	Total Project Cost Estimate (2020 Cost Rounded up to the Nearest $10,000)					**$9,475,000**

Opinion of Probable Construction Costs

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It should be noted that the provided cost estimation excludes Right of Way acquisition costs that may be required for these improvements to be implemented.

City of Watsonville

Estimate of Conceptual Project Costs

8.5 Las Brisas Connector Trail

From Lower Watsonville Slough Loop to East Side Struve Slough

Kimley»Horn

Date Prepared:	April 20, 2022

	Item	Unit	Quantity	Unit Cost	Total Cost	Notes
	San Luis Avenue & Santa Victoria Avenue					
1	Sharrow Markings	EA	14	$115	$1,600	Spaced at 100' each marking on both sides of the road
	SUB-TOTAL MAJOR CONSTRUCTION ITEMS				**$1,600**	**Notes**
	Utility Work	% of sub-total major construction items		0.0%	$0	
	Landscaping	% of sub-total major construction items		0.0%	$0	
	Erosion Control	% of sub-total major construction items		0.0%	$0	
	Drainage	% of sub-total major construction items		0.0%	$0	
	Traffic Control / Detour	% of sub-total major construction items		5.0%	$100	
	Traffic - Signage & Striping	% of sub-total major construction items		5.0%	$100	
	Mobilization	% of sub-total major construction items		5.0%	$100	
	Misc. - Lighting/Commercial Signs	% of sub-total major construction items		0.0%	$0	
	Minor Contract Revisions	% of sub-total major construction items		5.0%	$100	
	SUB-TOTAL CONSTRUCTION COSTS				**$2,000**	**Notes**
	Design Engineering	% of sub-total construction costs		15.0%	$300	
	Construction Management/Materials Testing	% of sub-total construction costs		15.0%	$300	
	SUB-TOTAL DESIGN AND PROJECT ADMIN				**$600**	
	SUB-TOTAL				**$2,600**	**Notes**
	Contingency (40%)	% of sub-total		40.0%	$1,100	
	Total Project Cost Estimate (2020 Cost Rounded up to the Nearest $10,000)					**$4,000**

Opinion of Probable Construction Costs

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City of Watsonville

Estimate of Conceptual Project Costs

8.7 Manabe-Ow Connector Trail Bridge

From West Side Struve Slough to East Side Struve Slough

Kimley»Horn

Date Prepared: April 20, 2022

Item	Unit	Quantity	Unit Cost	Total Cost	Notes
Manabe-Ow Connector Trail Bridge					
1 Bridge	SF	6,600	$900	$5,940,000	Assumes a 12' path over the bridge
SUB-TOTAL MAJOR CONSTRUCTION ITEMS				**$5,940,000**	**Notes**
Utility Work	% of sub-total major construction items		3.0%	$178,200	
Landscaping	% of sub-total major construction items		5.0%	$297,000	
Erosion Control	% of sub-total major construction items		5.0%	$297,000	
Drainage	% of sub-total major construction items		5.0%	$297,000	
Traffic Control / Detour	% of sub-total major construction items		5.0%	$297,000	
Traffic - Signage & Striping	% of sub-total major construction items		0.0%	$0	
Mobilization	% of sub-total major construction items		8.0%	$475,200	
Misc. - Lighting/Commercial Signs	% of sub-total major construction items		0.0%	$0	
Minor Contract Revisions	% of sub-total major construction items		5.0%	$297,000	
SUB-TOTAL CONSTRUCTION COSTS				**$8,078,400**	**Notes**
Environmental Review	% of sub-total construction costs		15.0%	$1,211,800	
Design Engineering	% of sub-total construction costs		15.0%	$1,211,800	
Construction Management/Materials Testing	% of sub-total construction costs		15.0%	$1,211,800	
SUB-TOTAL DESIGN AND PROJECT ADMIN				**$3,635,400**	
SUB-TOTAL				**$11,713,800**	**Notes**
Contingency (40%)	% of sub-total		40.0%	$4,685,600	
Total Project Cost Estimate (2020 Cost Rounded up to the Nearest $10,000)					**$16,400,000**

Opinion of Probable Construction Costs

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City of Watsonville

Estimate of Conceptual Project Costs

9.1 Upper Struve Slough

From Pennsylvania Dr to South Green Valley Rd

Kimley»Horn

Date Prepared: April 20, 2022

	Item	Unit	Quantity	Unit Cost	Total Cost	Notes
	Pennsylvania Dr to South Green Valley Rd					
1	Trail (14' Width)	LF	2,500	$325	$812,500	
2	Retaining Wall	SF	30,000	$250	$7,500,000	Assumes a 6' wall
	SUB-TOTAL MAJOR CONSTRUCTION ITEMS				**$812,500**	**Notes**
	Utility Work	% of sub-total major construction items		3.0%	$24,400	
	Landscaping	% of sub-total major construction items		10.0%	$81,300	
	Erosion Control	% of sub-total major construction items		10.0%	$81,300	
	Drainage	% of sub-total major construction items		10.0%	$81,300	
	Traffic Control / Detour	% of sub-total major construction items		0.0%	$0	
	Traffic - Signage & Striping	% of sub-total major construction items		0.0%	$0	
	Mobilization	% of sub-total major construction items		8.0%	$65,000	
	Misc. - Lighting/Commercial Signs	% of sub-total major construction items		0.0%	$0	
	Minor Contract Revisions	% of sub-total major construction items		5.0%	$40,700	
	SUB-TOTAL CONSTRUCTION COSTS				**$1,186,500**	**Notes**
	Environmental Review	% of sub-total construction costs		15.0%	$178,000	
	Design Engineering	% of sub-total construction costs		15.0%	$178,000	
	Construction Management/Materials Testing	% of sub-total construction costs		15.0%	$178,000	
	SUB-TOTAL DESIGN AND PROJECT ADMIN				**$534,000**	
				SUB-TOTAL	**$1,720,500**	**Notes**
	Contingency (40%)	% of sub-total		40.0%	$688,200	
	Total Project Cost Estimate (2020 Cost Rounded up to the Nearest $10,000)					**$2,410,000**

Opinion of Probable Construction Costs

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City of Watsonville

Estimate of Conceptual Project Costs

9.3 Rolling Hills Connector Trail

From Green Valley Rd to Hermann Ave

Kimley»Horn

Date Prepared: April 20, 2022

	Item	Unit	Quantity	Unit Cost	Total Cost	Notes
	Eileen St (Hermann Ave to Trail)					
1	Sharrow Markings	EA	8	$115	$900	Spaced at 100' each marking on both sides of the road
	Trail (Eileen St to SR 152)					
2	Trail (14' Width)	LF	490	$325	$159,300	This does not include amenities along the trail
	SR 152 (Trail to S. Green Valley Rd)					
3	Class I Path (10' Width)	SF	4,900	$25	$122,500	Concrete Path
	Green Valley Rd (Main St to Trail)					
4	Remove Concrete (Sidewalk)	LF	100	$120	$12,000	Removal of existing sidewalk for new Class I path
5	Class I Path (10' Width)	SF	1,000	$25	$25,000	Concrete Path
	Melwood Ct					
6	Sharrow Markings	EA	6	$115	$700	Spaced at 100' each marking on both sides of the road
	SUB-TOTAL MAJOR CONSTRUCTION ITEMS				**$282,700**	**Notes**
	Utility Work	% of sub-total major construction items		3.0%	$8,500	
	Landscaping	% of sub-total major construction items		0.0%	$0	
	Erosion Control	% of sub-total major construction items		5.0%	$14,200	
	Drainage	% of sub-total major construction items		5.0%	$14,200	
	Traffic Control / Detour	% of sub-total major construction items		10.0%	$28,300	
	Traffic - Signage & Striping	% of sub-total major construction items		2.0%	$5,700	
	Mobilization	% of sub-total major construction items		8.0%	$22,700	
	Misc. - Lighting/Commercial Signs	% of sub-total major construction items		0.0%	$0	
	Minor Contract Revisions	% of sub-total major construction items		5.0%	$14,200	
	SUB-TOTAL CONSTRUCTION COSTS				**$390,500**	**Notes**
	Design Engineering	% of sub-total construction costs		15.0%	$58,600	
	Construction Management/Materials Testing	% of sub-total construction costs		15.0%	$58,600	
	SUB-TOTAL DESIGN AND PROJECT ADMIN				**$117,200**	
				SUB-TOTAL	**$507,700**	**Notes**
	Contingency (40%)	% of sub-total		40.0%	$203,100	
	Total Project Cost Estimate (2020 Cost Rounded up to the Nearest $10,000)					**$720,000**

Opinion of Probable Construction Costs

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It should be noted that the provided cost estimation excludes Right of Way acquisition costs that may be required for these improvements to be implemented.

City of Watsonville

Estimate of Conceptual Project Costs

9.4 Upper Watsonville Slough Trail

From Main St to Freedom Blvd

Kimley»Horn

Date Prepared: April 20, 2022

	Item	Unit	Quantity	Unit Cost	Total Cost	Notes
	Trail (Main St to North of 9th St)					
1	Trail (14' Width)	LF	500	$325	$162,500	This does not include amenities along the trail
	Trail (North of 9th Street to Junipero Serra Dr)					
2	Trail (14' Width)	LF	1,650	$325	$536,300	This does not include amenities along the trail
3	Retaining Wall	SF	16,500	$250	$4,125,000	Assumes a 5' wall
	Junipero Serra Dr & Crespi Way					
4	Sharrow Markings	EA	10	$115	$1,200	Spaced at 100' each marking on both sides of the road
	Trail (Junipero Serra Dr to Miles Ln)					
5	Trail (14' Width)	LF	460	$325	$149,500	This does not include amenities along the trail
	Miles Ln (Trail to Slough)					
6	Sharrow Markings	EA	12	$115	$1,400	Spaced at 100' each marking on both sides of the road
	Trail (Junipero Serra Dr to Miles Ln)					
7	Trail (14' Width)	LF	390	$325	$126,800	This does not include amenities along the trail
	Trail (Miles Ln to Marin St)					
8	Trail (14' Width)	LF	200	$325	$65,000	ADA & pedestrian intersection improvements
	Trail (Marin to Alta Vista Ave)					
9	Trail (14' Width)	LF	1,820	$325	$591,500	This does not include amenities along the trail
	Alta Vista Ave (Trail to Freedom Blvd)					
10	Sharrow Markings	EA	12	$115	$1,400	Spaced at 100' each marking on both sides of the road
	SUB-TOTAL MAJOR CONSTRUCTION ITEMS				**$5,760,600**	**Notes**
	Utility Work	% of sub-total major construction items		3.0%	$172,900	
	Landscaping	% of sub-total major construction items		0.0%	$0	
	Erosion Control	% of sub-total major construction items		5.0%	$288,100	
	Drainage	% of sub-total major construction items		3.0%	$172,900	
	Traffic Control / Detour	% of sub-total major construction items		10.0%	$576,100	
	Traffic - Signage & Striping	% of sub-total major construction items		1.0%	$57,700	
	Mobilization	% of sub-total major construction items		8.0%	$460,900	
	Misc. - Lighting/Commercial Signs	% of sub-total major construction items		0.0%	$0	
	Minor Contract Revisions	% of sub-total major construction items		5.0%	$288,100	
	SUB-TOTAL CONSTRUCTION COSTS				**$7,777,300**	**Notes**
	Environmental Review	% of sub-total construction costs		15.0%	$1,166,600	
	Design Engineering	% of sub-total construction costs		15.0%	$1,166,600	
	Construction Management/Materials Testing	% of sub-total construction costs		15.0%	$1,166,600	
	SUB-TOTAL DESIGN AND PROJECT ADMIN				**$3,499,800**	
				SUB-TOTAL	**$11,277,100**	**Notes**
	Contingency (0%)	% of sub-total		40.0%	$4,510,900	
	Total Project Cost Estimate (2020 Cost Rounded up to the Nearest $10,000)					**$15,790,000**

Opinion of Probable Construction Costs

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Appendix F

Bike Ridership Forecasts

	Existing			Induced			Existing			Induced		
Trail	Child	Adult	Commuter	Child	Adult	Commuter	Child corrected	Adult corrected	Total	Child corrected	Adult corrected	Total
8.2	402	1,203	241	430	1,283	258	276	900	1,176	295	961	1,255
8.5	260	816	156	280	875	168	178	607	786	192	654	845
8.7	211	678	127	229	731	137	145	505	649	157	545	702
9.1	632	1,784	379	670	1,865	402	433	1,342	1,775	459	1,405	1,864
9.3	262	796	157	285	862	171	180	595	775	195	645	840
9.4	610	1,750	366	649	1,860	389	418	1,315	1,733	445	1,397	1,842
Total							**1,629**	**5,264**	**6,893**	**1,743**	**5,606**	**7,349**

Correction calculations:

Child corrected = ((1-commute%)-exercise%)/(1-commute%)*(Child)

Adult corrected = commuter+((((1-commuter%)-exercise%)/(1-commuter%)*(adult-commuter)))

Notes:

Percent commute = 11%

Percent exercise = 28%

Corridor Bikeway Improvement Project 8.2

National Cooperative Highway Research Program 552

Forecasted Bicycle Ridership Analysis

Near	Population within 0.5 miles	18,875	NCHRP crow flies default: 400m KHA network default: 0.5 miles
Mid	Population between 0.5 miles and 1 mile	38,930	NCHRP crow flies default: 800m KHA network default: 1 mile
Far	Population between 1 mile and 1.5 miles	52,536	NCHRP crow flies default: 1600m KHA network default: 1.5 miles
	Proportion of adults in population	0.801	NCHRP default 0.8 American Community Survey: Most recent 5-Year Estimate, Table S0101
	Proportion of adults that commute	0.5	NCHRP default 0.5
	Bicycle Commute Mode Share	1.00%	American Community Survey: Most recent 5-Year Estimate, Table B08006
Near	Proportion of commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of non-commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of non-commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of non-commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of youth that will use the facility	0.5	Estimated assuming younger children will not travel as far unaccompanied
Mid	Proportion of youth that will use the facility	0.33	Estimated assuming younger children will not travel as far unaccompanied
Far	Proportion of youth that will use the facility	0.17	Estimated assuming younger children will not travel as far unaccompanied
High	Adult bicycling rate	3.6%	NCHRP default 0.6% + 3 times commute rate
Medium	Adult bicycling rate	1.6%	NCHRP default 0.4% + 1.2 times commute rate
Low	Adult bicycling rate	1.0%	NCHRP default commute rate
Near	Likelihood multiplier for induced bicycle riders	2.93	NCHRP default 2.93
Mid	Likelihood multiplier for induced bicycle riders	2.11	NCHRP default 2.11
Far	Likelihood multiplier for induced bicycle riders	1.39	NCHRP default 1.39
	Youth bicycle use	6.0%	Statewide Household Travel Survey Data

SOURCE:

Ridership Estimate		High	Medium	Low
A	Total existing bicycle commuters	223	223	223
B	Total existing adult non-commuter bicyclists	2,958	1,191	660
C	Total existing adult cyclists (A+B)	3,181	1,414	884
D	Induced bicycle commuters	258	258	258
E	Induced non-commuters	2,628	1,025	544
F	Induced adult cyclists (D+E)	2,886	1,283	802
G	Total adult cyclists (C+F)	6,067	2,696	1,685
H	Total existing child cyclists	373	373	373
I	Induced child cyclists	430	430	430
J	Total child cyclists (H+I)	803	803	803
K	Total facility users (G+J)	6,870	3,500	2,488

1,255 Recommended Estimate for This Project
4 est dist (2 mi avg, 4 mi total)
5020.252 Daily VMT reduc

0.11 Percent Commute
0.28 Percent Exercise

Corridor Bikeway Improvement Project 8.5

National Cooperative Highway Research Program 552

Forecasted Bicycle Ridership Analysis

Near	Population within 0.5 miles	11,405	NCHRP crow flies default: 400m KHA network default: 0.5 miles
Mid	Population between 0.5 miles and 1 mile	25,693	NCHRP crow flies default: 800m KHA network default: 1 mile
Far	Population between 1 mile and 1.5 miles	45,599	NCHRP crow flies default: 1600m KHA network default: 1.5 miles
	Proportion of adults in population	0.801	NCHRP default 0.8 American Community Survey: Most recent 5-Year Estimate, Table S0101
	Proportion of adults that commute	0.5	NCHRP default 0.5
	Bicycle Commute Mode Share	1.00%	American Community Survey: Most recent 5-Year Estimate, Table B08006
Near	Proportion of commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of non-commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of non-commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of non-commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of youth that will use the facility	0.5	Estimated assuming younger children will not travel as far unaccompanied
Mid	Proportion of youth that will use the facility	0.33	Estimated assuming younger children will not travel as far unaccompanied
Far	Proportion of youth that will use the facility	0.17	Estimated assuming younger children will not travel as far unaccompanied
High	Adult bicycling rate	3.6%	NCHRP default 0.6% + 3 times commute rate
Medium	Adult bicycling rate	1.6%	NCHRP default 0.4% + 1.2 times commute rate
Low	Adult bicycling rate	1.0%	NCHRP default commute rate
Near	Likelihood multiplier for induced bicycle riders	2.93	NCHRP default 2.93
Mid	Likelihood multiplier for induced bicycle riders	2.11	NCHRP default 2.11
Far	Likelihood multiplier for induced bicycle riders	1.39	NCHRP default 1.39
	Youth bicycle use	6.0%	Statewide Household Travel Survey Data

SOURCE:

Ridership Estimate		High	Medium	Low
A	Total existing bicycle commuters	157	157	157
B	Total existing adult non-commuter bicyclists	2,227	903	506
C	Total existing adult cyclists (A+B)	2,384	1,059	662
D	Induced bicycle commuters	168	168	168
E	Induced non-commuters	1,801	707	379
F	Induced adult cyclists (D+E)	1,969	875	547
G	Total adult cyclists (C+F)	4,353	1,935	1,209
H	Total existing child cyclists	262	262	262
I	Induced child cyclists	280	280	280
J	Total child cyclists (H+I)	543	543	543
K	Total facility users (G+J)	4,896	2,477	1,752

845 Recommended Estimate for This Project
4 est dist (2 mi avg, 4 mi total)
3379.303 Daily VMT reduc

0.11 Percent Commute
0.28 Percent Exercise

Corridor Bikeway Improvement Project 8.7

National Cooperative Highway Research Program 552

Forecasted Bicycle Ridership Analysis

Near	Population within 0.5 miles	9,126	NCHRP crow flies default: 400m KHA network default: 0.5 miles
Mid	Population between 0.5 miles and 1 mile	20,537	NCHRP crow flies default: 800m KHA network default: 1 mile
Far	Population between 1 mile and 1.5 miles	42,791	NCHRP crow flies default: 1600m KHA network default: 1.5 miles
	Proportion of adults in population	0.801	NCHRP default 0.8 American Community Survey: Most recent 5-Year Estimate, Table S0101
	Proportion of adults that commute	0.5	NCHRP default 0.5
	Bicycle Commute Mode Share	1.00%	American Community Survey: Most recent 5-Year Estimate, Table B08006
Near	Proportion of commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of non-commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of non-commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of non-commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of youth that will use the facility	0.5	Estimated assuming younger children will not travel as far unaccompanied
Mid	Proportion of youth that will use the facility	0.33	Estimated assuming younger children will not travel as far unaccompanied
Far	Proportion of youth that will use the facility	0.17	Estimated assuming younger children will not travel as far unaccompanied
High	Adult bicycling rate	3.6%	NCHRP default 0.6% + 3 times commute rate
Medium	Adult bicycling rate	1.6%	NCHRP default 0.4% + 1.2 times commute rate
Low	Adult bicycling rate	1.0%	NCHRP default commute rate
Near	Likelihood multiplier for induced bicycle riders	2.93	NCHRP default 2.93
Mid	Likelihood multiplier for induced bicycle riders	2.11	NCHRP default 2.11
Far	Likelihood multiplier for induced bicycle riders	1.39	NCHRP default 1.39
	Youth bicycle use	6.0%	Statewide Household Travel Survey Data

SOURCE:

Ridership Estimate		High	Medium	Low
A	Total existing bicycle commuters	133	133	133
B	Total existing adult non-commuter bicyclists	1,956	795	447
C	Total existing adult cyclists (A+B)	2,089	928	580
D	Induced bicycle commuters	137	137	137
E	Induced non-commuters	1,508	594	320
F	Induced adult cyclists (D+E)	1,646	731	457
G	Total adult cyclists (C+F)	3,734	1,660	1,037
H	Total existing child cyclists	223	223	223
I	Induced child cyclists	229	229	229
J	Total child cyclists (H+I)	452	452	452
K	Total facility users (G+J)	4,186	2,111	1,489

702	Recommended Estimate for This Project
4	est dist (2 mi avg, 4 mi total)
2806.56	Daily VMT reduc
0.11	Percent Commute
0.28	Percent Exercise

Corridor Bikeway Improvement Project 9.1

National Cooperative Highway Research Program 552

Forecasted Bicycle Ridership Analysis

Near	Population within 0.5 miles	35,296	NCHRP crow flies default: 400m KHA network default: 0.5 miles
Mid	Population between 0.5 miles and 1 mile	49,594	NCHRP crow flies default: 800m KHA network default: 1 mile
Far	Population between 1 mile and 1.5 miles	57,517	NCHRP crow flies default: 1600m KHA network default: 1.5 miles
	Proportion of adults in population	0.801	NCHRP default 0.8 American Community Survey: Most recent 5-Year Estimate, Table S0101
	Proportion of adults that commute	0.5	NCHRP default 0.5
	Bicycle Commute Mode Share	1.00%	American Community Survey: Most recent 5-Year Estimate, Table B08006
Near	Proportion of commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of non-commuters that will use the facility	0.9	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Mid	Proportion of non-commuters that will use the facility	0.59	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Far	Proportion of non-commuters that will use the facility	0.3	NCHRP default 1 Override with likelihood decay factor based on .9 use for close proximity
Near	Proportion of youth that will use the facility	0.5	Estimated assuming younger children will not travel as far unaccompanied
Mid	Proportion of youth that will use the facility	0.33	Estimated assuming younger children will not travel as far unaccompanied
Far	Proportion of youth that will use the facility	0.17	Estimated assuming younger children will not travel as far unaccompanied
High	Adult bicycling rate	3.6%	NCHRP default 0.6% + 3 times commute rate
Medium	Adult bicycling rate	1.6%	NCHRP default 0.4% + 1.2 times commute rate
Low	Adult bicycling rate	1.0%	NCHRP default commute rate
Near	Likelihood multiplier for induced bicycle riders	2.93	NCHRP default 2.93
Mid	Likelihood multiplier for induced bicycle riders	2.11	NCHRP default 2.11
Far	Likelihood multiplier for induced bicycle riders	1.39	NCHRP default 1.39
	Youth bicycle use	6.0%	Statewide Household Travel Survey Data

SOURCE:

Ridership Estimate		High	Medium	Low
A	Total existing bicycle commuters	313	313	313
B	Total existing adult non-commuter bicyclists	3,792	1,511	827
C	Total existing adult cyclists (A+B)	4,105	1,824	1,140
D	Induced bicycle commuters	402	402	402
E	Induced non-commuters	3,795	1,463	763
F	Induced adult cyclists (D+E)	4,197	1,865	1,166
G	Total adult cyclists (C+F)	8,302	3,690	2,306
H	Total existing child cyclists	524	524	524
I	Induced child cyclists	670	670	670
J	Total child cyclists (H+I)	1,194	1,194	1,194
K	Total facility users (G+J)	9,496	4,884	3,500

1,864	Recommended Estimate for This Project
4	est dist (2 mi avg, 4 mi total)
7457.568	Daily VMT reduc
0.11	Percent Commute
0.28	Percent Exercise

Corridor Bikeway Improvement Project 9.3

National Cooperative Highway Research Program 552

Forecasted Bicycle Ridership Analysis

Near	Population within 0.5 miles	13,168
Mid	Population between 0.5 miles and 1 mile	22,545
Far	Population between 1 mile and 1.5 miles	43,216
	Proportion of adults in population	0.801
	Proportion of adults that commute	0.5
	Bicycle Commute Mode Share	1.00%
Near	Proportion of commuters that will use the facility	0.9
Mid	Proportion of commuters that will use the facility	0.59
Far	Proportion of commuters that will use the facility	0.3
Near	Proportion of non-commuters that will use the facility	0.9
Mid	Proportion of non-commuters that will use the facility	0.59
Far	Proportion of non-commuters that will use the facility	0.3
Near	Proportion of youth that will use the facility	0.5
Mid	Proportion of youth that will use the facility	0.33
Far	Proportion of youth that will use the facility	0.17
High	Adult bicycling rate	3.6%
Medium	Adult bicycling rate	1.6%
Low	Adult bicycling rate	1.0%
Near	Likelihood multiplier for induced bicycle riders	2.93
Mid	Likelihood multiplier for induced bicycle riders	2.11
Far	Likelihood multiplier for induced bicycle riders	1.39
	Youth bicycle use	6.0%

SOURCE:

NCHRP crow flies default: 400m	KHA network default: 0.5 miles
NCHRP crow flies default: 800m	KHA network default: 1 mile
NCHRP crow flies default: 1600m	KHA network default: 1.5 miles
NCHRP default 0.8	American Community Survey: Most recent 5-Year Estimate, Table S0101
NCHRP default 0.5	
American Community Survey: Most recent 5-Year Estimate, Table B08006	
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
Estimated assuming younger children will not travel as far unaccompanied	
Estimated assuming younger children will not travel as far unaccompanied	
Estimated assuming younger children will not travel as far unaccompanied	
NCHRP default 0.6% + 3 times commute rate	
NCHRP default 0.4% + 1.2 times commute rate	
NCHRP default commute rate	
NCHRP default 2.93	
NCHRP default 2.11	
NCHRP default 1.39	
Statewide Household Travel Survey Data	

Ridership Estimate		High	Medium	Low
A	Total existing bicycle commuters	153	153	153
B	Total existing adult non-commuter bicyclists	2,123	859	479
C	Total existing adult cyclists (A+B)	2,275	1,011	632
D	Induced bicycle commuters	171	171	171
E	Induced non-commuters	1,769	691	368
F	Induced adult cyclists (D+E)	1,940	862	539
G	Total adult cyclists (C+F)	4,215	1,873	1,171
H	Total existing child cyclists	256	256	256
I	Induced child cyclists	285	285	285
J	Total child cyclists (H+I)	540	540	540
K	Total facility users (G+J)	4,755	2,414	1,711

840	Recommended Estimate for This Project
4	est dist (2 mi avg, 4 mi total)
3359.883	Daily VMT reduc
0.11	Percent Commute
0.28	Percent Exercise

Corridor Bikeway Improvement Project 9.4

National Cooperative Highway Research Program 552

Forecasted Bicycle Ridership Analysis — **Base Year**

Near	Population within 0.5 miles	31,304
Mid	Population between 0.5 miles and 1 mile	54,172
Far	Population between 1 mile and 1.5 miles	63,220
	Proportion of adults in population	0.801
	Proportion of adults that commute	0.5
	Bicycle Commute Mode Share	1.00%
Near	Proportion of commuters that will use the facility	0.9
Mid	Proportion of commuters that will use the facility	0.59
Far	Proportion of commuters that will use the facility	0.3
Near	Proportion of non-commuters that will use the facility	0.9
Mid	Proportion of non-commuters that will use the facility	0.59
Far	Proportion of non-commuters that will use the facility	0.3
Near	Proportion of youth that will use the facility	0.5
Mid	Proportion of youth that will use the facility	0.33
Far	Proportion of youth that will use the facility	0.17
High	Adult bicycling rate	3.6%
Medium	Adult bicycling rate	1.6%
Low	Adult bicycling rate	1.0%
Near	Likelihood multiplier for induced bicycle riders	2.93
Mid	Likelihood multiplier for induced bicycle riders	2.11
Far	Likelihood multiplier for induced bicycle riders	1.39
	Youth bicycle use	6.0%

SOURCE:

NCHRP crow flies default: 400m	KHA network default: 0.5 miles
NCHRP crow flies default: 800m	KHA network default: 1 mile
NCHRP crow flies default: 1600m	KHA network default: 1.5 miles
NCHRP default 0.8	American Community Survey: Most recent 5-Year Estimate, Table S0101
NCHRP default 0.5	
American Community Survey: Most recent 5-Year Estimate, Table B08006	
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
NCHRP default 1	Override with likelihood decay factor based on .9 use for close proximity
Estimated assuming younger children will not travel as far unaccompanied	
Estimated assuming younger children will not travel as far unaccompanied	
Estimated assuming younger children will not travel as far unaccompanied	
NCHRP default 0.6% + 3 times commute rate	
NCHRP default 0.4% + 1.2 times commute rate	
NCHRP default commute rate	
NCHRP default 2.93	
NCHRP default 2.11	
NCHRP default 1.39	
Statewide Household Travel Survey Data	

Ridership Estimate		High	Medium	Low
A	Total existing bicycle commuters	317	317	317
B	Total existing adult non-commuter bicyclists	3,970	1,588	874
C	Total existing adult cyclists (A+B)	4,286	1,905	1,191
D	Induced bicycle commuters	389	389	389
E	Induced non-commuters	3,796	1,471	773
F	Induced adult cyclists (D+E)	4,186	1,860	1,163
G	Total adult cyclists (C+F)	8,472	3,765	2,353
H	Total existing child cyclists	529	529	529
I	Induced child cyclists	649	649	649
J	Total child cyclists (H+I)	1,178	1,178	1,178
K	Total facility users (G+J)	9,650	4,943	3,531

1,842	Recommended Estimate for This Project
4	est dist (2 mi avg, 4 mi total)
7368.137	Daily VMT reduc
0.11	Percent Commute
0.28	Percent Exercise

Appendix G

Assembly Bill (AB) 32, Senate Bill (SB) 375, and Senate Bill (SB) 743

California has a number of regulations regarding greenhouse gases (GHGs) and they are often confused with each other, in particular SB 375 is confused with AB 32. The major difference is AB 32 reduces GHGs from all sectors, whereas SB 375 is only concerned with transportation, specifically passenger vehicles. SB 743 also focuses on the transportation sector, but from an environmental perspective. It works with the California Environmental Quality Act (CEQA) to prioritize development and transportation projects that get people out of individual cars and into sustainable modes of transportation.

California's major initiative for reducing GHG emissions is outlined in AB 32, the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels), and requires the California Air Resources Board (CARB) to prepare a Scoping Plan that outlines the main state strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

SB 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by aligning transportation planning and funding, land use planning and state housing mandates at the regional level in order to reduce vehicle miles travelled (VMT) and transportation-related GHG emissions. As mandated by CARB, the Association of Monterey Bay Area Governments (AMBAG) must reduce per capita GHG emissions from passenger vehicles in order to meet the SB 375 target. The 2035 Metropolitan Transportation Plan / Sustainable Communities Strategy (MTP/SCS) for the AMBAG region includes the targets previously set by CARB to not exceed 2005 per capita levels of GHGs by 2020 and to reduce GHG emissions by 5 percent per capita from 2005 levels by 2035. These targets will be revised based on updated Scoping Plans prepared by CARB and reflected in subsequent MTP/SCS documents prepared by AMBAG.

SB 743 concerns how transportation-related GHG impacts of development and transportation projects are evaluated under CEQA. SB 743 focused transportation's impacts on the environment instead of on congestion. Before July 1, 2020, traffic congestion levels (known as level of service, or LOS) were the main measurement to determine the negative environmental impacts of development and transportation projects. These effects are now measured according to the overall amount that people drive (known as VMT). Given that transportation — and particularly passenger cars — is responsible for close to 40 percent of all GHG emissions in the State and over half of GHG emissions in the City, by reducing the VMT, the amount of GHG emissions and other air pollutants from cars are reduced.

RESOLUTION NO. 14-22 (PC)

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WATSONVILLE, CALIFORNIA, RECOMMENDING TO THE CITY COUNCIL TO ADOPT A VEHICLE MILES TRAVELED (VMT) POLICY INCLUSIVE OF ESTABLISHING VMT AS THE APPROPRIATE METRIC FOR EVALUATING TRANSPORTATION-RELATED IMPACTS UNDER CEQA, ESTABLISHING VMT THRESHOLDS OF SIGNIFICANCE, ESTABLISHING SCREENING CRITERIA, ESTABLISHING TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES, AND ESTABLISHING A VMT MITIGATION BANKING PROGRAM

Project: VMT Policy

WHEREAS, the California Environmental Quality Act (CEQA) requires public agencies responsible for approval of land use projects and construction of transportation projects to assess their anticipated environmental impacts and to select project alternatives or implement mitigation measure that lessen those impacts where feasible. Known as a "lead agency" under CEQA, a public agency with the discretionary authority to approve or deny a project (or to carry it out directly) generally must analyze the proposed project's impacts to the physical environment, identify alternatives and mitigation measures, and approve a project alternative and/or mitigation measures that substantially reduce significant impacts, unless those measures are infeasible due to economic, social, or other conditions; and

WHEREAS, in 2013, state law was changed with the passage Senate Bill (SB) 743 (Steinberg) to update the way transportation impacts are analyzed under CEQA for new land use and transportation projects. Previously, transportation analyses had been based on automobile delay, typically measured as "level of service," or LOS. SB 743 also required the Governor's Office of Planning and Research (OPR) to develop a new metric for evaluating transportation impacts other than LOS to more appropriately balance the needs of congestion management with statewide goals related to infill

development, promotion of public health through active transportation, and reduction of greenhouse gas emissions; and

WHEREAS, in 2018, OPR released updates to the state's CEQA Guidelines to implement SB 743 by replacing LOS with VMT as the most appropriate measure of a project's transportation impacts; this update was formally certified and adopted by the California Natural Resources Agency and codified as section 15064.3 of the CEQA Guidelines. Simultaneously, OPR released a Technical Advisory on Evaluating Transportation Impacts in CEQA. The Technical Advisory includes recommendations for thresholds of significance for evaluating impacts of office, residential and retail developments, and provides screening criteria for identifying the types of projects that can be presumed to have a less than significant impact; and

WHEREAS, as of July 1, 2020, all lead agencies are required to use VMT to measure transportation impacts, in accordance with section 15064.3 of the CEQA Guidelines; and

WHEREAS, in order to comply with SB 743, the City of Watsonville joined the Cities of Capitola, Santa Cruz, and Scotts Valley and the County of Santa Cruz to collectively approach this new paradigm of measuring transportation impacts for the purposes of conducting environmental review. The Cities and County hired Kimley Horn & Associates, a transportation consulting firm, to assist with the necessary work, including updating baseline traffic conditions, updating and running the county-wide Travel Demand Model, creating screening maps, and producing thresholds of significance for the Santa Cruz region. This work forms the foundation of the City's draft VMT Policy, and was used by other jurisdictions within our region that have adopted VMT thresholds of significance and SB 743 guidelines in conformance of with section 15064.3 of the CEQA Guidelines and OPR's Technical Advisory; and

WHEREAS, CEQA Guidelines section 15064.7(b) allows lead agencies to adopt thresholds of significance for the lead agency's general use in its environmental review process; and

WHEREAS, the City intends to adopt a VMT Policy, inclusive of establishing VMT thresholds of significance, based on a data-driven evaluation, in order to meet the intent of State legislation; and

WHEREAS, the adoption of a VMT Policy, including the VMT Mitigation Banking Program, is not a "project" as defined in section 15378 of the CEQA Guidelines and Public Resources Code section 21065, as this is not a "project" that may cause a direct, or reasonably foreseeable indirect, physical change in the environment. The VMT Policy is an administrative activity of the City, providing guidance to property owners, project developers, applicants and proponents for determining the significance of transportation impacts of land use projects. The VMT Policy would not approve any specific development and would therefore not lead to any particular physical change to the environment. Moreover, even if found to be a "project," the VMT Policy is exempt under the "common sense" exception (14 Cal. Code Regs. § 15061(b)(3)) because it can be seen with certainty that there is no possibility that the action of adopting the Policy would have a significant effect on the environment.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Watsonville, California, as follows:

Good cause appearing, therefore, the Planning Commission of the City of Watsonville does hereby recommend adoption of the draft City of draft VMT Policy, a copy of which is attached hereto and incorporated herein by this reference, inclusive of establishing VMT as the City's thresholds of significance for transportation-related environmental impacts pursuant to CEQA, as follows:

- Residential projects: 15% below existing county-wide average VMT per capita
- Office projects: 15% below existing county-wide average Work VMT per employee
- Retail projects: No net increase (based on county-wide VMT)
- Other customers: No net increase (based on county-wide VMT for similar land uses)
- Other employment: 15% below existing county-wide average Work VMT per employee for similar uses

BE IT FURTHER RESOLVED, that the Planning Commission of the City of Watsonville recommends that the City Council authorize the Community Development Director to update the VMT thresholds of significance for land use projects and plans, as necessary and appropriate to reflect current conditions, provided any update is consistent with the intent of SB 743 and in compliance with procedural and substantive requirement of CEQA and all other applicable state and local laws.

I HEREBY CERTIFY that the foregoing Resolution was introduced at a regular meeting of the Planning Commission of the City of Watsonville, California, held on the 6th of September, 2022, by Commissioner Kammer, who moved its adoption, which motion being duly seconded by Commissioner Veitch-Olson, was upon roll call, carried and the resolution adopted by the following vote:

Ayes: Commissioners: Acosta, Dodge, Kammer, Rojas, Sención, Veitch-Olson, Dorantes-Pulido

Noes: Commissioners: None

Absent: Commissioners: None

DocuSigned by:
Suzi Merriam
7604AA869306458...

Suzi Merriam, Secretary
Planning Commission

DocuSigned by:
Veronica Dorantes-Pulido
10199F72CEFA467...

Veronica Dorantes-Pulido, Chairperson
Planning Commission