Standardized Regulatory Impact Assessment: CEQA Guidelines Updates

1. Summary

a. Background on the California Environmental Quality Act

The California Supreme Court recently observed regarding the California Environmental Quality Act (Public Resources Code section 21000 and following), also known as CEQA, that:

> In CEQA, the Legislature sought to protect the environment by the establishment of administrative procedures drafted to '[e]nsure that the long-term protection of the environment shall be the guiding criterion in public decisions.' " … At the "heart of CEQA" … is the requirement that public agencies prepare an [environmental impact report, or EIR] for any "project" that "may have a significant effect on the environment." … The purpose of the EIR is "to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project." … The EIR thus works to "inform the public and its responsible officials of the environmental consequences of their decisions before they are made," thereby protecting "'not only the environment but also informed self-government.'"

(*Friends of the College of San Mateo Gardens v. San Mateo County Community College Dist*. (2016) 1 Cal.5th 937, 944 (citations omitted).)

Importantly, while CEQA's administrative procedures require that agencies study potential impacts, they do not specify precisely how to analyze or mitigate impacts. Lead agencies determine the specific methodology of a study and its outcome depending on the project and its surrounding circumstances.

Generally, the CEQA process follows several steps. First, the lead agency determines whether CEQA applies at all (in other words, whether the activity meets the definition of a "project" and if so, whether any exemption applies). If a project is not exempt from CEQA, a public agency typically evaluates a proposed project's potential impacts in a public document known as an initial study, which briefly describes an array of potential impacts including air quality, biological resources, water quality, etc. If the initial study shows that a project would cause no impacts, an agency may prepare a negative declaration, or a mitigated negative declaration if impacts can be avoided through the imposition of feasible mitigation measures. Before adopting the project, the lead agency would invite public review of the initial study and proposed negative declaration.

If evidence in the record indicates that the project may cause adverse environmental impacts, the agency must prepare a detailed environmental impact report. The purpose of an environmental impact report is to analyze a project's potential impacts, propose mitigation measures to lessen those impacts, and describe alternatives to the project that may avoid impacts. Agencies must invite public review and comment on environmental impact reports. If the significant impacts of a project cannot be avoided, an agency may approve the project if it adopts a statement of overriding considerations describing in the public record why the benefits of the project outweigh its adverse environmental impacts.

b. Proposed Regulatory Amendments and the Statement of the Need for those Amendments

The CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, section 15000 and following) are administrative regulations governing implementation of CEQA. According to the California Supreme Court, the CEQA Guidelines "are 'central to the statutory scheme'; they 'serve to make the CEQA process tractable for those who must administer it, those who must comply with it, and ultimately, those members of the public who must live with its consequences.'" (*Friends*, *supra*, 1 Cal.5th at 954.) The CEQA Guidelines reflect requirements set forth in the Public Resources Code, as well as court decisions interpreting the statute and practical planning considerations.

Among other things, the CEQA Guidelines explain how to determine whether an activity is subject to environmental review, what steps are involved in the environmental review process, and the required content of environmental documents. The CEQA Guidelines apply to public agencies throughout the state, including local governments, special districts, and state agencies. In practice, many agency staff look to the CEQA Guidelines as a plain English guide to the requirements set forth in statute and case law, and therefore, use the Guidelines as a primary source of information about CEQA.

Public Resources Code section 21083 requires the Office of Planning and Research (OPR) and the Natural Resources Agency to periodically update the CEQA Guidelines. Though there have been several updates addressing discrete topics over the years, there has not been a comprehensive update to the CEQA Guidelines since the late 1990s. Beginning in 2013, the Office of Planning and Research and the Natural Resources Agency began the update process. Together, after seeking input from the public, they identified numerous potential changes that could make the CEQA process more efficient, lead to improved environmental outcomes, and clarify developments in case law. That same year, the Legislature enacted, and the Governor signed, Senate Bill 743, which required an update to the CEQA Guidelines to modernize the analysis of transportation impacts.

Most of the changes proposed in this update consist of refinements and clarifications of existing requirements. The update related to transportation, however, will replacement one study methodology for another. That particular proposed regulatory amendment provides that transportation impacts of projects are, in general, best measured by evaluating the project's vehicle miles traveled (VMT). Methodologies for evaluating such impacts are already in use for most land use projects, as well as many transit and active transportation projects. VMT is also currently used to analyze a project's environmental impacts to other resources, including air quality and greenhouse gases. During the development of the proposal, some agencies advocated for greater discretion in selecting the metric to evaluate the transportation impacts of highway capacity projects. Therefore, the proposed amendments recognize a lead agency's discretion to analyze such projects using the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. Because the economic impacts of using one methodology instead of another are capable of estimate, the update related to transportation is the primary focus of this SRIA.

c. Major Regulation Determination

Prior to filing a Notice of Proposed Action with the Office of Administrative Law (OAL), agencies proposing a major regulation must first prepare a statement of regulatory impact assessment (SRIA). A "major regulation" is defined as:

> [A]ny proposed rulemaking action adopting, amending, or repealing a regulation subject to review by OAL that will have an economic impact on California business enterprises and individuals in an amount exceeding $50 million in any 12-month period between the date the major regulation is estimated to be filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented (as estimated by the agency) computed without regard to any offsetting benefits or costs that might result directly or indirectly from that adoption, amendment, or repeal.

(Cal. Code. Regs., tit. 1, § 2000(g).)

The proposed regulatory amendment related to transportation analysis is expected to lead to a cost savings in document preparation of slightly less than $50,000,000 over a 12-month period after full implementation. But because additional unquantifiable effects of the proposed regulation could aggregate to an economic impact of greater than $50,000,000 over that period, the Natural Resources Agency determined that the proposal may constitute a major regulation, and prepared this SRIA.

d. Baseline Information

This section describes implementation of CEQA under the status quo. This baseline information will inform the potential economic impact of the proposed regulations. In considering the effect of proposed changes to the transportation analysis of highway capacity projects, and to provide a conservative estimate of the potential economic impact of this proposal, this analysis assumes that for highway capacity projects, lead agencies will select VMT as the appropriate measure of transportation impacts. Appendix A includes a description of the changes in the analysis of common project types under the proposed regulation.

i. Estimate of Environmental Documents that Agencies Prepare Annually

CEQA applies broadly to nearly all public agency decisions that may affect the physical environment, "including but not limited to public works construction and related activities clearing or grading of land, improvements to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans" as well as "the issuance to a person of a lease, permit, license, certificate, or other entitlement for use[.]" (CEQA Guidelines, § 15378.) As a result, public agencies across the state produce thousands of environmental documents every year.

The following table summarizes the numbers of CEQA documents sent to the State Clearinghouse every year:

Table 1. Summary of CEQA Document Submittals by Year and Type

Year	ND / MND	EIR	NOE
1999	2,007	481	2,699
2000	2,243	475	3,840
2001	2,612	524	6,083
2002	2,676	544	5,737
2003	2,972	577	6,078
2004	2,903	625	5,898
2005	3,076	636	5,649
2006	2,882	649	4,716
2007	2,805	583	4,137
2008	2,583	570	4,307
2009	2,205	477	3,747
2010	1,771	464	3,646
2011	1,645	396	3,894
2012	1,594	373	4,334
2013	1,532	348	4,451
2014	1,732	406	4,576
2015	1,666	363	4,867

In the table above, "ND/MND" refers to a negative declaration, or mitigated negative declaration, which documents a lead agency's determination that the project will not cause any significant environmental impacts.

"EIR" refers to an environmental impact report. CEQA requires preparation of an environmental impact report when substantial evidence suggests that a project may cause an adverse environmental impact.

"NOE" refers to a notice of exemption, which a lead agency may file following a determination that CEQA does not apply to a project. The Legislature has exempted certain types of projects from CEQA's requirements. CEQA also authorizes the CEQA Guidelines to identify categories of projects that normally would not have a significant impact, and therefore are exempt from CEQA. An agency's determination that a project is exempt typically does not require the preparation of detailed studies.

Note, CEQA requires that most, but not all, documents be submitted to the State Clearinghouse. Further, lead agencies are not required to file notices of exemption at all. Therefore, the numbers above do not fully reflect all CEQA documents prepared in any given year.

ii. Estimate of Cost to Prepare Environmental Documents

The cost to prepare environmental documents varies considerably. Factors affecting cost include the scope of the project, its location, and potential range of impacts. Generally, the greater number of technical studies needed to evaluate the project, the higher the overall cost of the environmental document. Environmental professionals report that the following costs are typical:

- Many environmental analyses require technical studies addressing, among others:
    - Air quality / greenhouse gas emissions

  - Biological resources
  - Cultural resources
  - Noise
  - Traffic
- Costs for such studies often range from about $10,000 to $15,000.
- Traffic studies typically cost more. Today, traffic studies measure impacts on roadway capacity. The measure of such impacts is expressed as a "level of service," or LOS. Estimating LOS requires, among other things, estimating the number of trips associated with a project, conducting traffic counts at numerous intersections surrounding the proposed project, and estimating volumes at those intersections years into the future. The starting price for a traffic study is usually $15,000-$20,000 but can be in the $40,000-$50,000 range for larger development projects. Development projects that involve plan changes (specific plans and general plan amendments) can be in the $50,000-100,000 range.
- Completing the remainder of an initial study may cost another $15,000.

A typical initial study and ND/MND, therefore, may be assumed to cost approximately $65,000-$90,000. With technical studies, a typical EIR may cost between $300,000-$400,000.[1] These costs will often be smaller for smaller projects, and can be larger for more complex projects. A recent report on costs associated with CEQA that sampled a few projects for case studies found that environmental documents typically fell below one percent of total project cost.[2]

Some agencies and large departments have technical staff in-house that can prepare these environmental documents. Many agencies do not, however, and so the work is commonly completed under contract with private consulting firms. CEQA provides that when an agency conducts environmental review for a private development application, the agency may pass CEQA compliance costs onto the applicant. (Pub. Resources Code § 21089.)

iii. Public Outreach and Input Regarding the Development of the CEQA Guidelines Update

Since 2013, OPR and the Natural Resources Agency have engaged in an iterative process to develop the CEQA Guidelines proposal. Specifically, they:

- Distributed a formal Solicitation for Input on possible improvements in the Summer of 2013
- Published, and requested comment on, a possible list of topics to address in the update in December 2013
- Published, and requested comment on, an evaluation of alternative transportation metrics pursuant to Senate Bill 743, also in December 2013

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[1] These cost estimates were provided by the Association of Environmental Professionals in a personal communication. To develop the estimate, the Board President conducted an informal poll of the Association's Legislative Committee. The Association's members are primarily environmental consultants that regularly produce environmental documents and assist lead agencies with CEQA compliance. Therefore, these estimates come from a knowledgeable, reliable source.

[2] Rose Foundation, Bay Area Economics, "CEQA in the 21st Century: Environmental Quality, Economic Prosperity, and Sustainable Development in California" (August 2016), see pages 25-43, available online at https://rosefdn.org/wp-content/uploads/2016/08/CEQA-in-the-21st-Century.pdf

- Released a first draft of Guidelines evaluating vehicle miles traveled in August 2014 for public comment
- Released a first draft of a comprehensive update to the CEQA Guidelines in August 2015 for public comment
- Revised and released an updated draft of the Guidelines addressing vehicle miles traveled, together with a draft Technical Advisory, in January 2016, for additional public comment
- Developed changes and requested comments, in October 2016, to the Guidelines addressing hazards in response to the California Supreme Court's decision in *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369.

In addition to these public comment periods, OPR, the Resources Agency, or both have gathered input from over 150 informal stakeholder meetings, presentations, conferences, and other venues. (See Appendix B.)

2. Example Case Studies: Moving from LOS to VMT Metrics

Currently, environmental review of transportation impacts focuses on the delay that vehicles experience at intersections and on roadway segments. That delay is measured by the LOS metric, which assigns the delay a letter grade assessed at the peak hour of the day. Table 2 provides an example of LOS for two intersection types – signalized and unsignalized intersections. Most jurisdictions specify an LOS threshold, or level beyond which LOS is deemed unacceptable. In practice, agencies often use those thresholds as CEQA significance thresholds; thus, if a project reduces LOS to an unacceptable level, the lead agency must mitigate that impacts to the extent feasible, generally by providing additional vehicle capacity (e.g., adding a traffic lane).

Table 2. Intersection Levels of Service (LOS)

LOS	Signalized Intersection	Unsignalized Intersection
A	≤10 sec	≤10 sec
B	10–20 sec	10–15 sec
C	20–35 sec	15–25 sec
D	35–55 sec	25–35 sec
E	55–80 sec	35–50 sec
F	≥80 sec	≥50 sec

In contrast to LOS, VMT analysis would characterize the total miles of auto travel generated by the project. Lead agencies could provide CEQA thresholds of significance for various project types (e.g., 15 percent below regional VMT per capita for residential projects). A project exceeding the significance threshold for the amount of vehicle travel onto the region's roadways would be required to mitigate the project's significant adverse impacts. Lists of potential VMT mitigation measures for various project types and circumstances can be found in the California Pollution Control Officers Association's (CAPCOA) 2010 document, *Quantifying Greenhouse Gas Mitigation Measures, A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*. (*Id.* at pp. 155-331.) Section 2.a.i, below, provides some common examples of VMT mitigation measures.

The following sections present two case studies—an infill residential project and greenfield residential project—that are intended to illustrate the shift in the transportation metric from LOS to VMT. Specifically, these case studies show how the proposed regulation will streamline the analysis of some projects and may result in less costly and time-consuming transportation analysis.

a. Example Case Study: Infill Residential Project

To illustrate the effect of the proposal on infill projects, this SRIA considers a hypothetical centrally-located, multifamily infill residential project containing 350 units. Multifamily development (e.g., apartments) would generally be expected to generate 6.65 trips per unit per day, including 0.62 trips during each of the morning and evening peak hours (ITE Trip Generation Manual). However, a typical centrally-located infill development exhibits reduced trip generation due to an array of factors, including transit availability and walkability, and shorter than average trip lengths due to proximity to jobs and services. For this example, we assume a trip generation reduction of 25 percent, and trip length of five miles.

i. LOS Analysis

An LOS study for an infill project begins with field measurements taken to ascertain the traffic volume and LOS at each intersection affected by traffic from the project. Next, the expected routing of trips generated by the project through local intersections is determined, the additional volume of project-generated traffic arriving at each of those intersections as a result of the project is ascertained, and the resulting LOS is estimated.

In many infill areas, LOS already approaches the jurisdiction's threshold at many intersections because infill projects are generally in denser areas served by already-loaded roadways with high traffic volumes. Thus, a proposed development project in an infill location is likely to push LOS past the threshold at some intersections. LOS can degrade quickly by adding a few additional vehicles, especially in infill areas that may already experience high traffic volumes. The hypothetical project presented above may generate approximately 217 peak hour trips, which may be enough to trigger LOS thresholds at multiple intersections depending on initial conditions (e.g., LOS would degrade from LOS D to LOS E with the proposed project). For example, just half of those 217 peak hour trips passing through an intersection near or downstream of the project could add an average of more than two vehicles per traffic light cycle, introducing several seconds of additional delay. At any intersection where that additional delay pushed beyond the jurisdiction's LOS threshold and resulting in a significant environmental impact under CEQA, the project would be required to provide enforceable mitigation, if feasible, to reduce the impact to a less-than-significant level (such as supplying roadway capacity sufficient to bring LOS back above threshold levels). Alternatively, the project proponent would need to modify its project, such as reducing the number of units, to reduce trip generation.

ii. VMT Analysis

To assess VMT generated by a residential project, the number of trips generated is multiplied by the average length of those trips. In general, many variables influence the number of trips generated per person and the average trip lengths, such as a project's characteristics, the surrounding land uses and their layout, available transit and transportation options, and a proximity to amenities and services, among others. Trip lengths in infill areas are generally shorter because potential destinations are likely to be closer in proximity, leading to lower VMT generation per person than in outlying projects.

Under the proposed regulation, many infill projects would bypass a VMT impact analysis altogether by demonstrating either proximity to transit or location in a low-VMT existing neighborhood via a map showing areas of existing low-VMT. Thus, a significant benefit of a VMT analysis would be a lead agency's ability to streamline a proposed infill project's environmental review. Even for those projects that would not fall within streamlined categories, as discussed below in Section 3, Direct Benefits, VMT analysis would take less time to complete thereby providing cost and time savings (including staff time) to lead agencies and project proponents. Streamlined environmental review may spur more low-VMT development, which would result in many environmental, land use, and health benefits as discussed below in Section 3.[3]

In the minority of infill projects where a VMT assessment would be necessary, the lead agency could assess trip generation, selecting from a variety of data sources, and trip length could be assessed using a travel model (e.g., data provided by Caltrans at http://www.dot.ca.gov/hq/tpp/offices/omsp/SB743.html), travel survey, or aggregated GPS data. If the VMT analysis demonstrated that the proposed project would result in significant transportation impacts, feasible and enforceable mitigation measures would be required to reduce the impacts to a less-than-significant level. As noted earlier, proposed projects can vary greatly and mitigation could include travel demand management measures, among others. One source of VMT mitigation measures is the 2010 CAPCOA report, *Quantifying Greenhouse Gas Mitigation Measures*, *A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*. Common examples include:

- Improving or increasing access to transit.
- Increasing access to common goods and services, such as groceries, schools, and daycare.
- Incorporating affordable housing into the project.
- Incorporating neighborhood electric vehicle network.
- Orienting the project toward transit, bicycle and pedestrian facilities.
- Improving pedestrian or bicycle networks, or transit service.
- Providing bicycle parking.
- Limiting parking supply.
- Unbundling parking costs.
- Parking or roadway pricing or cash-out programs.
- Implementing a commute reduction program.
- Providing car-sharing, bike sharing, and ride-sharing programs.
- Providing transit passes.

b. Example Case Study: Greenfield Residential Project

To illustrate the effect of the proposed regulation in the context of greenfield single-family residential projects, this SRIA considers a hypothetical greenfield single-family residential project consisting of 350 units. A single-family development would generally be expected to generate 9.52 trips per unit per day, including 1.00 trips during each of the morning and evening peak hours (ITE Trip Generation Manual).

[3] See, e.g., "'Driving Miles' is best measure of new development," San Francisco Chronicle, Opinion by Curt Johansen and Jeremy Madsen (Nov. 19, 2014), available online at http://www.sfgate.com/opinion/openforum/article/Driving-miles-is-best-measure-of-new-5904868.php.

Because it is built in an outlying area, average trip lengths would be longer than the regional average; for this example, we assume a typical greenfield average trip length of ten miles.

iii. LOS Analysis

An LOS study for a greenfield residential project also begins with field measurements taken to ascertain the traffic volume and LOS at each intersection affected by traffic from the project. Next, the expected routing of trips generated by the project through local intersections is determined, the additional volume of project-generated traffic arriving at each of those intersections as a result of the project is ascertained, and the resulting LOS is estimated.

This project would generate an estimated 350 trips in each peak hour. Greenfield projects are less likely to be located near existing congested intersections than an infill development. However, these projects are more likely to be located in areas of limited transportation infrastructure and thus greenfield projects often must build new and additional physical roadway capacity to accommodate the project's traffic. Because greenfield projects are less likely to be built near existing congested intersections, the development of these projects are less likely to trigger the LOS threshold at any intersection in the project's affected area. Further, at any intersection where that additional delay triggers the jurisdiction's LOS threshold and results in a significant environmental impact under CEQA, the project would be required to provide enforceable mitigation, if feasible, to reduce the impact to a less-than-significant level. Typical mitigation could include addition of through or turn lanes, or the addition of traffic stop devices such as signals.

iv. VMT Analysis

As with infill projects, many variables influence the number of trips generated per person and the average trip lengths, such as a project's characteristics, the surrounding land uses and their layout, available transit and transportation options, and a proximity to amenities and services, among others. Trip lengths in greenfield areas are generally longer than those in infill areas because potential destinations are generally farther away, leading to VMT generation per person greater than that of infill projects.

Again, agencies would assess VMT for a greenfield project as described above. Similarly, if the VMT analysis demonstrates that the proposed project would result in significant transportation impacts, feasible and enforceable mitigation measures would be required to reduce the impacts to a less-than-significant level. If the significant impacts of a project cannot be avoided, an agency may approve the project if it adopts a statement of overriding considerations describing in the public record why the benefits of the project outweigh its adverse environmental impacts. As noted earlier, proposed projects can vary greatly and VMT mitigation could include travel demand management measures, among others. One source of VMT mitigation measures is the 2010 CAPCOA report, *Quantifying Greenhouse Gas Mitigation Measures*, *A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures,* described above in Section 2.a.i. Because greenfield development is likely to generate higher VMT than infill, mitigation is more likely needed. However, because VMT mitigation may be less costly than LOS mitigation, agencies and project proponents may experience some savings, especially when the cost savings of preparing a VMT analysis are factored in. As discussed below in Section 3, Direct Benefits, VMT analysis would take less time to complete, thereby providing cost and time savings (including staff time) to lead agencies and project proponents. Also as

discussed in Section 3, VMT mitigation would result in many environmental, land use, and health benefits.[4]

c. Overall Effects on Housing Development, Affordability, and Other State Interests

Implementation of the proposed regulation will lower the costs of both transportation studies and mitigation for most infill residential development, and provide time savings associated with those studies and mitigation measures. Implementation of the proposed regulation will also reduce costs of transportation studies, and in many cases, may also reduce costs of mitigation, for greenfield development. Therefore, the proposed regulation would likely lead to overall lower housing development costs, which in turn may lead to an increase in supply and a decrease in housing prices. Because the increase in housing development would be greater in infill areas (where VMT is lower and transportation options are often more readily available), and because VMT mitigation would reduce the need for auto reliance, transportation costs would also likely decrease.

Reduction in VMT resulting from the proposed regulation would lead to an array of environmental, health, and cost savings benefits (Fang et al., 2017), including:

- Reduced greenhouse gas emissions
- Improved air quality
- Reduced incidence of chronic disease
- Reduced water use
- Reduced impervious surface resulting in less stormwater runoff, reducing flood risk and pollutant transport to waterways
- Reduced consumption of open space, e.g. agricultural land and sensitive habitat

The proposed regulation may also result in improvements in transportation system performance, i.e., the ability of people to reach destinations (Mondschein et al. 2015).

3. Direct Benefits

a. Benefits to Individuals

There are no benefits directly to individuals. Some individuals that are private developers may benefit from various aspects of the proposal that streamline the CEQA process. Such benefits are described below in the sections related to benefits to businesses.

b. Benefits to Typical Businesses

The proposed regulation would result in cost savings to developers from multiple sources. Because VMT studies are substantially less expensive than LOS studies, developers would experience cost savings associated with transportation studies as well as time savings. Further, projects near transit and most

[4] See, e.g., "'Driving Miles' is best measure of new development," San Francisco Chronicle, Opinion by Curt Johansen and Jeremy Madsen (Nov. 19, 2014), available online at http://www.sfgate.com/opinion/openforum/article/Driving-miles-is-best-measure-of-new-5904868.php.

infill projects would not need to complete a transportation study under the proposed regulation, as noted in the infill residential case study above. Table 3 provides an estimate of the magnitude of those cost savings. Additionally, VMT analysis also takes less time to prepare than LOS analysis, allowing a development to move forward more quickly, further reducing development costs.

Table 3. Total Change in Cost to Businesses, Years 2019-2023

	2019	2020	2021	2022	2023
Total change in cost to businesses statewide/year ($ Million)	-$23.96	-$24.17	-$24.37	-$24.58	-$24.78

c. Benefits to Small Businesses

In reducing the cost of transportation analyses, the proposed regulatory amendment would affect the public agencies and private developers that fund or undertake these studies, and the private consulting businesses working on behalf of those entities. Government Code section 11342.610, however, specifies that developers of any size are not considered small businesses.

d. Benefits of the Proposed Regulation to Public Health, Safety, Welfare, Environment, and Quality of Life

There are numerous potential direct and indirect benefits of reducing VMT. Realization of those benefits will depend on the degree to which, pursuant to this CEQA Guidelines proposal, lead agencies use the streamlined approaches for analysis of low-VMT projects, mitigate high-VMT projects, or choose lower VMT project alternatives.[5] Some of the benefits that may result from reducing VMT are described qualitatively below:

- *Better health and avoided health care costs.* Higher VMT is associated with more auto collisions, more air pollution, more GHG emissions, less active transportation, and less transit use. If California achieves its goals of doubling walking and tripling biking (Caltrans Strategic Management Plan), 2,095 annual deaths will be avoided. Increasing active transit modes would help reduce air pollution and greenhouse gas emissions. Estimates of the annual monetized value of prevented deaths and disabilities in California resulting from achieving those targets ranges from $1 billion to $15.5 billion.[6]

- *Reduction in transportation, building energy, and water costs.* Less vehicle travel reduces vehicle fuel (or electricity), maintenance, parking, and in some cases vehicle ownership costs. Transportation costs are typically the second greatest category of household expenditure after housing itself (Bureau of Labor Statistics, Consumer Expenditures). Compact, low VMT development tends to consume less building energy and irrigation water, leading to savings to

[5] As explained above, lead agencies determine whether any particular mitigation measure is feasible in the context of the project under review. (See, e.g., CEQA Guidelines § 15091.) Further, CEQA allows a lead agency to approve a project that has significant environmental impacts so long as it finds that the benefits of the project outweigh those impacts. (*Id*. at § 15093.)

[6] Maizlish N. *Increasing Walking, Cycling, and Transit: Improving Californians' Health, Saving Costs, and Reducing Greenhouse Gases. Final Report. California Department of Public Health (CDPH)*, 2016. https://www.cdph.ca.gov/programs/Documents/IncreasingWalkingCyclingTransitFinalReport2016rev2017-01-28.pdf

residents and businesses. Busch et al., 2015 estimated that if 85 percent of new housing and jobs added in the state until 2030 were located within existing urban boundaries, it would reduce per capita VMT by about 12 percent below 2014 levels.[7] That combination of reduced VMT and more compact development would, in turn, result in an estimated $250 billion in household cost savings cumulative to 2030 (with an average annual savings per household in 2030 of $2,000). Household costs analyzed in the Busch, et al. study included auto fuel, ownership and maintenance costs, as well as residential energy and water costs.

- *Reduction in travel times to destinations.* Reducing VMT reduces congestion regionally, decreasing travel times, and may also encourage more investment in multi-modal infrastructure. It may add congestion locally, due to increased density of development; however, even in those areas, travel times decrease because of better proximity (Mondschein, 2015).[8]

- *Cleaner water.* Motor vehicle travel can cause deposition of pollutants onto roadways, which can then be carried by stormwater runoff into waterways. Fuel, oil, and other liquids used in motor vehicles can leak from vehicles onto the ground (Delucchi, 2000). Brake dust and tire wear can further cause particles to be deposited onto the ground (Thorpe and Harrison, 2008). Brake pads and tire compounds are made out of compounds that include metal. Further, motor vehicles require roadways for travel. Paved roadways are impervious surfaces which prevent infiltration of storm water in the ground. Impervious surfaces can increase the rate, volume, and speed, and temperature of stormwater runoff (US Environmental Protection Agency, 2003). Wearing down of roadways can further cause particles to be deposited onto the ground (Thorpe and Harrison, 2008). The Victoria Transportation Policy Institute (2015) estimates that in total that motor vehicle contributions to water pollution cost approximately 42 billion dollars per year or 1.4 cents per mile.

4. Direct Costs

a. Direct Costs to Individuals

There are no costs directly to individuals.

b. Direct Costs on Typical Businesses

As noted above, public agencies may require private project applicants to reimburse the cost of CEQA review. This SRIA refers to private applicants as developers. For the purpose of estimating costs to businesses, this SRIA assumes that half of CEQA documents (1,089 ND/MNDs and EIRs) are prepared to support private development applications, and that developers bear the costs of document preparation.

i. *Cost and time savings for analysis, and reduction in risk, for developers*

Transportation analysis for LOS studies for land use projects typically costs between $15,000 and $50,000. For the purpose of estimating costs, this SRIA assumes the estimated average cost of analysis

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[7] Busch C., et al., *Moving California Forward, How Smart Growth Can Help California Reach Its 2030 Climate Target While Creating Economic and Environmental Co-Benefits*, Nov. 2015, at p. 26.

[8] Mondschein A. *Congested Development: A Study of Traffic Delays, Access, and Economic Activity in Metropolitan Los Angeles*, Institute of Transportation Studies, UCLA Luskin School of Public Affairs, Sept. 2105.

for LOS studies is $25,000. (Pers. Comm., Ron Milam, Fehr and Peers, 2017) This SRIA also assumes that analysis for VMT studies using readily available tools such as CalEEMod or URBEMIS, costs an estimated $5,000 (Pers. Comm., Erik De Kok, Ascent Environmental, 2017). All study costs vary around these averages, influenced by project type, size, and complexity, among other factors. Assuming that only half of ND/MNDs require a traffic study, and all EIRs require a traffic study,[9] traffic studies today would cost businesses approximately $27,000,000 per year. Using the same assumptions as to the types and number of CEQA documents, VMT studies would cost approximately $3,200,000 per year—a savings of nearly $24,000,000 per year. These figures could be expected to grow gradually (roughly in proportion to population) with time.

Part of the cost savings from VMT studies results from the acknowledgment that projects in areas near transit exhibit low VMT, and therefore agencies would not study VMT for those projects at all. Employing data from the Southern California Association of Governments and Sacramento Area Council of Governments, and a conservative estimate for the rest of the state (including no development in transit priority areas outside of the four biggest metropolitan planning organizations in the state[10]), approximately half of future growth would be streamlined by transit proximity.[11] Substantial additional areas would also benefit from the streamlining of CEQA analysis under the proposed regulatory change, due to being located in areas not in proximity to transit but in areas of existing low VMT development; however, to provide a conservative cost savings estimate, this SRIA does not count that CEQA streamlining.

Switching to a VMT analysis would also provide a significant time savings compared to LOS analysis because less time would be spent to prepare less complicated, more transparent analysis, as noted above in the case example in Section 2(a)(ii) of an infill project. For example, in 2015, the City of San Francisco undertook an economic feasibility study that examined time savings from shifting analysis from LOS to VMT. Due to the shift to VMT analysis, the City experienced direct time savings (including staff time) of between zero and five months, direct costs savings that varied by size and complexity of project, significant risk reduction to developers, and reduction in backlog in the City's processing of development permits. (*Transportation Sustainability Fee: Economic Feasibility Study*, San Francisco Planning Department, 2015, pp. 19-22) Thus, VMT analysis would likely streamline the environmental review process and result in a cost and time savings for project developers and, as noted in Section 4.d, similar savings for lead agencies.

c. Direct Costs on Small Businesses

In reducing the cost of transportation analyses, the proposed regulatory change would affect the public entities and private developers that fund or prepare VMT studies. Private consulting businesses that are considered small businesses, as defined under Government Code Section 11342.610, are expected to generate less revenue for preparing less expensive studies; but their receipts would vary depending on project-specific factors, including project complexity and location.

d. Direct Costs to State and Local Governments

Even when technical studies and document preparation are contracted out to private consultants, agency personnel must review the documents to ensure that they reflect the agency's independent judgment. Therefore, the shift to VMT analysis would like result in lead agency staff reviewing a reduced volume of project-related materials, as noted above in the project examples in Section 2. As discussed in the infill project example, most infill projects in low-VMT areas would bypass a VMT impacts analysis altogether. Agencies would also likely experience time and cost savings, as noted in the greenfield project example. Reduced time needed to study a project could also decrease project management costs. Such savings would vary considerably depending on other factors, including project complexity and location. Therefore, the estimated savings for project management costs are not quantified in this analysis. But as to costs related to transportation studies prepared under the proposed regulation, Table 12 (Changes in Transportation Study Costs to State and Local Governments Under the Proposed Regulation, Years 2019-2023) shows the quantifiable cost savings to lead agencies in preparing VMT analysis.[12] The City of San Francisco's experience in preparing VMT analysis also demonstrates that lead agencies will likely experience time and cost savings related to staff time spent during the permitting process. VMT analysis would not necessarily translate into a lead agency's reduced revenues from development fees because jurisdictions could adjust their development fees to require VMT-based impact fees.

5. Economic Impacts

a. Methods for Determining Economic Impacts

Regional Economic Models, Inc. (REMI), Policy Insight Plus Version 1.7.2, is used to model the macroeconomic changes resulting from implementing the proposed regulation throughout the California economy. REMI is a structural economic forecasting and policy analysis model that integrates input and output, computable general equilibrium, econometric, and economic geography methodologies. REMI provides year-by-year estimates of the total impacts of the proposed regulatory change, pursuant to the requirements of Senate Bill 617 and the California Department of Finance. For this analysis, the REMI single-region, 160-sector model was adjusted to reflect the Department of Finance's June 2015 Conforming Forecast. Additionally, in analyzing the proposed regulation, REMI adjusted the costs to relevant sectors to reflect anticipated changes in the cost of CEQA transportation studies to businesses and public entities. Specifically, REMI modeled these anticipated changes by adjusting cost flows in the following sectors: developers (REMI code 23), consultants (REMI codes 5413 and 5416), and state and local agency entities.

b. Inputs for the Assessment

The number of anticipated CEQA transportation studies and the cost of both current LOS studies and proposed VMT studies are presented above. (See Section 4.b.) The estimated total number of VMT studies is divided by type, and between business-funded (i.e., developer-funded) and public entity-funded studies, to determine changes in costs to those entities. Table 4 below presents the total cost changes per year to businesses and public entities throughout the State.

[12] The quantifiable cost savings to state and local governments under Alternatives 1 and 2 related to transportation studies are presented *infra* in Tables 10 and 11, respectively.

Table 4. Total Change in Cost to Businesses and Public Entities Statewide Resulting from VMT Studies, Years 2019-2023

	2019	2020	2021	2022	2023
Total change in cost to businesses statewide/year	-$23,957,907	-$24,166,486	-$24,373,555	-$24,580,065	-$24,784,960
Total change in cost to public entities statewide/year	-$2,818,038	-$2,841,213	-$2,864,221	-$2,887,167	-$2,909,933

c. Assumptions and Limitations of the Model

By inputting the number of anticipated transportation studies and consequent reductions in document production costs and volumes discussed above, REMI is able to ascertain the likely macroeconomic effects throughout the State. Variables that could alter these results include the number of studies and mix of CEQA documents, and unanticipated changes in development patterns.

d. Results of the Assessment

The values in Table 5 represent the incremental change in the referenced year between the baseline scenario (LOS analysis) and the proposed regulation scenario (VMT analysis).

Table 5. Overview of the REMI Analysis of the Proposed Regulation, Years 2019-2023

Category	Units	2019	2020	2021	2022	2023
Total Employment	Individuals (Jobs)	75	174	236	268	281
Private Non-Farm Employee	Individuals (Jobs)	89	180	236	262	271
Residence Adjusted Employee	Individuals	109	199	258	288	301
Population	Individuals	98	180	260	332	397
Labor Force	Individuals	101	149	196	235	266
Gross Domestic Product	$M (2015)	$15.7	$28.7	$38.4	$45.1	$49.5
Output	$M (2015)	$30.7	$53.1	$69.6	$80.8	$88.4
Value Added	$M (2015)	$16.0	$29.1	$38.8	$45.4	$49.8
Personal Income	$M (2015)	$0.2	$8.4	$14.6	$18.9	$21.8
Disposable Personal Income	$M (2015)	$0.1	$7.0	$12.1	$15.7	$18.2
Real Disposable Personal Income	$M (2015)	$40.6	$44.0	$48.3	$51.4	$53.3
PCE-Price Index	2009=100 (Nation)	-0.0026	-0.0023	-0.0022	-0.0022	-0.0021

i. California Employment Impacts

In the REMI model, total estimated employment includes the number of full-time and part-time jobs and place of work. And while the model includes employees, sole proprietors, and active partners, it does not include unpaid family workers and volunteers.

Overall, statewide employment impacts are positive but negligible. Cost reductions in document production lead to a small increase in the rate of growth, as indicated by small positive impacts to total California employment. Depending on the industry, the REMI model predicts negligible increases or decreases in employment. The slight increase in employment growth can be attributed to the decrease in production cost for state and local governments and developers (nested under NAICS 23: Construction). Increases in the rate of employment growth attributed to lower production costs outweigh any negative impact to employment growth in the private consulting industries because of lower demand for consulting services.

ii. California Business Impacts

Table 6 presents the change in each sector's contribution to the State's gross domestic product under the proposed regulation. The estimated sector impacts to gross value added[13] are overall positive across all industries, but are slightly negative (i.e., less than 0.01 percent) in the Professional, Scientific, and Technical Services (NAICS 54) industry across all years of the assessment. The small decrease in demand for services in the Professional, Scientific, and Technical Services industry explains the negative change in that industry.

If a significance finding under the proposed CEQA Guideline influences what types of projects are ultimately approved, businesses specializing in particular types of construction may benefit. For example, because highway widening may increase VMT, and transit, bicycle and pedestrian projects may reduce VMT, businesses specializing in the latter category may see increased demand. Similarly, because infill, mixed-use, small town and transit adjacent developments tend to exhibit lower VMT, the proposed regulation may increase the likelihood of approval of such projects. Higher VMT projects, such as greenfield developments, may need to include mitigation to address such VMT impacts. But for the reasons explained above, it is unclear whether the proposed regulation will result in a measurable differential impact to businesses associated with higher VMT projects (such as construction firms) versus businesses focused on lower VMT projects. Demand for professional services may shift for similar reasons, but again, are difficult to quantify given the large variability in project demand. The proposed regulation's impact on gross value added is less than 0.01 percent across all years of the assessment, with the highest positive impact ranging from 0.005% to 0.01 percent in the construction industry.

Table 6. Changes to the State's Gross Domestic Product by Business Sector Resulting from the Proposed Regulation ($ Millions), Years 2019-2023

Category	2019	2020	2021	2022	2023
Forestry, Fishing, and Related Activities	$0.03	$0.05	$0.07	$0.08	$0.08
Mining	$0.71	$1.15	$1.44	$1.64	$1.77
Utilities	$0.64	$0.81	$0.96	$1.07	$1.15
Construction	$5.55	$8.74	$10.57	$11.52	$11.90
Manufacturing	$3.40	$5.59	$7.32	$8.73	$9.83

Wholesale Trade	$1.28	$1.78	$2.18	$2.45	$2.67
Retail Trade	$2.25	$2.92	$3.47	$3.87	$4.16
Transportation and Warehousing	$0.47	$0.77	$0.99	$1.15	$1.25
Information	$1.46	$1.94	$2.32	$2.61	$2.82
Finance and Insurance	$2.41	$3.03	$3.50	$3.81	$4.00
Real Estate and Rental and Leasing	$11.81	$12.94	$13.99	$14.65	$14.99
Professional, Scientific, and Technical Services	-$16.91	-$15.93	-$15.28	-$14.87	-$14.56
Management of Companies and Enterprises	$0.28	$0.49	$0.64	$0.76	$0.85
Administrative and Waste Management Services	$0.26	$0.56	$0.79	$0.95	$1.06
Educational Services	$0.22	$0.28	$0.33	$0.36	$0.39
Health Care and Social Assistance	$1.34	$1.79	$2.17	$2.43	$2.62
Arts, Entertainment, and Recreation	$0.41	$0.53	$0.64	$0.71	$0.76
Accommodation and Food Services	$0.74	$1.00	$1.23	$1.40	$1.53
Other Services, except Public Administration	$1.10	$1.28	$1.42	$1.51	$1.55

iii. Impacts on Investments in California

Table 7 shows the impact on gross private domestic investment in California. The REMI model defines private domestic investment as the demand for capital goods. Private investment consists of purchases of residential and nonresidential capital and software by private businesses. The proposed regulation would minimally increase the overall growth of gross private domestic investment, ranging from +0.00 percent to less than 0.01 percent annually across all years of the assessment.

Table 7. Proposed Regulation's Impact on Gross Private Investment in California ($ Millions), Years 2019-2023

Category	2019	2020	2021	2022	2023
Private Non-Farm	$16.5	$25.4	$30.3	$32.9	$34.0

iv. Impacts on Individuals in California

Modeling results presented in Table 5 show negligible increases in personal income growth in all years of the assessment. Personal income includes income received by persons from all sources, including income received from participation in production as well as from government and business transfer payments.

The proposed shift to VMT analysis would benefit low-income earners in at least three ways. First, it streamlines transit and active transit modes, which a disproportionate number of low-income residents rely upon for transportation. Transit and active transit modes instead of private automobiles can save low-income residents money. Second, because low-income earners generate less household VMT, affordable housing is streamlined with VMT analysis. Third, the shift to VMT analysis would lead to more infill and transit-oriented development, and such development often allows lower living costs when transportation and housing costs are both taken into account (Center for Neighborhood Technology, *Penny Wise, Pound Fuelish,* 2010).

v. Impacts on Gross State Product

The REMI model defines "gross state product" as the market value of goods and services produced by labor and property in California. Table 5 shows that impacts on California's gross state product are positive yet small relative to the size of the state economy, with an increase in gross state product growth of less than 0.01 percent across all years analyzed.

vi. Creation or Elimination of Businesses

The proposed change to VMT analysis would not lead to the creation or elimination of any businesses. The overall purpose of the proposed regulation is to modernize the analysis of transportation impacts, as Senate Bill 743 requires, and change the methodology of those impacts. Regulatory changes are not uncommon, and the proposed regulation would require a different metric for transportation analysis that is already required under CEQA. Existing developers, consulting firms, and public agencies would shift existing transportation analyses to reflect the new regulatory requirements for VMT analysis.

vii. Incentives for Innovation

The proposed regulation would require the adoption of a different metric of transportation impact, VMT, under CEQA. While lead agencies currently use VMT analysis in the CEQA process to ascertain emissions, noise, energy, and other impacts, the regulatory change to VMT for transportation impact analysis may lead to improved measurement techniques. Such improvements would lead to more accurate assessments of those other impacts as well. And for projects resulting in significant VMT impacts for which enforceable mitigation would be required, if feasible, the proposed regulation may lead to developing new mitigation approaches for reducing vehicle travel. Additionally, the co-benefit of new VMT mitigation includes spurring new research efforts, tools, and techniques to develop VMT reduction and to verify those reductions.

viii. Competitive Advantage or Disadvantage

By providing slight increases in gross state product, investment, and employment, the proposed regulation would marginally increase California's competitive advantage. The State's competitive advantage may also increase with new VMT research efforts, tools, and techniques that may occur within the State to develop VMT reduction and to verify those reductions. The proposed regulatory change to add VMT analysis is not anticipated to create a competitive disadvantage because lead agencies already require VMT to analyze other impact areas under CEQA (i.e., air and GHG emissions, noise, energy impacts).

b. Summary and Agency Interpretation of the Assessment Results

The proposed regulation would have a positive but negligible impact on California's overall economy. Likewise, it would have a positive but negligible effect on employment, investment, and gross state product.

6. Alternatives

As a first step in developing the proposed update to the CEQA Guidelines, public input was solicited on a number of possible alternatives to using a VMT metric, including auto trips generated, multimodal LOS, fuel use, and others. The results of that investigation are documented in the Preliminary Evaluation of Alternative Methods of Transportation Analysis. The two alternatives described below are variants on the proposed regulation that were raised in public comments.

a. Alternative 1: Apply VMT Analysis Only Within Transit Priority Areas

i. Description

Under Alternative 1, the change from LOS to VMT would apply only to proposed projects within "transit priority areas." This is the minimum scope of what Senate Bill 743 requires. Proposed projects outside of transit priority areas would continue to prepare traffic analyses using LOS. This SRIA conservatively estimates that 40 percent of growth will be in transit priority areas, based on data from two of the four largest metropolitan planning organizations.

Public Resources Code section 21099 defines "transit priority areas" to include only those areas within one-half mile of high quality transit. Geographically, those areas are quite small. According to the Southern California Association of Governments, such areas account for three percent of total land area in the Southern California region. Nonetheless, the Southern California Association of Governments estimates that 46 percent of future household growth, and 55 percent of future employment growth, will occur within areas served by high quality transit.[14] In part due to other requirements of state law (primarily Senate Bill 375, which requires coordination between land use planning and transportation planning to reduce GHG emissions), larger metropolitan planning organizations focus much new growth near transit.

ii. Costs and Benefits (Total and Incremental)

As described above, VMT analysis is much cheaper and quicker to prepare than a study of LOS impacts. Thus, the proposed regulation is expected to result in benefits and cost savings to lead agencies and developers under this alternative. Here, the proposed regulation would apply only to a subset of new projects and thus the expected benefits would be reduced. Specifically, instead of a cost savings to businesses of approximately $27,000,000, the savings would be approximately $14,000,000.

iii. Economic Impacts

The reduced cost savings would impact the State's economy by creating a reduced overall economic benefit. Table 8 provides changes in statewide employment, gross state product, output, and other economic factors under Alternative 1.

Table 8. Macroeconomic Effects of Alternative 1, Years 2019-2023

Category	Units	2019	2020	2021	2022	2023
Total Employment	Individuals (Jobs)	37	84	113	128	134
Private Non-Farm Employee	Individuals (Jobs)	43	86	112	125	129
Residence Adjusted	Individuals	53	95	123	137	143

Employee						
Population	Individuals	46	85	123	157	187
Labor Force	Individuals	48	70	93	111	126
Gross Domestic Product	$M (2015)	$7.6	$13.7	$18.2	$21.4	$23.5
Output	$M (2015)	$14.7	$25.2	$33.0	$38.2	$41.8
Value Added	$M (2015)	$7.7	$13.8	$18.4	$21.5	$23.6
Personal Income	$M (2015)	$0.2	$4.1	$7.0	$9.0	$10.4
Disposable Personal Income	$M (2015)	$0.2	$3.4	$5.8	$7.5	$8.7
Real Disposable Personal Income	$M (2015)	$19.2	$20.8	$22.8	$24.3	$25.1
PCE-Price Index	2009=100 (Nation)	-0.0012	-0.0011	-0.0011	-0.0010	-0.0010

iv. Cost Effectiveness

Because Alternative 1 would forgo the cost savings described above, it would be less cost effective than the proposed regulation.

v. Reason for Rejecting

Alternative 1 was rejected for several reasons.

First, as illustrated above, this alternative would forgo substantial cost and time savings that are expected to result from studying VMT instead of LOS.

Second, this alternative would be more likely to cause confusion and increase litigation risk. Greater uncertainty would result because this alternative would require two different types of analyses to be conducted, depending on location. The definition of transit priority area in the Public Resources Code is not clear. For example, a transit priority area is defined to include areas with intersecting bus lines that run at 15-minute intervals. Bus routes and frequency levels often change. Similarly, transit priority areas include areas within one half mile of both existing and *planned* transit. Again, plans are subject to change. An agency that mistakenly identifies a project as inside a transit priority area would study transportation impacts using the wrong metric, and could face litigation as a result. A uniform metric of study, as proposed in the current proposal, would avoid that potential confusion and litigation risk.

Third, research indicates that a transportation analysis focused on VMT may result in numerous indirect benefits to individuals including improved heath; savings on outlay for fuel, energy, and water; reduction of time spent in transport to destinations. Though such benefits are too indirect to attribute to the changes proposed in the CEQA Guidelines, potential benefits of reducing VMT are described qualitatively in Section 3.d above.

Finally, this alternative would be less likely to achieve the purposes of Senate Bill 743. That legislation requires the updated Guidelines "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." As explained in the Preliminary Evaluation of Alternative Methods of Transportation Analysis, as a metric, VMT promotes those statutory purposes better than LOS.

b. Alternative 2: Apply the VMT Analysis Only to Land Use Projects

i. Description

Some public comments on the proposed regulation objected to applying the VMT metric to transportation projects. Senate Bill 743 requires the development of new metrics to analyze the "transportation impacts of projects[.]" CEQA defines "project" very broadly. This SRIA, however, includes analysis of a scenario applying VMT to land use projects only and not to transportation projects. In other words, under this alternative, LOS analysis would continue to apply to roadway, transit, bicycle and pedestrian projects reviewed under CEQA.

ii. Costs and Benefits (Total and Incremental)

Alternative 2 would forgo the benefits of the proposed regulation as to transportation projects. Specifically, the proposed regulation clarifies that transit, bicycle and pedestrian projects tend to reduce VMT, and such projects would not require further transportation impact analysis under CEQA. Under Alternative 2, those types of projects would be required to evaluate under CEQA the potential impacts on roadway capacity, motorist turning movements, etc.

The time and cost savings of having to study transportation impacts could be substantial. The San Francisco Bicycle Plan, for example, was delayed by several years to prepare an environmental impact report primarily studying impacts on roadway capacity. Bus rapid transit and other transit projects, which are meant to provide cost- and time-efficient transportation and provide social and environmental benefits such as reduced GHG emissions, are also required to prepare that type of study. The time and cost savings are likely to also be substantial for large metropolitan areas such as Los Angeles where significant portions of LA Metro's transportation plan consist of transit, bicycle and pedestrian projects.

iii. Economic Impacts

The reduced cost savings propagate through the economy to create reduced overall benefit. Table 9 provides changes in statewide employment, gross state product, output, and other economic factors under Alternative 2.

Table 9. Macroeconomic Effects of Alternative 2, Years 2019-2023

Category	Units	2019	2020	2021	2022	2023
Total Employment	Individuals (Jobs)	0.00028	0.00069	0.00095	0.00107	0.00262
Private Non-Farm Employment	Individuals (Jobs)	0.00038	0.00082	0.00107	0.00120	0.00289
Residence Adjusted Employment	Individuals	0.00042	0.00079	0.00103	0.00115	0.00260
Population	Individuals	0.00023	0.00042	0.00060	0.00076	0.00106
Labor Force	Individuals	0.00049	0.00072	0.00095	0.00113	0.00163
Gross Domestic Product	$M (2015)	$0.0005	$0.0010	$0.0013	$0.0015	$0.0029
Output	$M (2015)	$0.0006	$0.0011	$0.0014	$0.0016	$0.0028
Value Added	$M (2015)	$0.0005	$0.0010	$0.0013	$0.0015	$0.0029
Personal Income	$M (2015)	$0.0000	$0.0003	$0.0006	$0.0007	$0.0019

Disposable Personal Income	$M (2015)	$0.0000	$0.0003	$0.0005	$0.0007	$0.0018
Real Disposable Personal Income	$M (2015)	$0.0020	$0.0021	$0.0023	$0.0023	$0.0034
PCE-Price Index	2009=100 (Nation)	-0.0020	-0.0018	-0.0017	-0.0016	-0.0016

iv. Cost Effectiveness

Because this alternative would forgo the cost savings described above, it would be less cost effective than the proposed regulation.

v. Reason for Rejecting

This alternative was rejected because it would forgo the cost and time benefits described above for transit, bicycle and pedestrian projects. Those types of projects in particular are more likely to provide healthier, lower cost, more equitable transportation options. They are also a key strategy to reducing greenhouse gas emissions. As a result, this alternative would be less likely to achieve the purposes of Senate Bill 743, requiring the Guidelines update to "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."

c. Fiscal Impacts to State and Local Governments Related to Transportation Study Costs Under Alternatives 1 and 2

Tables 10 and 11 show the quantifiable changes in costs for lead agencies in preparing VMT analysis under Alternatives 1 and 2, respectively.

Table 10. Change in Transportation Study Costs to State and Local Governments Under Alternative 1, Years 2019-2023

Costs: Alternative 1	Est. Share	2019	2020	2021	2022	2023
Transportation project env. docs./y (all public entity)		-$93,629	-$93,629	-$93,629	-$93,629	-$93,629
Est. share/cost transportation project env. docs state-driven	25%	-$23,407	-$23,407	-$23,407	-$23,407	-$23,407
Est. share/cost transportation project env. docs local-driven	75%	-$70,222	-$70,222	-$70,222	-$70,222	-$70,222
Land use project env. docs./year (public entity portion)		-$1,451,994	-$1,464,636	-$1,477,185	-$1,489,701	-$1,502,119
Est. share/cost transportation project env. docs state-driven	10%	-$145,199	-$146,464	-$147,719	-$148,970	-$150,212

Transportation project env. docs local-driven	90%	-$1,306,795	-$1,318,172	-$1,329,467	-$1,340,731	-$1,351,907
Total state portion compared to proposal		$168,607	$169,871	$171,126	$172,377	$173,619
Total local gov share compared to proposal		$1,377,017	$1,388,394	$1,399,688	$1,410,953	$1,422,129
Total state portion compared to existing		-$136,604	-$137,658	-$138,704	-$139,747	-$140,781
Total local government portion compared to existing		-$1,135,810	-$1,145,291	-$1,154,703	-$1,164,090	-$1,173,404

Table 11. Change in Transportation Study Cost to State and Local Governments Under Alternative 2, Years 2019-2023

Costs: Alternative 2	Est. Share	2019	2020	2021	2022	2023
Transportation project env. docs./year (all public entity)		-$156,048	-$156,048	-$156,048	-$156,048	-$156,048
Est. share/cost transportation project env. docs state-driven	25%	-$39,012	-$39,012	-$39,012	-$39,012	-$39,012
Est. share/cost transportation project env. docs local-driven	75%	-$117,036	-$117,036	-$117,036	-$117,036	-$117,036
Land use project env. docs./year (public entity portion)		$0	$0	$0	$0	$0
Est. share/cost transportation project env. docs state-driven	10%	$0	$0	$0	$0	$0
Transportation project env. docs local-driven	90%	$0	$0	$0	$0	$0
Total state portion compared to proposed regulation		$39,012	$39,012	$39,012	$39,012	$39,012
Total local gov share compared to proposed regulation		$117,036	$117,036	$117,036	$117,036	$117,036
Total state portion compared to existing		-$266,199	-$268,517	-$270,817	-$273,112	-$275,388
Total local government portion compared to existing		-$2,395,791	-$2,416,649	-$2,437,355	-$2,458,007	-$2,478,496

7. Fiscal Impacts

Currently, local governments fund transportation studies for land use projects (e.g., public buildings) and transportation infrastructure projects. Under the proposed regulation, local governments would continue to do so, but at a cost savings reflecting the reduced expense of VMT analysis.

Generally, public-funded projects represent a small proportion of land use projects; meanwhile, transportation projects are less numerous than land use projects and thus represent a small proportion of total projects. This SRIA assumes the following estimates were made: 10 percent of land use projects were estimated to be undertaken by public entities; of those projects, 10 percent were estimated to be state-driven, while the other 90 percent were estimated to be local entity-driven. This SRIA further assumes that all transportation projects would be undertaken by public entities; 25 percent would be state-driven projects, and the remaining 75 percent would be locally driven. These estimates were used to assess cost savings that state and local governments would experience from VMT analysis. Table 12 shows the estimated cost savings that state and local governments would experience in preparing VMT studies for government-led projects.

Table 12. Changes in Transportation Study Costs to State and Local Governments Under the Proposed Regulation, Years 2019-2023

Changes in state-local split of public entity costs	Est. Share	2019	2020	2021	2022	2023
Transportation project env. docs./year (all public entity)		-$156,048	-$156,048	-$156,048	-$156,048	-$156,048
Est. share/cost transportation project env. docs state-driven	25%	-$39,012	-$39,012	-$39,012	-$39,012	-$39,012
Est. share/cost transportation project env. docs local-driven	75%	-$117,036	-$117,036	-$117,036	-$117,036	-$117,036
Land use project env. docs./year (public entity portion)		-$2,661,990	-$2,685,165	-$2,708,173	-$2,731,118	-$2,753,884
Est. share/cost transportation project env. docs state-driven	10%	-$266,199	-$268,517	-$270,817	-$273,112	-$275,388
Est. share/cost transportation project env. docs local-driven	90%	-$2,395,791	-$2,416,649	-$2,437,355	-$2,458,007	-$2,478,496
Total state portion		-$305,211	-$307,529	-$309,829	-$312,124	-$314,400
Total local government portion		-$2,512,827	-$2,533,685	-$2,554,392	-$2,575,043	-$2,595,532

a. Local Government

Local government would save an estimated aggregate $2.5 million per year across the state under the proposed regulation. Those savings would result from savings on transportation analysis of land use projects of an estimated $2.4 million per year, and a savings on transportation analysis of transportation projects of an estimated $0.12 million per year.

b. State Government

State government would save an estimated $0.3 million per year under the proposed regulation. Those savings would result from savings on transportation analysis of land use projects of an estimated $0.27 million per year, and a savings on transportation analysis of transportation projects of an estimated $0.04 million per year.

c. Office of Planning and Research

OPR maintains and periodically updates the CEQA Guidelines, and also creates technical advisories for their implementation. None of the changes to the CEQA Guidelines would measurably alter any processes at OPR or require additional staffing and thus the update to the CEQA Guidelines, once adopted, is revenue neutral for OPR. Because OPR already provides planning assistance to state and local agencies, implementation of the proposed changes to the CEQA Guidelines would be folded into the normal functions of OPR and is not expected to create a measurable fiscal impact on it.

d. Other State Agencies

Savings in transportation analysis on land use projects described above would accrue to state agencies in proportion to their undertaking of land use projects requiring CEQA transportation analyses. Savings in transportation analysis on transportation projects would generally accrue to Caltrans.

8. Qualitative Discussion of the Other CEQA Guidelines Changes

As discussed above, the SRIA must analyze reasonably foreseeable benefit and costs that flow from the proposed regulation. The proposed changes regarding the analysis of transportation impacts are foreseeable and quantifiable, and are analyzed in depth in this analysis. Other proposed changes to the CEQA Guidelines that are unrelated to Senate Bill 743, however, are less capable of quantitative analysis and so are discussed qualitatively below.

Quantification of the economic impact of many changes to the CEQA Guidelines is not possible for several reasons. First, though CEQA requires agency decisions to be informed, it leaves lead agencies wide discretion regarding how to study and mitigate impacts. (See, e.g., *Eureka Citizens for Responsible Government v. City of Eureka* (2007) 147 Cal.App.4th 357, 371-373.)

Second, many variables will affect what studies are required, and to what depth, for any particular project. Such factors include, among others, the scope and type of project, the project's location, the presence of specific resources and sensitive receptors, the degree of community engagement, the number and type of other agencies that also have a secondary role in the project, etc. (CEQA Guidelines, § 15064(b) ("The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible

because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area.”).)

Third, many of the proposed changes merely clarify existing law, consistent with case law interpreting CEQA as well as statutory changes. Because CEQA practice varies so broadly, some changes may not actually alter agency behavior but will provide certainty that their practices are consistent with CEQA.

The primary changes to the CEQA Guidelines proposed in this update, and their potential economic effects, are qualitatively described below:

- **Regulatory Standards and Thresholds of Significance** (Sections 15064 and 15064.7): Clarifies that agencies may use compliance with environmental standards to determine whether impacts may be significant.
    - *Expected cost or benefit*: This change should result in the benefit of greater certainty. It may also save lead agencies the cost and time required to develop case-by-case thresholds. It is not possible to quantify these benefits, however, because the selection of a threshold is within a lead agency’s discretion, and varies across the state.

- **Responses to Comments** (Section 15088): Clarifies that lead agencies need only respond to comments that raise specific issues.
    - *Expected cost or benefit*: This change should reduce costs and time required to respond to late comments, and information that is not adequately presented to lead agencies. It should also result in the benefit of greater certainty regarding legal requirements.

- **Baseline** (Section 15125): Clarifies when project impacts may be analyzed against future conditions.
    - *Expected cost or benefit*: This change should result in the benefit of greater certainty regarding legal requirements.

- **Energy Impacts Analysis** (Section 15126.2 and Appendix G): Clarifies the scope of analysis required of a project’s energy use. Clarification is proposed because practice varies and recent cases provide additional direction.
    - *Expected cost or benefit*: This change is expected to reduce costs resulting from litigation over the failure to analyze energy impacts. It should also reduce costs due to uncertainty about the scope of the required analysis.

- **Hazards** (Section 15126.2): Clarifies that analysis of bringing development to hazardous locations is required when the project risks exacerbating the hazard; deletes provisions found invalid in *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369.
    - *Expected cost or benefit*: This change is expected to reduce costs resulting from litigation over the failure to analyze hazards that a project might risk exacerbating. It should also reduce costs due to uncertainty about the scope of the required analysis.

- **Deferred Mitigation Detail** (Section 15126.4): Clarifies when an agency may defer details of mitigation measures until after project approval.
    - *Expected cost or benefit*: This change should result in the benefit of greater certainty regarding legal requirements.

- **Water Supply Analysis** (Section 15155): Codifies the California Supreme Court's holding in *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, which requires analysis of a proposed project's possible sources of water supply over the life of the project and the environmental impacts of supplying that water to the project.
    - *Expected cost or benefit*: This change is expected to reduce costs resulting from litigation over the failure to adequately analyze water supply impacts. It should also reduce costs due to uncertainty about the scope of the required analysis.

- **Program EIRs and Tiering** (Sections 15152 and 15168): Clarifies when a project may be found to be "within the scope" of a program EIR, and no further review is needed.
    - *Expected cost or benefit*: This change will result in a cost benefit in those instances that, using the criteria described in this proposed change, the lead agency concludes that a project was adequately described in a program EIR and that no further review is necessary. These changes are expected to result in greater reliance on program EIRs to approve later projects. Because the determination of whether a project is" within the scope" depends on the project's circumstances, it is not possible to quantify cost savings.

- **Exemption for Transit Oriented Development** (Section 15182): Codifies Public Resources Code section 21155.4, a statutory exemption for projects that are in a specific plan and near transit.
    - *Expected cost or benefit*: Projects that qualify from the exemption will benefit from not having to prepare any environmental document. That benefit arises from the Public Resources Code, not this proposed change. Because this change codifies that exemption in the CEQA Guidelines, however, it may result in a benefit where lead agency staff or applicants are unaware of the exemption.

- **Remedies and Remand** (Section 15234): Clarifies what project activities may continue while the agency takes corrective action following litigation.
    - *Expected cost or benefit*: This change is expected to provide clarity and certainty to lead agencies regarding requirements following a court remand. Because those requirements will vary from case to case, the cost benefits of such greater certainty are not quantifiable.

- **Existing Facilities Exemption** (Section 15301): Broadens the categorical exemption for operations and minor alterations of existing facilities to allow reuse of vacant buildings.
    - *Expected cost or benefit*: These changes will clarify that reuse of existing buildings is normally exempt from CEQA, and so would avoid the cost of preparing an environmental document. Currently, some practitioners interpret the categorical

exemption to not apply to vacant buildings, and so this change would result in a benefit to the extent that an agency would rely on the exemption where it previously would not.

- **Initial Study Update** (Appendix G): Updates and consolidates sample initial study checklist questions, and adds questions on wildfire risk (Senate Bill 1241).
    - *Expected cost or benefit*: This change should result in time and cost savings due to a shorter checklist. It should also have the benefit of providing greater certainty. The initial study checklist is voluntary, however, and so it is not possible to quantify the benefit to agencies.

- **Miscellaneous Updates** (various sections): The proposed updates to the CEQA Guidelines include many miscellaneous technical updates and correction suggested by stakeholders.
    - *Expected cost or benefit*: This change should result in the benefit of greater certainty regarding legal requirements.

Appendix A: Qualitative Discussion of VMT Analysis of Common Projects

This section describes the effect of proposed changes to the transportation analysis of common projects under the proposed regulation, including infill housing, outlying housing, local-serving retail, regional-serving retail, transit, and roadway capacity projects. Section 2 of the SRIA discusses in more detail the effect of the proposed change to the VMT metric on infill and greenfield residential projects.

CEQA requires a lead agency to analyze a proposed project's transportation impacts, among other potential impacts. That analysis has traditionally focused on a project's potential to increase congestion on roadways and intersections, as measured using metric known as LOS.

To analyze LOS, the first step is to estimate future traffic volumes at each intersection where an LOS threshold might be triggered. Next, the LOS study would analyze traffic movements in each intersection, given traffic volume and characteristics of the intersection and surrounding streets to determine delay. Finally, the delay can be converted from a number of seconds into a letter grade.

This SRIA focuses on the proposed regulatory amendment requiring public agencies to analyze the impacts of VMT in the transportation analysis under CEQA. Analyzing VMT impacts associated with residential and office land uses involves two steps. The first step is assessing trip length, which can be accomplished using travel survey data, data from a travel demand model, or other data. The second step is assessing the number of trips generated, for which a variety of resources exist. VMT is the product of the number of trips generated and trip length.

Analyzing VMT impacts from retail development and transportation projects requires a travel demand model assessment of aggregate change in VMT between scenarios with and without the project. As noted earlier, this analysis assumes that for highway capacity projects, lead agencies will select VMT as the appropriate measure of transportation impacts. Unlike traditional LOS analysis, VMT analysis does not require examining results at individual intersections or microsimulation modeling at those intersections. In comparison, LOS analysis is generally more expensive and time-consuming (approximately five to ten times the cost and analysis time compared to a VMT analysis).

1. Infill Housing Projects

Under LOS analysis, a proposed infill housing project is more likely than non-infill housing to require mitigation measures to address significant traffic impacts. This is so because infill housing is typically proposed in congested areas where the addition of even a few vehicle trips can trigger LOS thresholds. This disparity increases the cost in both an absolute sense and relative to development elsewhere, ultimately reducing the amount of infill housing constructed.

Residential and office projects that locate in areas with low-VMT, such as in infill areas, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Under the proposal, lead agencies can screen out residential and office projects which are proposed in low-VMT areas, and such projects may not require a detailed VMT analysis. Thus, most infill areas will experience time and cost savings from the streamlining of transportation analysis under CEQA. Streamlining will also help expand the supply of dwellings that are affordable when the full cost of housing and transportation together is considered.

2. Outlying Housing Projects

Housing projects proposed in outlying area may have few LOS impacts under existing conditions. However, they are often planned with expansive roadway infrastructure to avoid future congestion. Such roadway infrastructure investments may initially be funded with development fees; however, maintenance costs would fall to the local government.

Analyzing a similar development using VMT is expected to be less expensive and quicker for the reasons described above. In general, outlying developments can be expected to produce higher levels of VMT than housing in infill locations. In some cases, lead agencies may determine that level of VMT to be significant and require mitigation. Whereas LOS mitigation tends to consist of expanded infrastructure, VMT mitigation could include lower cost actions such as including mixed-use components, facilitating transit connections, and expanding bicycle and pedestrian pathways.

3. Local-serving Retail Projects

For local-serving retail, existing LOS analysis is both expensive and time consuming for the same reasons discussed as to infill and outlying housing (see above).

Under the proposal, VMT analysis would generally not be necessary for locally-serving retail. Such retail typically reduces VMT.

4. Regional-serving Retail Projects

For regional-serving retail, existing LOS analysis is both expensive and time consuming for the same reasons discussed as to locally-serving retail (see above).

Proposed VMT analysis would examine whether the project leads to more vehicle travel overall, or less. A VMT analysis could involve a travel demand model run, but would not require assessing traffic volume at individual intersections or running microsimulation modeling to determine delay. Mitigation measures could consist of project-specific measures, or be accomplished via measures elsewhere in the county or region.

5. Transit Projects

Similar to various projects discussed above, existing LOS analysis is expensive and time consuming for transit projects. For buses in mixed flow lanes, LOS in some cases will improve bus flow along with car flow. But because LOS does not weigh the number of passengers per vehicle, LOS will tend to penalize proposed projects that provide any priority to transit vehicles over single-occupancy private automobiles. LOS will also penalize transit projects that that operate in separate rights-of-way where provision of that right-of-way slows auto travel or removes auto capacity, such as dedicated bus lanes.[15]

Because a transit project reduces VMT by creating mode shift away from auto use, those kinds of transit project would not likely create a transportation impact under CEQA and need not undertake a VMT analysis, streamlining such projects. As investments in transit increase, this will be a more significant cost and time savings.

6. Roadway Capacity Projects

Currently, LOS analysis of a project which expands roadway capacity requires a travel demand model run and microsimulation of roadway segments or intersections which may trigger LOS thresholds. Travel demand model outputs also underlie greenhouse gas, noise, and other environmental analyses. Generally, projects which increase roadway capacity may improve LOS on the portion of the roadway that is expanded. But where they relieve bottlenecks and release that traffic downstream, roadway capacity projects may lead to heavier traffic volumes elsewhere, which can negatively impact LOS. Additionally, roadway capacity projects may induce additional vehicle travel, and that vehicle travel can also impact LOS beyond the area of increased capacity.

The proposed amendment states that agencies have discretion to apply the appropriate measure of environmental impact consistent with CEQA and other applicable requirements for highway capacity projects. In discussing the effect of proposed changes to the transportation analysis of highway capacity projects, this analysis assumes that for highway capacity projects, lead agencies will select VMT as the appropriate measure of transportation impacts. Proposed VMT analysis of a project which expands roadway capacity could include a travel demand model run, but would not require assessing traffic volume at individual intersections or running microsimulation modeling to determine delay. Travel demand model outputs also underlie GHG, noise, and other environmental analyses. Mitigation could consist of project specific measures, or be accomplished via measures elsewhere in the county or region. Similar to analysis under LOS, roadway capacity projects that induce additional vehicle travel may increase VMT to a significant degree. Such increases may be mitigated by pairing capacity increases with other improvements that would not otherwise occur that reduce VMT either as part of the project or through a regional mitigation program.

Appendix B: Public Outreach

OPR and the Natural Resources Agency have engaged in an iterative process to develop the CEQA Guidelines proposal, and in doing so, have solicited and received extensive public comments. Since the release of the preliminary discussion draft in August 2014, OPR, the Resources Agency, or both have engaged with the following stakeholders, among others, in over 150 meetings, presentations, conferences, and other venues, as listed below.

Additionally, for approximately two years, OPR participated in regular standing meetings with the Caltrans Director on a monthly basis, and Caltrans staff on a bi-weekly basis. In 2016, OPR spent five full days in working group meetings with the metropolitan planning organizations in 2016. OPR has also developed a series of training materials, including a module for the Association of Environmental Professionals Spring Workshop series, and an article published in the California Bar's "Environmental Law News."

- SPUR (August 13, 2014)
- Council of Infill Builders (August 15, 2014)
- Numerous meetings with San Francisco planning and transportation; mayoral support
- Southern California Association of Governments Staff (August 27, 2014)
- Natural Resources Defense Council (August 27, 2014)
- Meea Kang (Infill Builders Federation) (August 28, 2014)
- Nelson Nygaard (September 2, 2014)
- Greenbelt Alliance (September 5, 2014)
- Bay Area Rapid Transit (September 8, 2014)
- Building Industry Association (September 8, 2014)
- UC Davis Extension (September 8, 2014) (to develop course on analyzing VMT)
- Sacramento Metro Chamber of Commerce (September 9, 2014)
- Bay Area Transportation Agencies (hosted by Alameda County Transportation Commission) (September 9, 2014)
- City of Los Angeles (September 10, 2014)
- City Center Association of Los Angeles (September 10, 2014)
- Kittelson Associates (September 10, 2014)
- Circulate San Diego, American Planning Association, Institute of Transportation Engineers, Caltrans (September 12, 2014)
- American Planning Association, California Chapter (September 14, 2014)
- Orange County Business Council (September 15, 2014)
- Valley Transportation Authority (September 18, 2014)
- Women's Transportation Seminar Sacramento (September 23, 2014)
- Association of Environmental Professionals, Central Valley Chapter (September 24, 2014)
- High Speed Rail Authority (September 25, 2014)
- OPR Hosted Public Webinar (September 25, 2014)
- SANDAG phone call with modelers (September 26, 2014)

- SANDAG in person with planners (September 29, 2014)
- Circulate San Diego (September 29, 2014)
- Association of Environmental Professionals, North Bay (October 2, 2014)
- Law Seminars International, Santa Monica (October 6, 2014)
- California State Association of Counties (October 7, 2014)
- University of Southern California (October 7, 2014)
- California Transportation Commission (October 8, 2014) (in Glendale)
- California Air Pollution Control Officers Association, Planning Managers (October 10, 2014)
- Infill Builders Federation (October 13, 2014)
- Institute of Transportation Engineers (October 15, 2014)
- California Bar Association, Environmental Law Section (October 17, 2014)
- Transform (October 17, 2014)
- National Association of City Transportation Officials Conference (October 23, 2014)
- Sacramento APA Speaker Series (October 24, 2014)
- Southern California Association of Governments, Stakeholder Convening (October 28, 2014)
- Center City Association of Los Angeles (October 29, 2014) (follow-up)
- Association of Environmental Professionals, South Bay (October 30, 2014)
- Association of Environmental Professionals, San Francisco (October 30, 2014)
- OPR Hosted Public Workshop (livecast) (November 3, 2014)
- Governor's Office of Economic Development (November 4, 2014)
- American Planning Association, Santa Rosa (November 6, 2014)
- California State Association of Counties (November 7, 2014)
- Port of San Diego (November 7, 2014)
- Metropolitan Transportation Commission (November 10, 2014)
- CalChamber and Building Industry Association (November 18, 2014)
- California Transportation Commission (December 3, 2014)
- Caltrans Interagency Modeling Forum (December 3, 2014)
- Continuing Legal Education CEQA Conference (December 5, 2014)
- Caltrans Freight (December 19, 2014)
- Caltrans Operations (December 30, 2014)
- Air Resources Board Freight (January 6, 2015)
- Transportation for America (January 8, 2015)
- U.S. Department of Housing and Urban Development (January 8, 2015)
- State of Virginia Governor's Office (January 9, 2015)
- U.S. EPA Office of Sustainable Communities (January 9, 2014)
- U.S. Department of Transportation (January 9, 2015)
- Transportation Research Board Presentation on published paper on rural VMT reduction (January 12, 2015)
- Transportation Research Board Presentation to Major Cities Committee (January 12, 2015)
- U.S. Department of Housing and Urban Development (January 13, 2015)
- Brookings Institute (January 14, 2015)

- Association of Bay Area Governments (January 14, 2015)
- Housing and Transportation Steering Committee (January 15, 2015)
- League of Cities, Environmental Quality Committee (January 16, 2015)
- Land Use Seminar (Los Angeles) (January 19, 2015)
- Association of Environmental Professionals (January 27, 2015)
- Association of Bay Area Governments (Public Workshop) (February 4, 2015)
- Port of Long Beach (February 17, 2015)
- Association of Environmental Professionals, Spring Workshop (February 23, 2015)
- Kittelson Associates (February 25, 2015)
- California County Planning Directors Association (February 26, 2015)
- New City of Oakland Transportation Director (March 17, 2015)
- UC Berkeley (March 17, 2015)
- Institute of Transportation Engineers, Western Division (March 18, 2015)
- Association of Environmental Professionals Annual Conference (March 23-24, 2015)
- San Joaquin Valley Air Pollution Control District (April 2, 2015)
- City of San Pablo (April 6, 2015)
- American Society of Civil Engineers and Institute of Transportation Engineers, Riverside County, San Bernardino County (April 16, 2015)
- Institute of Transportation Engineers (April 23, 2015)
- Full day UC Davis Extension Course (May 6, 2015)
- Port of Long Beach (May 21, 2015)
- San Francisco Planning Department (May 22, 2015)
- MPO-State Agency Workgroup (May 26, 2015)
- California Air Pollution Control Officers' Association (June 4, 2015)
- San Francisco County Transportation Authority (June 10, 2015)
- State Smart Transportation Initiative (June 12, 2015)
- Keynote Speech at University of Michigan NECTAR Conference (June 15, 2016)
- Highway 50 Corridor Transportation Management Authority (July 15, 2016)
- Institute of Transportation Engineers (July 21, 2016)
- Southern California Association of Governments Convening (July 28, 2016)
- Circulate San Diego Stakeholder Roundtable (July 29, 2016)
- San Francisco Bay Area Convening at Alameda County Transportation Commission (July 30, 2016)
- Southern California Association of Governments staff (August 30, 2016)
- San Francisco Municipal Transportation Agency (August 18, 2015)
- North Natomas Transportation Management Authority (August 21, 2015)
- Southern California Association of Governments staff (September 15, 2015)
- Los Angeles Department of Transportation (September 24, 2015)
- City of Truckee (November 3, 2015)
- California Air Pollution Control Officers' Association (November 4, 2015)
- Southern California Association of Governments staff (January 20, 2016)
- California legislative staff (January 26, 2016)

- SPUR (January 28, 2016)
- U.S. Department of Transportation (February 1, 2016)
- Two statewide webinar presentations and Q&A sessions, attended by over 500 participants (February 1 and 9, 2016)
- Southern California Association of Governments staff (February 9, 2016)
- UC Davis Extension full-day course (February 10, 2016)
- Bay Area Working Group, Alameda County Transportation Authority (February 12, 2016)
- Southern California Association of Governments stakeholder convening (February 18, 2016)
- Sacramento stakeholder convening (February 22, 2016)
- Port of Long Beach (February 22, 2016)
- Sacramento Area Councils of Government staff (February 24, 2016)
- Shasta Regional Transportation Agency (February 29, 2016)
- California Legislative staff (March 1, 2016)
- Sacramento Area Councils of Government staff (March 3, 2016)
- Stanislaus County Planning Directors Meeting (March 4, 2016)
- Southern California Association of Governments staff (March 14, 2016)
- Sacramento Area Councils of Government staff (March 14, 2016)
- Bay Area Air Quality Management District (March 17, 2016)
- Big Cities DOTs (8 largest cities, ~25% state population) (March 18, 2016)
- ClimatePlan (March 29, 2016)
- Infill Builders (April 8, 2016)
- Southern California Association of Governments staff (April 8, 2016)
- Valley Industry and Commerce Association (April 13, 2016)
- Transportation For America Webinar (April 13, 2016)
- UC Davis ITS Seminar (April 15, 2016)
- MPO State Agency Working Group (April 27, 2016)
- AEP/APA/ITE/WTS/CSTF/Circulate San Diego (May 12, 2016)
- Southern California Association of Governments and Sacramento Area Councils of Government staff (May 24, 2016)
- Sacramento Area Councils of Government staff (July 22, 2016)
- ClimateResolve (July 27, 2016)
- Southern California Association of Governments staff (August 2, 2016)
- ClimateResolve (July 10, 2016)
- Institute of Transportation Engineers National Annual Meeting (August 15, 2016)
- San Francisco Municipal Transportation Agency (August 31, 2016)
- ClimatePlan (September 13, 2016)
- Portland State Symposium on transportation funding, national audience (September 21, 2016)
- Southern California Association of Governments staff (September 23, 2016)
- Railvolution Conference presentation (national audience) (October 11, 2016)
- Southern California Association of Governments stakeholder convening (November 14, 2016)
- Southern California Association of Governments staff (November 29, 2016)

- Southern California Association of Governments individual stakeholder follow-up (December 5, 2016)
- Southern California Association of Governments staff (November 7, 2016)
- Portland State, Big Four MPOs, San Joaquin Council of Governments, California Association of Councils of Government (January 6, 2017)
- Transportation Research Board (January 9, 2017)
- UC Davis Extension full day course (February 1, 2017)
- Erik Ruehr, Institute of Transportation Engineers (February 2, 2017)
- City of Sacramento (February 17, 2017)
- UC Davis CEQA Course (February 23, 2017)
- California State Association of Counties (March 2, 2017)
- Local Government Commission Yosemite Conference (March 18, 2017)
- Portland State, Big Four MPOs, San Joaquin Council of Governments, California Association of Councils of Government (April 4, 2017)
- Los Angeles NGOs, hosted by ClimateResolve (April 7, 2017)
- Congress for the New Urbanism Annual Conference (May 4, 2017)
- CAPCOA Planning Managers' Meeting (May 11, 2017)
- Clean Air Dialog (May 24, 2017)
- Sacramento Air Quality Management District (June 6, 2017)
- Bay Area Metro Planning Innovations (June 8, 2017)
- City of San Jose (July 14, 2017)
- Los Angeles Department of Transportation (July 14, 2017)
- ClimatePlan, Environmental Council of Sacramento, Transform (July 19, 2017)
- Association of Environmental Professionals, AEP Institute (August 4, 2017)
- City of Long Beach (September 7, 2017)
- Portland State University (September 12, 2017)
- Bay Area Metro (September 15, 2017)
- Sacramento Metropolitan Air Quality Management District (September 22, 2017)
- American Planning Association, California Chapter, Statewide Conference (September 25, 2017) (three separate panel presentations)
- City of San Jose (October 6, 2017)
- CAPCOA Planning Manager's Meeting (October 11, 2017)
- UCLA Lake Arrowhead Conference on Transportation and Environment (October 15, 2017)
- Caltrans, Legal Division (November 3, 2017)
- Rural Counties Task Force (November 17, 2017)
- VOLPE/Federal Highway Administration Webinar (November 30, 2017)