TRANSPORTATION IMPACT ANALYSIS GUIDELINES

APPENDIX M
DRIVING HAZARDS

San Francisco Planning

SAN FRANCISCO
PLANNING DEPARTMENT

MEMO

Appendix M
Driving Hazards Memorandum

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RE:	**Transportation Impact Analysis Guidelines Update, Driving Hazards**

INTRODUCTION

This memorandum updates the prior guidance provided in the Transportation Impact Analysis Guidelines for the topic of hazards to people driving. The prior guidelines did not identify vehicle-to-vehicle hazards as a separate topic; instead, the prior guidelines included vehicular driveway access impacts as part of the parking topic. The department prepared this memorandum in consultation with stakeholders (e.g., city and county agencies, consultants). The department will issue memoranda that provide updates to other topics (e.g., transit, loading) within the guidelines. When the department issues a memorandum about a topic, it will supersede existing guidance regarding that topic.

This memorandum provides specific guidance on the methodology and impact analysis required for the driving hazards transportation topic. Overall guidance on conducting transportation analysis for environmental review, including developing the project description, how to address the significance criteria, methodology, and impact analysis, is in the Transportation Impact Analysis Guidelines.

The guidance provided herein assumes a land use development project located outside of an area plan that requires a transportation impact study. Guidance on other types of projects, such as projects located in an area plan or infrastructure projects, is included below under the "Other" subsection. The department may use this guidance for multiple projects, but the department has discretion on how to apply the guidance on a project-by-project basis.

The organization of the memorandum is as follows:

1) Project Description
2) Significance Criteria
3) Existing and Existing plus Project
   a) Methodology
   b) Existing Baseline
   c) Impact Analysis
4) Cumulative
   a) Methodology
   b) Impact Analysis
5) Other (covers different types of projects)

Attachments to this memorandum are under separate cover and are attached to the end of this memorandum. The department may update the attachments to the memoranda more frequently than the body of the memoranda.

PROJECT DESCRIPTION

Refer to the Transportation Impact Analysis Guidelines Appendix A, Tables 1-3, for a list of the typical physical, additional physical, and programmatic features for existing and existing plus project conditions, as applicable. The geographic extent of these features must, at a minimum, include the project's frontage and may include the entirety of the project's block. Appendix A, Table 4 of the guidelines provides a non-exhaustive list of approvals from agencies other than the planning department that a project sponsor may need to obtain for the project description features described in the guidelines.

SIGNIFICANCE CRITERION

San Francisco Administrative Code Chapter 31 directs the department to identify environmental effects of a project using as its base the environmental checklist form set forth in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. As it relates to hazards, Appendix G states: "would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?" The department uses the following significance criterion to evaluate that question: A project would have a significant impact if it would create potentially hazardous conditions[1] for people driving.

EXISTING AND EXISTING PLUS PROJECT

Methodology

This section describes the typical methodology required to address the significance criteria. The methodology section identifies the collection, generation, and approach to analyze data. The department will determine whether to adjust the methodology as necessary to inform the analysis.

The guidelines provide direction on the geographical area and period required for analysis. Further guidance on the typical methodology for evaluating existing and existing plus project conditions for this topic, including data collection, is provided below. This section also indicates in bracketed text [ ] whether the presentation of typical methodological elements in other sections of a transportation study (e.g., baseline, impact analysis) could occur in text, a figure, and/or a table (see Appendix A of the guidelines for examples of typical tables).

Existing Conditions

The following identifies the methodology for assessing existing conditions.

Counts

[1]For the purposes of this memorandum, "hazard" refers to a project-generated vehicle potentially colliding with a person driving that could cause serious or fatal physical injury to the person driving, accounting for the aspects described below. Human error or non-compliance with laws, weather conditions, time-of-day, and other factors can affect whether a collision could occur. However, for purposes of CEQA, hazards refer to engineering aspects of a project (e.g., speed, turning movements, complex designs, substantial distance between street crossings, sightlines) that may cause a greater risk of collisions that result in serious or fatal physical injury than a typical project. This significance criterion focuses on hazards that could reasonably stem from the project itself, beyond collisions that may result from aforementioned non-engineering aspects or the transportation system as a whole.

The methodology may include prior counts collected from other studies or sources combined with (e.g., an average of three different dates with counts at the same intersection, global positioning system user data) or in isolation from the counts collected for the project. The use of prior counts must be justified, in consultation with the department. Typically, the use of prior counts may occur if these counts have not changed substantially under existing conditions (e.g., due to lack of new development, circulation changes, or travel patterns). [text, table]

Visual Analysis with Recorded Observations

Data collection for the project should include a site visit for a visual analysis, with recorded observations of slope, topography, physical structures, and other conditions that may affect sightlines for people driving or speeds or turning. In addition, the site visit must record any existing potential or observed hazards at locations in the study area for people driving (e.g., conditions that lead to potentially hazardous speeds or turning movements). [text, figure]

Street Design Characteristics

Obtain the following general characteristics of streets within the study area:

- Location and type of traffic control devices (e.g., stop signs, signals, crosswalks, countdown signals, audible warning devices) and intersections [text, figure]
- Number of travel lanes by type (e.g., mixed flow, parking, bicycle, transit-only, etc.) [text, figure]
- Posted speed limit and recorded speed observations or inferences about observed speeds [text]
- Presence of High-Injury Network [text, figure]
- Locations of nearest driveways (driveways that are the closest to the project driveway on both the same and the opposite side of the street) [text, figure]

Obtain the following additional characteristics of streets within the study area to the extent applicable:

- Signal timing and phasing of traffic control devices [text]
- Width of travel lanes [text, figure]
- Number of travel lanes by type at intersections (if different from midblock) [text, figure]
- Data regarding the location and causes of collisions (e.g., particular turning movements) [text, figure]
- Nearby transit stations/stops amenities (e.g., shelters) and service information (e.g., frequency) [text, figure, table]

Existing plus Project Conditions

The following identifies the typical methodology for assessing existing plus project conditions.

Travel Demand

Estimate the number of people driving to and from the project site. [text, table] In addition, the methodology will distribute and assign the project's vehicle to roadways, intersections, loading zones, and driveways to the extent applicable. [text, figure]

Potentially Hazardous Conditions

Use the travel demand analysis and project elements to determine if the project would cause potentially hazardous conditions. The methodology should assess to the extent applicable:

- The number, movement type, sightlines, and speed of project vehicle trips in and out of project facilities based upon the design of such facilities (e.g., curb cut dimensions, roadway speeds) in relation to the number of people driving at those locations [text, figure]

- The number, type (e.g., left turn, right turn), sightlines, and speed of project vehicle turning movements at intersections, including any changes to the public right-of-way that facilitate vehicular movement (e.g., channelized turns) in relation to the number of people driving at those movement locations [text, figure]

Existing Baseline

Refer to the guidelines for direction on including existing baseline in transportation studies.

Impact Analysis

This section ties the project description, methodology, and existing baseline together to address the significance criteria for existing plus project conditions. This section addresses the typical approach for the impact analysis and provides more details related to hazards for people driving. The impact analysis section should present a format (text, figure, or table) consistent with earlier sections of this memorandum for easy comparison.

The impact analysis must address whether the project would create potentially hazardous conditions for people driving. Too many factors mentioned in the methodology affect the potential for hazardous conditions. Instead, the department will determine significance on a project-by-project basis.

Refer to the guidelines for direction on what to consider when conducting the existing plus project impact analysis and how to present the findings. The subsections below provide specific examples of the types of circumstances that could result in a potentially hazardous condition impact under existing plus project conditions.

Potentially Hazardous Conditions

The following examples are some of the circumstances, which may result in potentially hazardous conditions to people driving. This is not an exhaustive list of circumstances, under which, potentially hazardous impacts would occur:

- A project would construct or be located on a lot with physical obstructions (e.g., trees, utilities, an adjacent curb cut used by a substantial number of people driving, or on-street parking directly adjacent to the curb cut or transit stop) or slopes that would obstruct sightlines between a substantial number of people driving, exiting, or reversing into an off-street facility and a substantial number of people driving at high speeds in travel lane(s) next to the off-street facility
- A project would add a substantial number of vehicle trips to an uncontrolled or stop-sign controlled turning movement (e.g., left-turn) across multiple lanes used by a substantial number of people driving at high speeds
- A project would add a substantial number of trucks (e.g., based on counts or projections) to a turning movement such that those trucks would encroach into oncoming travel lane(s) used by a substantial number of people driving (e.g., based on counts or projections)
- A project would be unable to accommodate[2] vehicle trips, including freight and delivery service vehicle trips into its off-street facilities, thereby blocking a travel lane at a location with inadequate sightlines for a substantial number of people driving (e.g., based on counts or projections) in that blocked travel lane

[2] "Accommodate" refers to design of the facility (e.g., can vehicles be accommodated without queuing based upon throat length, gate location, etc.) and not the capacity (e.g., does the number of spaces accommodate the demand) of the facility as many variables affect the demand to and from a facility.

- A project would include an off-street loading dock adjacent to a garage driveway entrance/exit that would result in blocking the driveway for ingress vehicles (entering), resulting in queuing within the public right-of-way

CUMULATIVE

Methodology

The guidelines detail the typical methodology for cumulative analysis, including the geographical area, period, cumulative projects, and adjustments (refer to Appendix B) under cumulative conditions. The cumulative section in transportation studies must present (text, figure, or table) the applicable elements included in the methodology. Basics

Impact Analysis

This section ties the methodology and description of cumulative conditions together to address the significance criteria for cumulative conditions. Refer to the guidelines for direction on what to consider when conducting the cumulative impact analysis and how to present the findings. The same examples of the types of circumstances that could result in a potential hazardous condition impact that were provided for existing plus project conditions apply here, except for cumulative conditions.

OTHER

The guidance provided in this memorandum assumes a land use development project located outside of an area plan that requires a transportation impact study. This section describes the type of additional or different information that may be necessary to address driving impacts for the following circumstances: land use development project located within an area plan, an area plan, or infrastructure project (which may be located in a different county than San Francisco).

Land Use Development Project Located within an Area Plan

For projects that are consistent with an area plan for which an environmental impact report (EIR) was certified, pursuant to CEQA guidelines section 15183, the assessment must limit its analysis to such conditions specified in that section. The guidelines provide direction on how to analyze a land use development project in an area plan and a list of area plan EIRs that have been certified as of February 2019.

Attachment A of this memorandum identifies mitigation and improvement measures from area plan EIRs related to people bicycling. The department will list bicycling-related mitigation and improvement measures from future area plan EIRs in Attachment A after the Planning Commission or Board of Supervisors certifies those EIRs.

Area Plans

For area plans, the assessment will typically use the significance criteria identified herein. The following sub-sections describe the type of additional or different information that may be necessary to address driving impacts for project description, methodology, and impact analysis. For area plans that also include infrastructure changes (e.g., street redesigns), please see the Infrastructure Project sub-section for additional or different information that may be necessary.

Project Description

Typically, the department conducts an analysis to estimate the amount of future development that could occur in the plan area as a result of its implementation. The department typically does not have all the project description details described herein. However, the project description may include policies that may relate to the methodology and impact analysis (e.g., curb cut restrictions).

Methodology

The assessment will typically use the same methodology identified herein, except the methodology will use a larger geographical study area and require less site-specific information (e.g., driveway locations at each site) except to document circumstances where vehicles may not be allowed (e.g., curb cut restrictions). While an individual project may not require some elements listed in the Existing and Existing plus Project Methodology subsection, area plans typically will include all of these elements. The department should select sidewalks, streets, and intersections most impacted by the area plan to represent the impacts that may occur at other locations.

Impact Analysis

For analysis of area plans, assess the projected amount of growth and infrastructure changes associated with the rezoning within the area plan boundaries. The analysis of potentially hazardous conditions should be similar to that described under the Existing plus Project and Cumulative Impact Analysis subsections. If the area plan includes infrastructure changes (e.g., street redesigns), given the potential time gap between land use development and completion of infrastructure changes, the analysis should discuss the potential short-term effects of that potential time gap in a lesser level of detail than that provided for overall effects. However, the analysis should assume individual land use development projects within the area plan would be subject to requirements related to property specific infrastructure changes (e.g., Better Streets Plan).

Examples of circumstances that would result in significant impacts are described under Existing plus Project Impact Analysis subsection.

Infrastructure Project

For infrastructure projects (e.g., new roads, bridge repair, sewer line, rail service, roadway modifications, etc.), the assessment of the project description, significance criteria, and impact analysis should be similar to private development projects. The analysis typically does not require trip generation analysis as infrastructure projects usually do not generate trips.[3] However, some infrastructure project may induce trips, such as the addition of through lanes on existing or new highways or streets.[4] In addition, infrastructure projects may generate short-term trips due to construction workers and vehicles accessing the project site.

Project Description

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[3] Governor's Office of Planning and Research, *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA,* January 20, 2016.

[4] Generally, minor transportation projects would not result in additional trips. Examples include, but are not limited to, rehabilitation, maintenance, and repair of transportation infrastructure; installation, removal or reconfiguration of non-through traffic lanes and traffic control devices; removal of through lanes; installation of traffic calming measures and wayfinding; removal of on- or off-street parking. Governor's Office of Planning and Research, *Technical Advisory on Evaluating Transportation Impacts in CEQA,* November 2017.

The project description must describe the typical physical, additional physical, and programmatic features for existing and project conditions, as applicable. The project description must provide the geographic boundaries of the project and street cross sections.

Methodology

The assessment will typically use the same methodology identified herein.

Impact Analysis

The analysis of potentially hazardous conditions should be similar to that described under the Existing plus Project Cumulative Impact Analysis subsections. Examples of circumstances that would result in significant impacts are described under the Existing plus Project Impact Analysis subsection.

ATTACHMENT A

Mitigation and Improvement Measure Examples

The following lists the typical types of measures that can mitigate or lessen impacts to people driving, for the significance criterion:

Potentially Hazardous Conditions

- Remove or relocate driveway or physical obstructions (e.g., trees, utilities, bus zone, bus stop shelter, loading, or parking spaces) to increase sightline(s) and visibility;
- Establish safe sight distances[1] (e.g., daylighting, relocation of curb cuts or new structures);
- Relocate or redesign off-street loading facility to allow for front-in maneuvers;
- Restrict turning movements from off-street facilities (e.g., right-in, right-out);
- Relocate off-street loading facilities to avoid turning movements across oncoming travel lanes;
- Manage freight and service deliveries (e.g., active loading management plan, delivery time restrictions);
- Employ queue abatement measures or pursue design modifications to off-street vehicular entrances/exits to accommodate queuing vehicles (see queue abatement language below);
- Provide on-site signs promoting safety for people driving (e.g., signage at the garage exit reminding people driving to slow down and yield to people walking on the sidewalk or stop signs);
- Provide roadway designs that slow vehicle speeds such as traffic calming measures (e.g., bulb-outs, chicanes, speed humps, tighter turning radii).

[1] The analysis can use Figure 3.1 and guidance in Section 3.2.6 "Criteria for Measuring Sight Distance" and Section 9.5 "Intersection Sight Distance," in the American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 2011 6th Edition.