CEQA Transportation VMT Analysis Guidelines

City of Temecula

April 3, 2020

FEHR & PEERS

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Overview

SB 743, signed by the Governor in 2013, changes the focus of transportation impact analysis in CEQA from measuring impacts to drivers, to measuring the impact of driving. The change is being made by replacing LOS with VMT and providing streamlined review of land use and transportation projects that will help reduce future VMT growth. This shift in transportation impact focus is expected to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce greenhouse gas (GHG) emissions, encourage infill development, and improve public health through more active transportation.

In January 2019, the Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of SB 743 modifications. The Office of Planning and Research (OPR) published its latest Technical Advisory on Evaluating Transportation Impacts in CEQA to the California Natural Resources Agency in December 2018. This Technical Advisory provides recommendations on how to evaluate transportation impacts under SB 743. These changes include elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant CEQA transportation impacts. The OPR guidance recommends the use of Vehicle Miles Travelled, or VMT, as the preferred CEQA transportation metric. To comply with the new legislation the City of Temecula has established a VMT analysis methodology, established VMT thresholds for CEQA transportation impacts, and identified of possible mitigation strategies. SB 743 includes the following two legislative intent statements:

1. Ensure that the environmental impacts of traffic, such as noise, air pollution, and safety concerns, continue to be properly addressed and mitigated through the California Environmental Quality Act.
2. More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions.

Since CEQA transportation analysis now requires an evaluation of a project's potential impacts related to VMT significance criteria, the VMT analysis will:

- Enable proposed development projects to comply with current CEQA requirements as a result of the implementation of SB 743.
- Outline the County's CEQA significance thresholds, screening criteria, and methodology for conducting the transportation VMT analysis.
- Help determine if mitigation is required to offset a project's significant VMT impacts.
- Identify VMT reduction measures and strategies to mitigate potential impacts below a level of CEQA significance.

- Reduce the need to widen or build roads through effective use of the existing transportation network and maximizing the use of alternative modes of travel throughout the County.

VMT is a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. VMT does not directly measure traffic operations but instead is a measure of network use or efficiency, especially if expressed as a function of population or employment (i.e. VMT per resident). VMT tends to increase as land use density decreases and travel becomes more reliant on the use of the automobile due to the long distances between origins and destinations. VMT can also serve as a proxy for impacts related to energy use, air pollution emissions, GHG emissions, safety, and roadway maintenance. The relationship between VMT and energy or emissions is based on fuel consumption. The traditional use of VMT in environmental impact analysis is to estimate mobile air pollution emissions, GHGs, and energy consumption.

This guidelines document is organized as follows:

1. Metrics and Methodology for Calculating VMT
2. VMT Analysis for Land Use Projects
3. VMT Analysis for Transportation Projects
4. VMT Reduction and Mitigation Measures
5. Cumulative VMT Impacts

Metrics and Methodology for Calculating VMT

Transportation VMT analysis for CEQA should be conducted using the Riverside County Transportation Analysis Model (RIVTAM) [1]. The model outputs can be used to produce Total VMT/Service Population and Total VMT.

VMT per Service Population

VMT/Service Population is established by dividing the total VMT with at least one trip end in the City of Temecula by the population plus employment of the City. The total VMT includes all internal VMT, internal to external, and external to internal VMT (in other words all VMT regardless of geographic boundaries). Since this metric combines VMT for residents and employees and reflects how accessible all land uses are
(for example, geographies with higher density, more shopping, and more jobs will have lower VMT/Service Population) it can be used to evaluate multiple types of projects. To analyze the VMT/Service Population for a proposed project, the project's total VMT is divided by the project population plus employment.

The total VMT (origin-destination method) within the City can be calculated directly from model outputs by multiplying the origin-destination (O-D) trip matrix by the final assignment skims (O-D Method VMT). The total VMT value should be appended to include VMT from all trips that enter or exit the Riverside County, as explained in the Trip Length Adjustment section.

Total VMT (Boundary Method)

Total daily VMT within a given area can be measured by multiplying the daily volume on every roadway segment by the length of every roadway segment within a given area. This is called Boundary Method VMT. Examples of total VMT (Boundary Method) are VMT within the WRCOG region, VMT within the City of Temecula, or VMT within the vicinity of a transportation project.

Trip Length Adjustments

Trip length adjustments for trips leaving the RIVTAM Model Area can be made by using the California Statewide Travel Demand Model (CSTDM).

Adjusting the length of trips leaving a model boundary requires appending extra distance at the model gateway zone (or external centroid) connectors. This process results in new gateway distances that are weighted based on the amount and location of external travel origins and destinations.

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[1] RIVCOM is currently under development with an anticipated completion date in the Spring/Summer of 2020. Once finalized, RIVCOM should be utilized for all forecasting activity.

The first step of this process is to determine trip volume leaving or entering the model boundary. These are referred to as internal-to-external (IX) and external-to-internal (XI) trips. This data can be generated either from O-D trip matrices or by conducting a select zone analysis to track trips to the model gateways. The volume at the gateways for this purpose should not include external-to-external (XX) through trips.

Determining the full length of trips leaving or entering a model boundary requires an OD dataset that includes flows between the model area and the area external to the model. The California Statewide Travel Demand Model (CSTDM) should be used to develop the OD dataset.

The next step requires determining the gateway(s) based on the RIVTAM model which trips from the OD data source would travel through. The trip length adjustment process ultimately requires calculating the weighted average distance beyond each model gateway. The process of calculating trip lengths external to the RIVTAM model region for trips entering or exiting the RIVTAM model area using the CSTDM is described below:

- Create correspondence between Study Area TAZs within RIVTAM model to the Statewide Model TAZs.
- Add "Gate" attribute to CSTDM roadway network links and set "Gate" equal to gateway id only for those links identified as the locations corresponding to the RIVTAM model gateways.
- Add "Gate_Dist" attribute to CSTDM roadway network links and set "Gate_Dist" equal to the link distance for those links outside the RIVTAM model boundary. All the CSTDM roadway links inside the RIVTAM model boundary will have a "Gate_Dist" attribute of 0.
- Run a highway skim on the CSTDM roadway network to skim the shortest travel time between each OD pair, tracking the gateway and distance outside the RIVTAM model boundary. • For each gateway, summarize the average distance beyond the RIVTAM model boundary weighted by volume at each gateway.
- Tag the gateway distance from the above step using CSTDM to the gateways in the RIVTAM model and multiply to the gateway volume from the RIVTAM model to determine the gateway external VMT to the RIVTAM model. Make sure not to double-count any overlap distance that's already accounted for in the VMT calculation from the RIVTAM model.

Table 1 shows the base year (2012) weighted average distance beyond the RIVTAM model boundary for trips passing through the Riverside County model gateway, as calculated using the methodology above. A full list of distances for model gateway distances for the RIVTAM model can be found in Appendix A.

Table 1: Average Trip Distances South of Riverside County Line

Gateway		Distance Outside Riverside County (miles)	
Route	County	IX Trips	XI Trips
SR-79	San Diego County	40.9	41.7
Pala Rd	San Diego County	19.3	20.4
I-15	San Diego County	23.8	23.1
Sandia Creek Rd	San Diego County	6.7	6.7
De Luz Rd	San Diego County	4.4	4.4
Tenaja Rd	San Diego County	6.5	6.5

Source: Fehr & Peers.

VMT Analysis for Land Use Projects

Screening Criteria for CEQA VMT Analysis for Land Use Projects

The requirements to prepare a detailed transportation VMT analysis apply to all land development projects, except those that meet at least one of the screening criteria. A project that meets at least one of the screening criteria below would have a less than significant VMT impact due to project characteristics and/or location.

1. Small Residential and Employment Projects

Projects generating less than 110 daily vehicle trips (trips are based on the number of vehicle trips after any alternative modes/location-based adjustments are applied) may be presumed to have a less than significant impact absent substantial evidence to the contrary.

2. Projects Located Near a Major Transit Stop/High Quality Transit Corridor

Projects located within a half mile of an existing major transit stop or an existing stop along a high-quality transit corridor[2] may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may not be appropriate if the project:

- Has a Floor Area Ratio of less than 0.75
- Includes more parking for use by residents, customers, or employees of the project than required by the City
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units

3. Projects Located in a VMT Efficient Area

A VMT efficient area is any area with an average VMT per service population 15% below the baseline average for the WRCOG region. Land use projects may qualify for the use of VMT efficient area screening if the project can be reasonably expected to generate VMT per service population that is similar to the existing land uses in the VMT efficient area. Projects located within a VMT efficient area may be presumed

[2] Major transit stop: a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods. High quality transit corridor: a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute periods.

to have a less than significant impact absent substantial evidence to the contrary. Screening maps for each metric and subregion can be found in Appendix B.

4. Locally Serving Retail Projects

Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.

5. Locally Serving Public Facilities

Public facilities that serve the surrounding community or public facilities that are passive use may be presumed to have a less than significant impact absent substantial evidence to the contrary.

6. Redevelopment Projects with Greater VMT Efficiency

A redevelopment project may be presumed to have a less than significant impact if the proposed project's total project VMT is less than the existing land use's total VMT.

7. Affordable Housing

An affordable housing project may be presumed to have a less than significant impact absent substantial evidence to the contrary.

VMT Thresholds of Significance for Land Use Projects

Projects that do not meet the above screening criteria must include a detailed evaluation of the VMT produced by the project. Any project with a VMT/Service Population 15% below the WRCOG baseline average VMT/Service Population can be presumed to have a less than significant impact.

VMT Analysis Procedures for Land Use Projects

For projects which meet one of the screening criteria for CEQA VMT analysis, no additional analysis is necessary. For projects which are not screened, an evaluation of the VMT produced by the project is necessary. To complete the analysis, the project should be evaluated using the RIVTAM Model (or RIVCOM model once available) to evaluate the VMT/Service population using the methodology described in the Methodology section.

If the project includes transportation demand management (TDM) measures, the reduction in VMT due to each measure shall be calculated and can be applied to the project analysis. There are several resources for determining the reduction in VMT due to TDM measures, such as the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (2010) (Quantification Report).

The VMT reductions associated with project TDM should be applied to the project VMT estimate (nsuring that the VMT reduction is applied to the appropriate project VMT. For example, if a commute trip reduction program is proposed for a multi-family residential project, the VMT reduction should only be applied to the work related VMT associated with the project. If the project does not include any TDM, then no reduction would be taken.

The resulting VMT values should be compared to the significance threshold determine whether the project results in a significant CEQA transportation impact due to VMT.

VMT Analysis for Transportation Projects

For transportation projects, any project that results in an increase in additional motor vehicle capacity (such as constructing a new roadway or adding additional vehicle travel lanes on an existing roadway) has the potential to increase vehicle travel, referred to as "induced vehicle travel."

Screening Criteria for CEQA VMT Analysis for Transportation Projects

Appendix C contains a list of transportation projects that, absent substantial evidence to the contrary, do not require an induced travel/VMT analysis since they typically do not cause substantial or measurable increases in VMT.

VMT Thresholds of Significance for Transportation Projects

A net increase in area total VMT indicates that the project has a significant impact

VMT Analysis Procedures for Transportation Projects

To calculate the change in area (boundary method) total VMT, the transportation project should be input into the travel demand model. The "with project" area total VMT produced by the model run is compared to the "no project" area total VMT. A net increase in area VMT indicates that the project has a significant impact

VMT Reduction and Mitigation Measures

To mitigate VMT impacts, the project applicant must reduce VMT, which can be done by either reducing the number of automobile trips generated by the project or by reducing the distance that people drive. The following strategies are available to achieve this:

1. Modify the project's built environment characteristics to reduce VMT generated by the project.
2. Implement TDM measures to reduce VMT generated by the project.

Strategies that reduce single occupant automobile trips or reduce travel distances are called TDM strategies. There are several resources for determining the reduction in VMT due to TDM measures such as the CAPCOA Quantification Report.

Cumulative VMT Impacts

Since VMT is a composite metric that will continue to be generated over time, a key consideration for cumulative scenarios is whether the rate of VMT generation gets better or worse in the long-term. If the rate is trending down over time consistent with expectations for air pollutant and GHGs, then the project level analysis may suffice. However, the trend direction must be supported with substantial evidence. A project would result in a significant project-generated VMT impact under cumulative conditions if the cumulative project-generated VMT per service population exceeds the WRCOG baseline VMT per service population.

Measuring the 'project's effect on VMT' is necessary especially under cumulative conditions to fully explain the project's impact. A project effect on VMT under cumulative conditions would be considered significant if the cumulative total VMT/service population increases under the plus project condition compared to the no project condition.

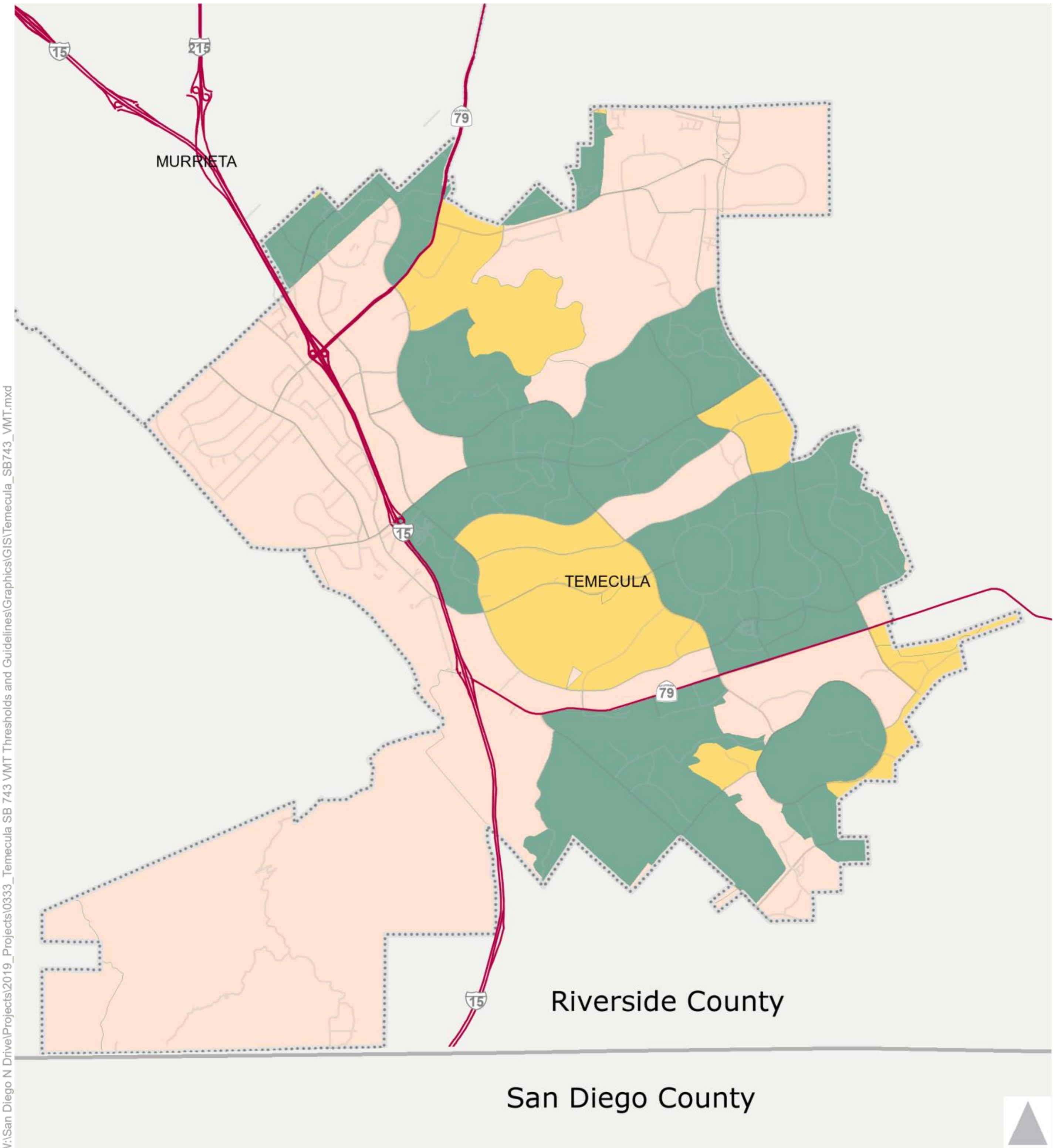
Please note that the cumulative no project shall reflect the adopted RTP/SCS; as such, if a project is consistent with the regional RTP/SCS, then the cumulative impacts shall be considered less than significant.

Appendix A: Model Gateway Distances

Gateway		Distance Outside Riverside County (miles)	
Route	Destination	IX Trips	XI Trips
US-101	Santa Barbara County	24.4	26.4
SR-150	Santa Barbara County	1.9	1.4
SR-33	Santa Barbara County	162.9	184.7
Lockwood Valley Rd	Kern County	1.8	1.9
I-5	Kern County	224.2	224.8
90th Street W	Kern County	26.9	19.8
60th Street W	Kern County	0.0	6.1
SR-14	Kern County	30.3	29.0
Sierra Hwy	Kern County	0.0	0.0
120th Street E	Kern County	13.0	13.1
Mercury Blvd. (200th St)	Kern County	0.0	0.0
SR-58	Kern County	102.8	92.7
SR-395	Kern County	134.8	122.1
SR-178	Kern County	2.9	3.6
Trona Rd	Inyo County	0.0	0.0
SR-127	Inyo County	38.9	37.9
Mesquite Valley Rd	Inyo County	0.0	0.0
Kingston Rd	State of Arizona	0.0	0.0

SR-15	State of Arizona	0.0	0.0
Nipton Rd	State of Arizona	0.0	0.0
SR-95	State of Arizona	0.0	0.0
Needle Hwy	State of Arizona	0.0	0.0
I-40	State of Arizona	0.0	0.0
Parker Dam Rd	State of Arizona	0.0	0.0
SR-62	State of Arizona	0.0	0.0
I-10	State of Arizona	0.0	0.0
I-8	International Border - Mexico	0.0	0.0
SR-186	International Border - Mexico	0.0	0.0
SR-7	International Border - Mexico	0.0	0.0
SR-111	International Border - Mexico	0.0	0.0
I-8	Imperial County	67.2	63.8
SR-78	Imperial County	48.6	43.4
SR-22	Imperial County	28.1	26.1
SR-79	San Diego County	40.9	41.7
Pala Rd	San Diego County	19.3	20.4
I-15	San Diego County	23.8	23.1
Sandia Creek Rd	San Diego County	6.7	6.7
De Luz Rd	San Diego County	4.4	4.4
Tenaja Rd.	San Diego County	6.5	6.5
I-5	San Diego County	40.2	40.3

Appendix B: VMT Screening Maps



< -15% below WRCOG Regional Average (Screened)

0 to -15% below WRCOG Regional Average (Mitigatable)

Higher than WRCOG Regional Average (Challenge to Mitigate)

City Limits

County Boundary

W:\San Diego N Drive\Projects\2019_Projects\0333_Temecula SB 743 VMT Thresholds and Guidelines\Graphics\GIS\Temecula_SB743_VMT.mxd

RIVTAM Model (2012)
Daily Total VMT per Service Population
Comparison to WRCOG Regional Average

Appendix C: Transportation Projects That Do Not Require VMT Analysis

The following complete list is provided in the OPR Technical Advisory (December 2018, Pages 20-21) for transportation projects that "would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis:"

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such as median barriers and guardrails
- Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety • Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel
- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow
- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices
- Adoption of or increase in tolls

Appendix

- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve nonmotorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor