

**MEMORANDUM - CITY OF PASADENA
DEPARTMENT OF TRANSPORTATION**

DATE: January 23, 2020
TO: Transportation Advisory Commission
FROM: Mike Bagheri, Principal Engineer
RE: CEQA: TRANSPORTATION PERFORMANCE MEASURES

RECOMMENDATION:

The following report is for information only.

EXECUTIVE SUMMARY:

The City's General Plan lays out a blue print for the future growth and vision of the City, identifying what growth should look like in the City's various communities and neighborhoods, while taking into account that each neighborhood has unique characteristics and opportunities. As developers respond to the vision that has been laid out in the form of proposed projects, the Department of Transportation (DOT) is tasked with the responsibility of analyzing the proposed projects for any potential transportation related impacts.

What is analyzed, meaning, whether DOT is analyzing for potential impacts to vehicular traffic or accounting for other modes of transportation, has recently changed. This change in analysis has largely been informed by an acknowledgement at both the City and State level, that more sustainable and holistic approaches to understanding how development and the increased travel associated with those developments ought to be addressed. As the analysis is developed, DOT is not in a position to determine whether a project should move forward. It is, however, DOT's responsibility to identify any potential transportation related impacts and identify strategies that would either eliminate, minimize or mitigate the potential impact.

This report walks through the various evaluation steps, what determines what analysis will be carried out, what informs whether a proposed project is expected to have potential transportation impacts and how those potential impacts are addressed. A snapshot of this process is included in Attachment A: Transportation Analysis Process.

BACKGROUND:

The Mobility Element of the General Plan sets forth a Guiding Principle that envisions Pasadena as “a community where people can circulate without cars.” The vision relies upon an integrated and multimodal transportation system that provides choices and accessibility for everyone living, visiting and working in the City. The City strives to offer opportunities for healthier lifestyles, alternatives to automobiles, reduce greenhouse gas emissions, improve pedestrian and bicycle safety, and enhance quality of life. To that end, the City adopted Mobility Element identified three major objectives that serve as a framework:

- Enhance Livability
- Encourage walking, biking, transit, and other alternatives to motor vehicles
- Create a supportive climate for economic viability

The current transportation impact analysis guidelines were developed to ensure that transportation system improvements necessary to support new development meet the aforementioned objectives prior to project approval. The guidelines apply to all projects that require environmental review in accordance with CEQA. In addition to CEQA metrics, DOT included a separate set of metrics that exist outside of CEQA evaluation process. Projects that exceed targeted caps under the outside of CEQA analysis are subject to conditions of approval.

Level of Service: Mobility Metrics Based on Vehicular Volume and Delay

In assessing traffic impacts, agencies had traditionally relied on a metric known as Level of Service (LOS). LOS is intended to measure how well a road is performing by measuring the number of cars and the delay that vehicles experience. This metric, which only takes into consideration how vehicular traffic is impacted often meant that strategies to address that impact led to street design and community design decisions that further prioritized and made vehicular travel easier. Similar to other DOT's and planning organizations, the City's approach to evaluating a development's potential impact to the City's street network was vehicle based. A project's anticipated level of impact was measured in terms of net new trips versus existing conditions.

In addition, DOT used to conduct a street segment analyses that evaluated the relative change in daily traffic with the addition of the proposed project on a specific street segment over the existing daily traffic. This street segment analysis methodology allowed for a percentage of traffic growth before physical mitigation was required regardless of the street type classification and how much traffic exists on the street segment. Under this analysis, the resulting mitigations again often led to further prioritization of vehicular travel. This evaluation method did not fully consider how a project affects non-vehicular modes, multi-modal objectives or sustainability goals.

In brief, under previous evaluation metrics, the City made decisions primarily based on how vehicular traffic was impacted. This approach often led to unintended community

design decisions that prioritized vehicular travel, often at the expense of other travel modes. The new CEQA evaluation metric, Vehicle Miles Travelled (VMT) takes into consideration vehicular travel, in addition to other modes, including pedestrians, bicyclists and transit.

Vehicle Miles Travelled: Mobility Metrics to Reduce Greenhouse Gas Emissions

In response to the growing concern over the environment and a sense of urgency to reduce greenhouse gas (GHG) emissions, the state of California made a fundamental decision to move away from the traditional evaluation metric of LOS. During this time, the City was also in the process of updating its General Plan Mobility Element. Taking cues from the anticipated direction of the state legislature and after an extensive planning and community engagement process, City Council decided to embrace a more environmentally sound and holistic approach to evaluating project impacts.

Signed into law in September 2013, SB 743 (Steinberg) required the Governor's Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines to provide an alternative to LOS when evaluating a project's transportation impacts. The intent of the law was to identify and establish guidelines that would promote the reduction of GHG emissions, multi-modal transportation systems and diverse land uses. SB 32 (Pavley, 2016) further requires California to reduce gas emissions by 40% below 1990 levels by 2030. While there are many contributors to meeting this goal, reducing the number of vehicle miles travelled is considered to have the greatest impact. By July 1, 2020, all California lead agencies are required to shift the focus of transportation analyses under CEQA from driver delay to Vehicle Miles Traveled (VMT).

On November 3, 2014, the City Council adopted a new set of transportation performance measures and thresholds to align with the Guiding Principles as listed in the General Plan. These performance measures and thresholds are also in line with the guidelines provided by OPR and the direction the State set forth. In short, the adopted performance measures and thresholds reflect a holistic approach to addressing the City's transportation needs and the City's commitment to prioritize the movement of people, encourage sustainable transportation solutions and support a mix of land uses, particularly near transit. The five transportation performance measures with CEQA thresholds are:

- Vehicle Miles Traveled per Capita
- Vehicle Trips per Capita
- Proximity and Quality of the Bicycle Network
- Proximity and Quality of the Transit Network
- Pedestrian Accessibility

Moving away from evaluating project impact based on vehicular delay, these performance measures comply with SB 743 by providing alternative metrics to LOS

analyses to assess the project’s impact on the quality of, and impact on, both motorized and non-motorized modes of travel, including transit.

CEQA Transportation Performance Measures

The General Plan identifies a mix of land uses where particularly in the central business district and near transit walking, bicycling and the use of transit are encouraged. At General Plan build out, a balanced mix of land uses are expected to reduce the trip length associated with adjacent land uses by encouraging walking and other non-motorized modes of travel, thereby reducing dependency on the automobile. Similarly, the greater the number of jobs adjacent to a transit network, the greater the likelihood of travel by transit. The City’s adopted VMT metric is reflective of the City’s comprehensive approach of planned land uses and supportive transportation options that when combined are intended to produce a more sustainable urban environment. It is through this lens that DOT analyzes development projects.

The City identified three distinct thresholds used for determining transportation review of projects reflect the land use designations outlined in the General Plan Land Use Element. Under these thresholds, all new development applications (including infill developments and accessory dwelling units) are evaluated. Depending on the size and scale of the proposed development, each project is considered and evaluated per the established thresholds. As shown in the following table, the three categories are projects that are Exempt, projects that are considered to be Below Communitywide Significance (Category 1-Outside CEQA) and projects that are considered to be of Communitywide Significance (Category 2-CEQA).

Thresholds for Determining Transportation Review of Projects			
(Approved by City Council on November 3, 2014)			
TYPE OF PROJECT	EXEMPTION	Category 1: (Outside CEQA) BELOW COMMUNITYWIDE SIGNIFICANCE	Category 2: (CEQA) COMMUNITYWIDE SIGNIFICANCE
Residential (Net # of units)	10 units or less	11 – 49 units	50+ units
Non-Residential Use (Net)	10,000 Sq Ft or less than 300 daily trips	10,001 to 49,999 Sq Ft	50,000+ Sq Ft

Category 2 CEQA Analysis

Proposed projects requiring a Category 2 CEQA analysis are analyzed using the City's calibrated travel demand model, which is based on Southern California Association of Government's (SCAG) regional model. The model includes information provided by cities that summarize land uses, street networks, travel characteristics, and other key factors. Travel demand models are generally updated every 5 years to account for land use and street network changes. City Council adopted a 2013 baseline year in November 2014.

The following table summarizes the City's CEQA thresholds of significance approved by City Council in 2014. The results are based on the project's vehicular and non-vehicular trip making characteristics, trip length, and its interaction with other surrounding/citywide land uses, and the City's transportation network. Any project that falls within the established threshold, is deemed to not have a significant impact. Any project that exceeds an established threshold is deemed to have a significant impact and is thereby subject to mitigation(s) aimed at either eliminating or minimizing the identified impact.

METRIC	DESCRIPTION	IMPACT THRESHOLD
VMT Per Capita	Vehicle Miles Traveled (VMT) in the City of Pasadena per service population (population + jobs).	CEQA Threshold: An <u>increase</u> over existing Citywide VMT per Capita of 22.6 .
VT Per Capita	Vehicle Trips (VT) in the City of Pasadena per service population (population + jobs).	CEQA Threshold: An <u>increase</u> over existing Citywide VT per Capita of 2.8 .
Proximity and Quality of Bicycle Network	Percent of service population (population + jobs) within a quarter mile of bicycle facility types	CEQA Threshold: Any <u>decrease</u> in existing citywide 31.7% of service population (population + jobs) within a quarter mile of Level 1 & 2 bike facilities.
Proximity and Quality of Transit Network	Percent of service population (population + jobs) located within a quarter mile of transit facility types.	CEQA Threshold: Any <u>decrease</u> in existing citywide 66.6% of service population (population + jobs) within a quarter mile of Level 1 & 2 transit facilities.
Pedestrian Accessibility	The Pedestrian Accessibility Score uses the mix of destinations, and a network-based walk shed to evaluate walkability	CEQA Threshold: Any <u>decrease</u> in the Citywide Pedestrian Accessibility Score

VMT Methodology

VMT as a metric, is ultimately about addressing GHG emissions. However, effectively applying VMT as a metric, requires a shift in how we approach mobility. The City's adopted transportation performance measures embrace a management concept that focuses on improving operation strategies, expand transit, bicycle and pedestrian infrastructure, and incorporate transportation demand management measures to help achieve the reduction of GHG emissions associated with transportation.

The following table provides a brief comparison between VMT and LOS:

TRANSPORTATION ANALYSIS COMPARISON	
Vehicle Miles Traveled (VMT) per Capita	Level of Service (LOS)
Measures travel distance times the number of vehicles over an efficiency metric	Evaluates intersection performance based on vehicle delay
Considers and analyzes for vehicle miles traveled into, out of, and within the City	Considers and analyzes vehicular travel at intersections only
Emphasis is on network management and travel efficiency	Silent on evaluating system performance on non-vehicular travel modes
Mitigation measures are related to the reduction of GHG, multimodal transportation networks, and a diversity of land uses	Mitigation measures place value on efficient movement of vehicles only
Mitigation measures decrease the emphasis on increasing roadway capacity and reducing intersection delay	Mitigation measures encourage street widening, which may compromise pedestrian and bicycle infrastructure
Mitigation measures are centered around reducing vehicular travel	Street widening may increase automobile use, reduce sidewalk widths, and other secondary impacts

There are three methods by which to calculate VMT: manual methods, using a regional travel demand model, or a locally calibrated and validated model. Of the three, the City of Pasadena uses a locally calibrated and validated model to analyze projects subject to CEQA. In simplistic form, the inputs required to calculate VMT per an efficiency metric are:

1. Land use data subdivided and split into traffic analysis zones
2. Number of trip destinations within the zone
3. Street network to be used in the analysis
4. Trip generation rates consistent with the model area
5. Estimated population, vehicle ownership, and commute trips
6. Transit facilities
7. Evaluate VMT per capita against a baseline
 - a. The City of Pasadena evaluates VMT per capita. Capita is defined as service population (residential population plus employment).

A regional travel model reflects information gathered from various sources to develop commuting patterns for the region (US Census, California Household Travel Survey, National Cooperative Highway Research Program, SCAG Planning Model, National Household Travel Survey, etc.). Regional model data would include a high proportion of pass-through traffic from multi-jurisdiction study areas and use modeling software (TransCAD) to calculate VMT. The level of detail for applying the model, however, may not be adequate to evaluate results at a local scale. Accordingly, the City developed a locally calibrated model.

The City's model is in line with the discretion granted by OPR to develop localized thresholds specific to the jurisdiction. The City developed locally calibrated and validated travel demand model more accurately captures and reflects local conditions, including accounting for local level using GPS data, traffic counts, parcel level land use, vehicular availability, and street network and travel time information. The model development process produced a calibrated and validated model that matched travel data specific to the City to be ultimately be used in evaluating potential project transportation impacts. By using this model, transportation analyses more accurately reflect and capture potential impacts at the local level.

Cumulative Impacts

The General Plan Environmental Impact Report (EIR) assumed a full build out as allowed per the General Plan. As part of the analysis, the EIR considered the cumulative impact of having a fully built out city, and the potential impact it would have on the City's transportation network. The analysis considered the cumulative VMT, VT, proximity transit and bicycle metrics, and pedestrian accessibility impacts at full build-out within the City boundary, which assumed:

- Future assumptions to the transportation network and service changes
- Changes in land uses per the General Plan
- 151,700 jobs (6% more than the 2004 General Plan)
- 163,400 population (2% more than the 2004 General Plan)
- 315,100 service population (4% more than the 2004 General Plan)

The CEQA cumulative impact findings were that at City build-out, established thresholds are not exceeded. The table below reflects the adopted thresholds and the General

Plan cumulative transportation analysis findings. Reflected within the results is the understanding that as the City develops in a manner where land use and transportation decisions are promoting the reduction of greenhouse gas emissions, developing multimodal transportation networks, and a diversity of land uses, then by adhering to the City's 2035 General Plan, the 2014 CEQA thresholds will not be exceeded at General Plan build-out in 2035.

CEQA METRICS	Model Significant Impact Threshold	2035 Model Baseline	Within Adopted Threshold?
VMT per Capita	> 22.6	22.1	Yes
VT per Capita	> 2.8	2.4	Yes
Proximity and Quality of Bicycle Network	< 31.7%	70.0%	Yes
Proximity and Quality of Transit Network	< 66.6%	72.4%	Yes
Pedestrian Accessibility	< 3.88	5.1	Yes

Outside CEQA Transportation Performance Measures

Category 1 (Outside CEQA) Analysis

Addressing the City's mobility needs requires a balanced approach. Whereas VMT addresses GHG emissions and multi-modal transportation solutions, the City has been a pioneer in also developing a separate analysis, outside of the CEQA process that considers the potential impact of new developments on vehicular traffic. The Outside CEQA analysis is applied to Category 1 projects (Below Communitywide Significance) with the intent of identifying potential traffic issues and protecting neighborhoods from the potential increase in traffic as a result of new development(s).

Caps for Determining Project Street Segment Changes

Caps for evaluating changes in vehicular volumes on street segments were developed to measure the potential changes of net new trips from projects that intensify an existing land use, change site access, or alter existing traffic patterns. The caps are designed to capture a project's anticipated level of changes measured in terms of net new trips over existing conditions.

The following table summarizes the Category 1 (outside CEQA) caps. Projects exceeding established caps are subject to recommended conditions of approval that will address potential traffic generated by the new development and protect neighborhoods from related traffic intrusion. Recommended conditions of approval also help bring the

project in line with the City’s Guiding Principles to encourage walking, biking, and transit to-and-from the project site to reduce project-related vehicular trips and protect neighborhoods. Category 1 analysis is also applied to projects that are evaluated under Category 2 (CEQA). Proposed projects requiring a Category 1 (outside CEQA) analysis are evaluated against four metrics explained below:

METRIC	DESCRIPTION	CAP
Street Segment Analysis	The street segment analysis assesses traffic intrusion on local streets in residential neighborhoods	Increases of 10-15% above existing on streets with more than 1,500 Average Daily Traffic (ADT)
Auto Level of Service	Level of Service (LOS) as defined by the TRB’s Highway Capacity Manual (HCM) 2010.	A decrease beyond LOS D Citywide or LOS E within Transit Oriented Development (TOD)
PEQI	Pedestrian Environmental Quality Index	Below average conditions
BEQI	Bicycle Environmental Quality Index	Below average conditions

Street Segment Analysis

Specific caps have been established to determine whether there would be any potential project changes along neighborhood street segments by project traffic. A conservative approach is taken when calculating the traffic growth by basing the calculation on the increase relative to existing traffic volumes as follows:

$$\text{Percentage of Increase} = \frac{\text{net new project trips}}{\text{existing daily traffic}}$$

The percentage increase in segment ADT resulting from the addition of project daily traffic is determined by dividing the net new daily project trips over the existing daily traffic of the street segment to be evaluated.

EXISTING ADT	PROJECT RELATED VEHICULAR INCREASE IN ADT
0 to 1500	150 or more
1,501 to 3,499	10 percent or more of final ADT
3,500 or more	8 percent or more of final ADT

The relative change to the Average Daily Traffic (ADT) on those streets determine whether the project trips exceed the street segment caps. If project-related net trips exceed the caps in the table above, conditions of approval would require the project applicant to implement measures to discourage neighborhood intrusion by project related traffic. If the project traffic increases fall below the street segment caps, additional analyses are not required.

Auto Level of Service

Proposed development projects will be evaluated using the Highway Capacity Manual (HCM) Level of Service (LOS) analysis criteria at study intersections. This methodology determines an intersection’s level of service by calculating delay. Intersection Level of Service (LOS) analyses measure compliance with the intersection LOS caps below.

STUDY INTERSECTIONS	EXISTING PLUS PROJECT LEVEL OF SERVICE CAP
Citywide	D
Transit Oriented District (TOD)	E

LOS D is where the influence of congestion becomes noticeable. Longer delays may result from some combination of unfavorable progression or long cycle lengths. Many vehicles stop. LOS E is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor (vehicle) progression and long cycle lengths. This metric aligns with the historically applied evaluation metric focused on vehicular travel efficiencies.

Under this metric, a new development whose associated traffic exceeds the identified LOS caps of E within a Transit Oriented District (TOD), or D anywhere within the City, would be subject to conditions of approval.

PEQI/BEQI Metric

The Pedestrian Environmental Quality Index (PEQI) and Bicycle Environmental Quality Index (BEQI) are instruments used to describe and summarize the street and intersection environmental factors known to affect people’s travel behaviors. The PEQI and BEQI consists of factors associated with pedestrian and bicycle environmental quality and safety, classified into five categories; Intersection Safety, Traffic, Street Design, Land Use and Perceived Safety.

Data is primarily collected through an observational survey. Indicator scores for each indicator category are based on a survey of national experts, including City, transportation planners and consultants regarding the importance of each indicator to pedestrian and bicycle environmental quality. The scores reflect the degree to which environmental factors supportive of walking, biking, and safety have been incorporated into street

segment and intersection design. The PEQI and BEQI analysis result in a score for street segments and intersections on a scale ranging between 0-100 as outlined below.

Score	Description
81-100	Highest quality, many important pedestrian/bicycle conditions present
61-80	High quality, some important pedestrian/bicycle conditions present
41-60	Average quality, pedestrian/bicycle conditions present but room for improvement
21-40	Low quality, minimal pedestrian/bicycle conditions
20 and below	Poor quality, pedestrian/bicycle conditions absent

The proposed development impacts to pedestrians and bicyclists are evaluated based on the existing quality of pedestrian and bicycle amenities on street segments within the primary influence area of the development. Measures to improve the quality will be required when the findings reveal less than average conditions.

As conditions placed upon a proposed project are intended to address project related traffic impacts, recommended conditions must be met or reflected in design plans prior to issuance of a building permit.

Pasadena Municipal Code Requirements

In addition to mitigations and conditions that may be placed upon a proposed development as a result of Category 2 (CEQA) and Category 1 (outside CEQA) analysis, respectively, the City has other tools at its disposal to ensure new projects contribute their fair share to addressing the City’s transportation needs. Per the City’s Municipal Code, based on number of units and/or square footage, new developments are required to help address the City’s transportation needs as described below.

Traffic Reduction and Transportation Improvement Fee (TR/TIF)

With the adoption of the 2015 General Plan Land Use and Mobility Element, a number of new transportation facilities, including transit, pedestrian and bicycle infrastructure were deemed necessary in order to address the potential impact of future new development on the City’s transportation system. In July 2017, City Council amended The Traffic Reduction and Transportation Improvement Fee (Municipal Code Section 4.19) in order to ensure equitable sharing of costs associated with necessary transportation system. This ensures that future developments pay their “fair share” of the cost of future facilities. The TR/TIF applies to net new residential, retail, industrial, and office developments and is applied in addition to any identified mitigation and recommended conditions.

As required by state law, a list of identified projects that would be eligible for TR/TIF funds was developed. The Needs List was informed by a number of other City studies whereby transportation facilities were identified. Caltrans reviewed and provided feedback as the Needs List was developed.

The Needs List facilities are diverse and reflect a multi-modal City-wide approach to addressing the impact of new developments on the City's transportation system. The Needs List includes improvements to the roadway and signal systems as well as public transit, bikeways, and pedestrian walkways. The Needs List is included in Attachment B: List of Transportation Improvements Funded Through the Fee.

Trip Reduction Ordinance

The City's Trip Reduction Ordinance established the Transportation Demand Management (TDM) program with the goal of advancing the City's commitment to being an environmental steward. The TDM program requires projects to implement measures that promote alternative modes of transportation in an effort to reduce the demand for vehicle commute trips. Developments subject to the TDM program requirement include sites that exceed 25,000sf or more of gross floor area, multi-family residential developments that are 100 or more units, and mixed-use developments with 50 or more residential units or with 50,000 sf or more of non-residential development. Projects subject to the ordinance are required to submit annual TDM plans.

NEXT STEPS:

Staff will return to TAC for consideration of an updated baseline year and associated CEQA thresholds to reflect new baseline conditions. The CEQA performance measures and thresholds City Council adopted in 2014 assumed a 2013 baseline. In order to ensure analyses remain relevant, the baseline must be updated on a regular basis.

A more detailed report back on the funding received from the TR/TIF and Needs List implementation will also be addressed.

Attachments:

Attachment A: Transportation Analysis Process

Attachment B: List of Transportation Improvements Funded Through the Fee

Attachment A: Transportation Analysis Process

Attachment B: List of Transportation Improvements Funded Through the Fee