Introduction

This document describes the development of criteria that can be used to assess travel forecasting model suitability to perform CEQA transportation impact analysis and the general outcomes of applying that criteria to models for CEQA applications. The intent of developing these criteria and performing an assessment is to start a dialogue with lead agencies about the potential 'benchmarks' that could be used to assess model suitability for CEQA compliance.

CEQA compliance has two basic elements. One, is the legal risk of challenge associated with inadequately analyzing impacts due to use of models that do not meet benchmark expectations. Two, is the mitigation risk of mis-identifying the impact and the mitigation strategies to reduce the impact. Agencies with a high risk of legal challenges will likely be concerned about both elements while agencies with less legal risk should still be concerned about the second element since it is also relevant for all other transportation analysis based on model forecasts.

CEQA Expectations

The CEQA Guidelines contain clear expectations for environmental analysis as noted below; however, the Guidelines are silent about what data, analysis methods, models, and mitigation approaches are adequate for transportation impacts.

> **CEQA Guidelines – Expectations for Environmental Impact Analysis**
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> § 15003 (F) = fullest possible protection of the environment…
>
> § 15003 (I) = adequacy, completeness, and good-faith effort at full disclosure…
>
> § 15125 (C) = EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated…
>
> § 15144 = an agency must use its best efforts to find out and disclose…
>
> § 15151 = sufficient analysis to allow a decision which intelligently takes account of environmental consequences…

All of these suggest accuracy is important and have largely been recognized by the courts as the context for judging an adequate analysis. So, then what is the basis for determining adequacy, completeness, and a good faith effort when it comes to forecasting and transportation impact analysis? A review of relevant court cases suggests the following conclusions.

- CEQA does not require the use of any specific methodology. Agencies must have substantial evidence to support their significance conclusions. (Association of Irritated Residents v. County of Madera (2003) 107 Cal.App.4th 1383.)

- CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. (CEQA Guidelines, § 15204, subd. (a))

- CEQA does not require perfection in an EIR but rather adequacy, completeness and a good faith effort at full disclosure while including sufficient detail to enable those who did not participate in the EIR preparation to understand and consider meaningfully the issues raised by the project. (Kings County Farm Bureau v. City of Hanford (1990) 221 Cal.App.3d 692)

- Lead agencies should not use scientifically outdated information in assessing the significance of impacts. (Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm. (2001) 91 Cal.App.4th 1344.)

- Impact analysis should improve as more and better data becomes available and as scientific knowledge evolves. (Cleveland National Forest Foundation v. San Diego Association of Governments, Cal. Supreme Ct. S223603, 2017).

These conclusions tend to reinforce the basic tenet of CEQA that requires having substantial evidence to support all aspects of the impact analysis and related decisions. Further, analysis should produce reasonable, reliable, and meaningful results. This expectation is grounded in the basic purpose behind environmental regulations like CEQA that attempt to accurately identify and disclose potential impacts and to develop effective mitigation. Having reasonable and reliable travel forecasts is essential for meeting these expectations.

In setting specific CEQA expectations for travel forecasting models, an important consideration is that expectations may vary based on the variety of factors listed below.

- Complexity of the transportation network and number of operating modes.

- Available data (e.g. traffic counts, transit passenger boarding counts, land use types and densities, demographic data, etc.).

- Land use context (e.g. urban, suburban, rural setting, level of mix of use, balance and match of jobs versus workers, etc.).

- Planned changes in the transportation network (particularly to major roads or transit systems).

- Availability of resources to develop and apply travel demand models.

- Population and employment levels.

- Congestion levels.

- Regulatory requirements.
- Types of technical and policy questions posed by decision makers.
- Desired level of confidence in the analysis findings.
- Anticipated level of legal scrutiny.

In California, travel forecasts are generated using various forms of models that range from simple spreadsheets based on historic traffic growth trends to complex computer models that account for numerous factors that influence travel demand. According to *Transportation and Land Development*, 2nd Edition, ITE, 2002, the appropriate model depends on the size of the development project and its ability to affect the surrounding area. As projects increase in size, the likelihood of needing a complex model (such as a four-step model) increases because of the number of variables that influence travel demand and transportation network operations. The study area can also influence the type of model needed especially if congestion occurs or if multiple transportation modes operate in the study area. Either of these conditions requires robust models that can account for the myriad of travel demand responses that can occur from land use or transportation network changes.

The other relevant national guidance on model applications and forecasting is the *NCHRP Report 765, Analytical Travel Forecasting Approaches for Project-Level Planning and Design*, Transportation Research Board, 2014. This is a detailed resource with many applicable sections. A few direct excerpts worth noting about forecasting expectations for models are listed below.

- *A travel forecasting model should be sensitive to those policies and project alternatives that the model is expected to help evaluate.*
- *A travel forecasting model should be capable of satisfying validation standards that are appropriate to the application.*
- *Project-level travel forecasts, to the extent that they follow a conventional travel model, should be validated following the guidelines of the Travel Model Validation and Reasonableness Checking Manual, Second Edition from FHWA. Similar guidelines are provided in NCHRP Report 716. This level of validation is necessary, but not sufficient, for project-level forecasts. Project-level forecasts often require better accuracy than can be obtained from a travel model alone.*
- *The model should be subject to frequent recalibrations to ensure that validation standards are continuously met.*

Model Assessment

The information above can be used as the basis for developing specific questions that could be used to assess existing travel forecasting models. These questions are organized into two components. The first component considers model ownership and maintenance and the second component assesses model conditions and performance against select criteria from the guidance material above. Public agencies that develop travel forecasting models for planning and impact analysis must maintain those models and frequently update and recalibrate them as explained above to ensure they remain accurate and dependable for generating travel demand forecasts.

Ownership

To assess the status of model ownership and maintenance, agencies can be asked about their control of the following model components.

- Model documentation – Does the agency have the model development documentation and any related user guidance?
- Model files – Does the agency maintain the model input and output files?
- Model distribution – Does the agency control the distribution of the model files to users?

Assessment

The following section details the criteria for model assessment and highlights criteria in **bold text** that are unique to SB 743 compliance.

- Model documentation – this criterion relies on the availability of documentation about the model's development including its estimation, calibration, and validation as well as a user's guide.
- Completed calibration and validation within the past 5 years – recent calibration and validation is essential for ensuring the model accurately captures evolving changes in travel behavior. Per NCHRP Report 765, "The model should be subject to frequent recalibrations to ensure that validation standards are continuously met."
- Demonstrated sensitivity to VMT effects across demographic, land use, and multimodal network changes - validation reporting will be checked for static and dynamic tests per the *2017 Regional Transportation Plan Guidelines for Metropolitan Transportation Planning Organizations*, CTC, 2017 and *Travel Model Validation and Reasonableness Checking Manual, Second Edition*, TMIP, FHWA, 2010.

- Capable of producing both "project-generated VMT" and "project effect on VMT" estimates for households, home-based trips, and total trips – both metrics are essential for complete VMT analysis. Project-generated VMT is useful for understanding the VMT associated with the trips traveling to/from a project site. The 'project's effect on VMT' is more essential for understanding the full influence of the project since it can alter the VMT generation of neighboring land uses.

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- **Capable of producing regional, jurisdictional, and project-scale VMT estimates – VMT analysis for air quality, greenhouse gases, energy, and transportation impacts requires comparisons to thresholds at varying scales. For SB 743, the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018, California Governor's Office of Planning and Research (OPR) recommends thresholds based on comparisons to regional or city-wide averages.**

- **Level of VMT estimates that truncate trip lengths at model or political boundaries – The OPR *Technical Advisory* states that lead agencies should not truncate any VMT analysis because of jurisdictional or model boundaries. The intent of this recommendation is to ensure that VMT forecasts provide a full accounting of project effects.**