

ATTACHMENT A: TRANSPORTATION IMPACT STUDY GUIDELINES

City of Redondo Beach

TRANSPORTATION IMPACT STUDY GUIDELINES FOR LAND USE PLANS AND PROJECTS

May 5, 2021

In compliance with Senate Bill 743 and the California Environmental Quality Act (CEQA), the City of Redondo Beach has developed guidance for Transportation Studies that provide instructions for the preparation of analyses and documentation. This document is intended to provide standard methods and approaches that encourage safety, sustainability, the reduction of greenhouse gases, and local quality of life for residents and the many users of the transportation system. When a transportation study is initiated, the process in this document should be applied and coordinated with the City Traffic Engineer and other City staff, as appropriate. Importantly, the process described in this document applies only to land use plans and projects and does not apply to transportation infrastructure projects.

The City recognizes that vehicular level of service (LOS) is not to be used as a measure of transportation impacts in the context of CEQA. Therefore, the City has determined that a dual analysis process will be applied for identifying and evaluating potential transportation impacts as well as non-CEQA roadway operational effects that may necessitate roadway improvements associated with new land development and infrastructure projects located within the City. The CEQA analysis will consist of an approach using the metric of vehicle miles traveled (VMT) to identify potential transportation impacts by applying CEQA designated methodologies and thresholds. The non-CEQA operational analysis will be a localized approach conducted primarily to identify potential safety and operational issues when applied against criteria the City has established. This approach will continue to use LOS to evaluate land development and infrastructure projects. A separate report is required for each analysis. For more information about the City's goals regarding LOS, please refer to the City's General Plan.

I. CEQA Regional Analysis Overview

Pursuant to the adoption of California Senate Bill 743 (SB 743), the implementation of CEQA guidance in the City of Redondo Beach includes the following:

- **VMT Screening:** The first step in the transportation analysis process is to determine if a full VMT analysis is required. The City of Redondo Beach requires that VMT screening be conducted based on a subset of the recommendations of the Governor's Office of Planning & Research (OPR). While OPR recommends that projects be screened from a VMT analysis based on their size, location, and/or accessibility to transit, projects in Redondo Beach may only be screened based on their size and location. In addition, transportation projects that are not adding new travel lanes may be screened from further VMT analysis. Details on applying the VMT screening process are provided in Table 1.

- **VMT Analysis Methodology:** If the project is not screened from needing a VMT analysis, the most recent Southern California Association of Governments (SCAG) regional travel demand model available shall be used to estimate a project’s VMT. OPR recommends that VMT be reported as “Home-Based VMT” per capita for residential projects and “Home-Based Work VMT” per employee for office projects. Total VMT and/or VMT per service population is to be reported for area plans, large-scale retail projects, or other project types, such as special event venues.
- **VMT Impact Thresholds:** Projects exceeding a level of 16.8 percent below the Baseline VMT (reported as VMT per capita, per employee, or per service population) are considered to have a significant VMT impact. The City of Redondo Beach has defined the South Bay Cities Council of Governments (SBCCOG) as the geographic area for the impact analysis relating to residential and employment uses.
 - a. For regional retail projects¹, projects resulting in a net increase in total areawide VMT are considered to have a significant VMT impact. The scale of analysis for regional retail projects will be based on changes to VMT for an area to be determined in consultation with City staff. The study area would be dependent on factors such as land use, scale, and proximity to the City’s borders.
- **VMT Mitigation:** The types of mitigation that effect VMT are those that reduce the number of single-occupant vehicles generated by the site. This can be accomplished by changing the land uses being proposed or by implementing transportation demand management (TDM) measures.

The following sections describe the CEQA analysis process in greater detail.

VMT Screening Criteria

CEQA includes a variety of policy tools for project streamlining that are not covered in this document. Based on the guidance provided by OPR, land use projects can be screened from a VMT analysis based on their size and location. In addition, transportation projects that are not adding new travel lanes may be screened from further VMT analysis. Screening opportunities in the City of Redondo Beach are described in the table below. A project only needs to satisfy one of the screening criteria to be exempt from requiring further VMT analysis. However, for mixed-use projects that include both residential and office/commercial components and are not otherwise screened from VMT analysis based on their size (project generates 110 or fewer daily trips), a VMT analysis must be completed

¹ Per the Governor’s Office of Planning and Research (OPR) guidance, regional retail projects are those that exceed 50,000 square feet.

for the full project if either component of the project fails to meet screening criteria for location in a low VMT area.

TABLE 1 – VMT SCREENING GUIDANCE	
Screening Categories	Project Requirements to Meet Screening Criteria
Project Size	A project that generates 110 or fewer daily trips. ²
Locally Serving Retail	A project that has locally serving retail uses that are 10,000 square feet or less, including specialty retail, shopping center, grocery store, pharmacy, financial services/banks, fitness center or health club, restaurant, and café. If the project contains other land uses, those uses need to be considered under other applicable screening criteria.
Project Located in a Low VMT Area	A residential or office project that is located in an area that is already 16.8% below the SBCCOG Baseline VMT. <u>For mixed-use projects that include both residential and office/commercial land uses, if either component of the project fails to meet the Low VMT screening criteria, all project components must complete a VMT analysis.</u>
Transportation Facilities	Transportation projects that promote non-auto travel, improve safety, or improve traffic operations at current bottlenecks, such as transit, bicycle and pedestrian facilities, intersection traffic control (e.g., traffic signals or roundabouts), or widening at intersections to provide new turn lanes.

VMT Analysis Methodology

For projects that do not meet any of the screening criteria in Table 1, a VMT analysis is required and should rely on the best available data to inform trip generation and trip length estimates for the project uses. For land use plans (e.g., Specific Plan or General Plan) and projects consisting of residential, office, or retail land uses, the VMT analysis should be conducted using the SCAG RTP/SCS travel demand model. For other project types, such as a performing arts center or special event venues, the VMT analysis should be customized to determine the unique trip generation and trip length characteristics of the proposed uses. This approach should be determined in consultation with City of Redondo Beach staff.

The VMT analysis should consider the potential impacts of the project under both existing and future/cumulative conditions as follows:

- Existing/Baseline Conditions:** Project-generated VMT should be estimated for the proposed land uses under existing/baseline conditions. VMT can be estimated using the SCAG regional travel demand model and should be reported as Home-Based VMT per capita (residential projects) or Home-Based Work VMT per employee

² Per the OPR guidance, the Project Size screening criteria should be evaluated according to the net change in daily vehicle trips that is attributable to the project.

(office or employment-generating projects). For land use plans and large-scale retail projects (exceeding 50,000 square feet), Total VMT per service population or Total VMT can be used to determine potential impacts.

- **Cumulative Conditions:** A less than significant impact under Existing/Baseline conditions would also result in a less than significant cumulative impact as long as the project is consistent with the SCAG RTP/SCS.

For large planning efforts such as a Specific Plan that may result in changes to regional travel patterns, the Project-effect on VMT should be estimated under cumulative conditions to determine if VMT in the study area would be higher/lower in the future with the project in place. To evaluate the project's effect on VMT, the future year travel demand model should be updated to reflect the project and determine if the citywide or regional VMT increases or not with the project.

VMT Impact Thresholds

The California Air Resources Board has quantified the need for VMT reduction in order to meet the State's long-term climate goals and has identified 16.8% below the regional average as the threshold for identifying a significant VMT impact for land use projects and plans. The VMT thresholds for projects and plans in the City of Redondo Beach are summarized in Table 2.

TABLE 2 – VMT IMPACT THRESHOLDS	
Project Type	Threshold for Determination of Significant VMT Impact
Residential Project	Project exceeds 16.8% below SBCCOG Baseline VMT for home-based VMT per capita.
Employment (Commercial or Industrial) Project	Project exceeds 16.8% below SBCCOG Baseline VMT for home-based work VMT per employee.
Local-Serving Retail Project	Local serving retail project between 10,000 – 50,000 square feet exceeds 16.8% below SBCCOG Baseline VMT for home-based work VMT per employee.
Regional Retail Project ³	Project results in a net increase in total VMT in comparison to the SBCCOG Baseline VMT.
Mixed-Use Projects	Evaluate each project land use component separately using the criteria above. If either the residential or office/commercial component of a mixed-use project fails to meet the Low VMT screening criteria, VMT analysis must be completed for all components of the project.
Land Use Plans	Plan exceeds 16.8% below SBCCOG Baseline VMT for Total VMT per service population.
Other land use types	Project exceeds 16.8% below SBCCOG Baseline VMT. For land use types not listed above, the City can determine the appropriate VMT metric depending on the project characteristics. For projects that are generally producing job-related travel, the employment generating VMT (home-based work VMT per employee) can be compared to the baseline. For other projects, the total VMT per service population can be compared to the SBCCOG baseline, or the net change in Total VMT can be estimated.

VMT Mitigations

The types of mitigation that affect VMT are those that reduce the number of single-occupant vehicles generated by the project. This can be accomplished by changing the land uses being proposed or by implementing Transportation Demand Management (TDM) strategies. TDM strategies have been determined to be among the most effective VMT impact mitigators. TDM strategies are reductions available from certain types of project site modifications, programming, and operational changes.

The effectiveness of identified TDM strategies is based primarily on research documented in the 2010 California Air Pollution Control Officers Association (CAPCOA) publication, *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA, 2010). CAPCOA offers methodology based on preferred literature, along with methodology based on alternative

³ Per the Governor’s Office of Planning and Research (OPR) guidance, regional retail projects are those that exceed 50,000 square feet.

literature, for each strategy. Additionally, CAPCOA's documentation contains detailed equations on applying TDM reductions given the land use type and built environment context. For a comprehensive list of available TDM strategies, please refer to *Quantifying Greenhouse Gas Mitigation Measures*. Attachment A to this document provides a comparison of the VMT reductions that can be expected from the strategies in the CAPCOA guidance with anticipated reductions as described in literature that has been published after 2010.

Specific mitigation strategies need to be tailored to the project characteristics and their effectiveness needs to be analyzed and documented as part of the environmental review process to determine if impacts could be mitigated or if they would remain significant and unavoidable. Given that research on the effectiveness of TDM strategies is continuing to evolve, feasible mitigation measures should be considered based on the best data available at the time a project is being considered by the City.

Plans, Programs, Ordinances, and Policies Review

Potential impacts to the transportation system, including public transit, pedestrian facilities and travel, and bicycle facilities and travel can be evaluated using the following criteria:

- A significant impact occurs if the project conflicts with adopted transportation-related plans, programs, ordinances, or policies, or otherwise decreases the performance or safety of transportation facilities, including public transit, pedestrian, and bicycle facilities.

Therefore, it should be evaluated whether a project is consistent with adopted transportation-related plans, programs, ordinances, or policies, or otherwise increases or decreases the performance or safety of transportation facilities and make a determination as to whether it has the potential to conflict with existing or proposed facilities. Examples of transportation-related plans, programs, ordinances, and policies that should be reviewed include, but are not limited to, the following:

- SCAG Regional Transportation Plan / Sustainable Communities Strategy
- South Bay Bicycle Master Plan
- City of Redondo Beach General Plan Circulation Element
- City of Redondo Beach Specific Plans (if applicable)

Geometric Design Features and Emergency Access Review

Project site plans shall be reviewed in light of commonly accepted traffic engineering principles to ascertain whether any deficiencies are apparent which could be considered to create or substantially increase hazards. This analysis should consider internal circulation at the project site and the potential for vehicle queuing at project driveways. Additionally, project site plans must be reviewed to ensure that adequate access is provided for emergency vehicles.

II. Local Transportation Assessment Overview

In addition to the CEQA analysis described above, the City of Redondo Beach requires a non CEQA analysis utilizing a localized approach conducted primarily to identify potential operational issues when applied against criteria the City has established. This approach uses LOS to evaluate land development and infrastructure projects.

In the event a development project significantly degrades the effective use or safety of City streets, improvements may be required. Required improvements should consider transit, bicycle, and pedestrian improvements, as well as roadway and operational improvements.

The Local Transportation Assessment will analyze the changes in the LOS of designated intersections and/or roadway segments through a progression of scenarios beginning with existing traffic conditions. If any substantial operational effect is indicated, the Local Transportation Assessment will propose feasible improvements that are needed to accommodate the additional travel demand generated by the project.

Local Transportation Assessment Study

A project requires operational improvements to the transportation system if a detrimental increase in intersection or roadway segment traffic volumes results from the proposed project. Illegal dwellings or other conditions that exist in violation of the City's zoning ordinance or its local coastal program and are subject to the City's power of abatement may not be accounted for in the as-built condition for the purpose of determining a detrimental increase.

A Local Transportation Assessment is required if the Project is anticipated to generate net new vehicle trips of 50 or more during any peak hour. If it is determined that any operational improvements are required, the potential for secondary impacts to other modes, such as pedestrians and cyclists, should be considered.

The final scope for the Local Transportation Assessment shall be determined by the City after a proposed scope is submitted for review by the Project Applicant or its representative(s). The scope shall include:

1. Project trip generation, including any proposed discounts
2. Site plan, showing location, service type and geometry of each access
3. List of study intersections and/or roadway segments
4. Project trip distribution
5. Ambient growth rate
6. Year of project build-out
7. Table of related projects with type, size and location

Scenarios for Analysis

The intersection and street segment levels of service shall be analyzed under the following scenarios:

- I: Existing Conditions
- II: Cumulative Base Conditions
- III: Cumulative Base plus Project Conditions
- IV: Cumulative Base plus Project with Operational Enhancements (if applicable)

Project Trip Generation

Trip generation estimates should be based on the best available data. In many cases, data published by the Institute of Transportation Engineers provides reasonable trip generation estimates for land uses in the City. However, care should be taken, particularly if the sample size of a given ITE land use is limited. When possible, locally derived trip generation data should be used as a primary source for trip generation estimates or validation of ITE trip rates.

Signalized Intersection Operations

The most current version of the *Highway Capacity Manual (HCM)* is the preferred methodology to analyze signalized intersections. LOS ratings for signalized intersections are based on the average control delay expressed in seconds per vehicle. The HCM methodology accounts for vehicular volumes, lane geometries, signal phasing, signal timings, bicycle and pedestrian volumes, upstream bottlenecks impacting travel flows, and the distribution of travel flows throughout the peak hour (peak hour factor). The following table documents the relationship between the vehicle delay and the LOS for signalized intersections.

LOS DEFINITIONS FOR SIGNALIZED INTERSECTIONS

LOS	Description	Average Control Delay Per Vehicle (Seconds)
A	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.	≤10.0
B	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 – 20.0
C	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.	>20.0 – 35.0
D	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.	>35.0 – 55.0
E	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	>55.0 – 80.0
F	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.	>80.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

When comparing existing or future baseline conditions to “plus project” conditions, delay changes for signalized intersections that exceed the criteria below should be identified.

CITY OF REDONDO BEACH CRITERIA FOR SIGNALIZED INTERSECTIONS

LOS with Project	Average Total Delay (Seconds per Vehicle)	Project-Related Increase in Seconds of Average Total Delay
D	> 35.0 – 55.0	Equal to or greater than 10.0 seconds
E or F	> 55.0	Equal to or greater than 5.0 seconds

Unsignalized Intersection Operations

The most current version of the *Highway Capacity Manual (HCM)* is the preferred methodology to analyze unsignalized intersections. LOS ratings for all-way stop-controlled (AWSC) intersections are based on the average control delay expressed in seconds per vehicle. At two-way or side-street-controlled intersections, the average control delay is calculated for each minor-street stopped movement and the major-street left turns, not for the intersection as a whole. Average control delay for the worst approach should be reported for two-way stop controlled intersections. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The

average control delay for unsignalized intersections is correlated to a LOS designation as shown below.

LOS DEFINITIONS FOR UNSIGNALIZED INTERSECTION

LOS ($v/c \leq 1.0$)	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delay.	> 10.0 to 15.0
C	Average traffic delays.	> 15.0 to 25.0
D	Long traffic delays.	> 25.0 to 35.0
E	Very long traffic delays.	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

All-Way Stop Intersections

When comparing existing or future baseline conditions to “plus project” conditions, delay changes for all-way stop controlled intersections that exceed the criteria below should be identified.

CITY OF REDONDO BEACH CRITERIA FOR UNSIGNALIZED (ALL-WAY STOP) INTERSECTIONS

LOS with Project	Average Total Delay (Seconds per Vehicle)	Project-Related Increase in Seconds of Average Total Delay
D	> 25.0 and ≤ 35.0	Equal to or greater than 4.0 seconds
E or F	> 35.0	Equal to or greater than 3.0 seconds

Side-Street Stop Intersections

When comparing existing or future baseline conditions to “plus project” conditions, delay changes for side-street stop intersections that exceed the criteria should be identified. In addition to the delay thresholds, the peak hour traffic signal warrant should also be met as part of the performance criteria, which involves a two-part test to evaluate the peak hour traffic volumes. Adding the peak hour warrant to the criteria will ensure that minor street approaches with low traffic volumes are not identified as potentially needing improvements.

**CITY OF REDONDO BEACH CRITERIA FOR UNSIGNALIZED (SIDE-STREET STOP)
INTERSECTIONS**

LOS with Project	Average Total Delay for Side-Street Approach (Seconds per Vehicle)	Project-Related Increase in LOS or Seconds of Average Total Delay
E	> 35.0 to 50.0	LOS D or better to LOS E or worse, and meets the peak hour warrant for a traffic signal
F	> 50.0	LOS E to LOS F, or > 10 seconds of delay for worst-case approach if already at LOS F; and meets the peak hour warrant for a traffic signal

The peak hour traffic signal warrant is defined in the California Manual on Uniform Traffic Control Devices (CA MUTCD). The MUTCD is published by the Federal Highway Administration and then adopted by Caltrans to provide uniform standards and specifications for all official traffic control devices in California. The peak hour traffic signal warrant is based on the traffic levels at each approach to an intersection to determine if the traffic volumes are high enough to warrant the installation of a traffic signal. The analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals and should not serve as the only basis for deciding whether and when to install a signal. In some cases, alternatives to signalization may be suitable operational enhancements (i.e., adding new turn lanes to reduce vehicle delay, etc.). The City’s traffic engineer should make the ultimate determination on the appropriate types of improvements to implement (if any) for unsignalized intersections.

Transportation Improvements

If a study intersection or roadway segment is found to have a significant degradation of operations based on the evaluation criteria, potential improvements should be identified to offset degraded roadway operations. Potential improvements should be analyzed and discussed with the City to determine if they are feasible and desirable. The potential for secondary impacts to other modes, such as pedestrians and cyclists, should be considered in the determination of feasible operational improvements.

III. Report Outline and Format

The traffic study report documenting both CEQA and non-CEQA analysis methodologies and results should follow this general outline:

CEQA Report Format

1. Table of Contents
 - a. List of report contents with corresponding page nos.
Each page should be numbered, including pages of figures and exhibits.

2. Main Body of Report
 - a. Introduction – Full description of the Project and its planning case information.
 - b. Environmental Setting – Description of the existing roadway, pedestrian, bicycle, and transit facilities in the study area, as well as existing roadway safety conditions near the project site
 - c. Methodologies & Thresholds of Significance – Description of the impact criteria and methodologies used in the CEQA analysis
 - d. CEQA Transportation Impact Analysis
 - i. Plans, Programs, Ordinances, and Policies Review – Describe the qualitative analysis used to determine whether the project conflicts with any adopted plans, policies, programs, and ordinances.
 - ii. Geometric Design Features and Emergency Access Review – Identify whether the project site plan(s) would create, or substantially contribute to, geometric hazards and inadequate access for emergency vehicles.
 - iii. VMT Analysis – Present the VMT estimates for the specific project land uses and the comparison to the applicable threshold(s). Identify any VMT impacts.
 - iv. Mitigation Program – Identify mitigations and their expected impact on project VMT.
 - v. Residual Impacts & Summary – Identify VMT impacts that are not fully mitigated and summarize the findings of the VMT analysis.

3. Conclusion
 - a. Summary of the Project, its impacts (if any), and measures to mitigate the same.

Tables, figures, diagrams, exhibits, maps and charts that accompany discussion text shall be inserted in the Main Body and Conclusion of the report where appropriate for immediate and convenient reference.

4. Appendices – All technical data sheets, worksheets, calculations, and other reference documents supporting the tables, diagrams, maps, and charts imbedded in the text shall be placed in the Appendix.

5. Attachments - Project site plans, conceptual mitigation plans and drawings that are larger than 11” by 17” may be included as attachments and referenced elsewhere in the report.

Local Transportation Assessment Report Format

1. Table of Contents
 - a. List of report contents with corresponding page nos.
Each page should be numbered, including pages of figures and exhibits.
2. Main Body of Report
 - a. Introduction – Full description of the Project and its planning case information.
 - b. Local Transportation Assessment
 - i. Daily and Peak Hour Trip Generation – Trip Generation estimates should rely on the best available data and may utilize the Institute of Transportation Engineers’ (ITE) rates or local data.
 - ii. Analysis scenarios - Each traffic analysis scenario shall include a description of roadway geometry, lane configuration, traffic volume and traffic controls for each study intersection and roadway segment.
 - iii. Finding (or non-finding) of Operational Effects – Discussion of any operational effects indicated at the study locations.
 - iv. Proposed Operational Improvements – Discussion of feasible measures proposed to improve traffic operations, including guarantees to ensure implementation.
3. Conclusion
 - a. Summary of the Project, its operational effects (if any), and measures to improve the same.

Tables, figures, diagrams, exhibits, maps, and charts that accompany discussion text shall be inserted in the Main Body and Conclusion of the report where appropriate for immediate and convenient reference.

4. Appendices – All technical data sheets, worksheets, calculations, and other reference documents supporting the tables, diagrams, maps, and charts imbedded in the text shall be placed in the Appendix.
5. Attachments - Project site plans, conceptual operational enhancement plans and drawings that are larger than 11” by 17” may be included as attachments and referenced elsewhere in the report.