



# SAN FRANCISCO PLANNING DEPARTMENT

**MEMO**

## Appendix I Public Transit Memorandum

*Date:* February 14, 2019  
*To:* Record No. 2015-012094GEN  
*Prepared by:* Debra Dwyer, Sherie George, and Daniel Wu  
*Reviewed by:* Wade Wietgreffe  
*RE:* **Transportation Impact Analysis Guidelines Update, Public Transit**

1650 Mission St.  
Suite 400  
San Francisco,  
CA 94103-2479

Reception:  
**415.558.6378**

Fax:  
**415.558.6409**

Planning  
Information:  
**415.558.6377**

### INTRODUCTION

This memorandum updates the prior guidance provided in the Transportation Impact Analysis Guidelines for the public transit topic. For the purpose of environmental review, the department defines transit as public transit system operations in the public right-of-way.<sup>1</sup> This consists of public transit services owned and/or operated by local and regional governmental agencies. 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., traffic hazards, 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 public transit 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 guidelines.

The guidance provided herein assumes a land use development project located outside of an area plan that requires a transportation study. Guidance on other types of projects, such as projects located in an area plan, projects requiring rezoning, and infrastructure projects, is discussed below under the "Other" subsection. The department has discretion on applying the guidance for multiple projects, but the department has discretion on applying 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)

---

<sup>1</sup> Transit does not include private transit carriers, on-demand services, and/or shuttle services. These private transit carriers are considered private vehicles on the public right-of-way during evaluation of a project's potential transportation-related impacts.

Attachments are under separate cover. 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. Attachment A of this memorandum includes examples of figures that illustrate how to graphically represent public transit conditions.

## SIGNIFICANCE CRITERIA

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 people taking public transit and public transit operations, Appendix G states: "would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?" The department uses the following significance criteria to evaluate that question: A project would have a significant impact if it would:

- 1) Substantially delay public transit; or
- 2) Creates potentially hazardous conditions<sup>2</sup> for public transit operations

## 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. For most projects, the department may only require transit impact analysis if the project site fronts or is within one block of a street with transit service.

---

<sup>2</sup> For the purposes of this memorandum, "hazard" refers to a project generated vehicle potentially colliding with a transit vehicle that could cause serious or fatal physical injury, 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, sight lines) 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.

*Period*

In San Francisco, the weekday extended p.m. peak period (Tuesday, Wednesday, or Thursday, 3 p.m. to 7 p.m.) is typically the period when the most overall travel happens.<sup>3</sup> Although a substantial amount<sup>4</sup> of travel occurs throughout the day and impacts from projects would typically be less during other periods, the methodology should typically focus on this period (including limiting the hours within the extended p.m. peak period) as changes in travel demand or public right-of-way would be acute compared to other times of the day and days of the week. In some instances, the most overall travel may occur at different periods (a.m., midday, post-p.m. peak, and/or weekend) for smaller geographic areas (e.g., a segment of a street) or certain transit route (e.g. Muni Metro surface service) in existing conditions or as a result of the project, or the project may result in substantial disparity in travel demand at different periods (e.g., special events). In these instances, the methodology may substantiate the use of periods in addition to or other than the weekday p.m. peak period. Attachment B shows ridership by Muni route over different time periods and can substantiate the use of periods in addition to or other than the weekday p.m. peak period. The use of an alternative time period to p.m. peak should be discussed with the planning department during the scoping period.

*Existing Conditions*

The following identifies the typical methodology for projects. The department will determine the appropriate methodology as necessary to inform the impact determination:

Visual Analysis with Recorded Observations

Data collection for the project should include a site visit for a visual analysis, with recorded observations of the absence, discontinuity, or presence of the features listed in the project description and other relevant features (e.g., the location of a transit-only lane or other transit facilities), and a description of the weather conditions. In addition, the site visit must record any existing hazards to transit operations at locations in the study area, especially along travel lanes where transit vehicles operate and transit stop/station locations. [text, figure]

Transit Travel Time, Delay, and Reliability

Include the travel time of transit vehicles or indicators of transit delay and reliability such as the following to the extent applicable:

- Auto to transit travel time comparison
- Transit Travel time (and variability) between stops and/or time points

Transit travel time, delay, and reliability data may be obtained from in-public transit vehicle automatic vehicle location system, countywide congestion management program, or other San Francisco or regional public transit agency reports.

---

<sup>3</sup> Examples that illustrate this statement: within the San Francisco County Congestion Management Program network transit and vehicular travel speeds are lower during the p.m. peak period (4:30-6:30 p.m.) than during the a.m. peak period (7-9a.m.) as documented in San Francisco County Transportation Authority, *Congestion Management Program*, December 2015; demand at transit stations is consistent and generally higher throughout the p.m. peak period relative to demand at transit stations during the a.m. peak period, as documented in the Metropolitan Transportation Commission, *Core Capacity Transit Study Briefing Book*, July 2016; the weekday peak period for for-hire vehicles occurs from 6:30 p.m. to 7p.m., as documented in San Francisco County Transportation Authority, *TNCs Today: a Profile of San Francisco Transportation Network Company Activity*, June 2017.

<sup>4</sup> Throughout this memo, the term “substantial amount” is used but not defined. This is because what constitutes a substantial amount of people, vehicles, etc., depends on the context in which the project is being evaluated (e.g., existing conditions, proposed land uses, and other variables).

### Street Design Characteristics

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

- Location and type of traffic control devices (e.g., stop signs, signals, crosswalk) [text, figure]
- Number of travel lanes by type (e.g., mixed flow, parking, bicycle, transit-only, etc.) [text, figure]
- Posted speed limit and recorded or inferences about observed speeds [text]
- Presence of High-Injury Corridor [text, figure]
- Transit Preferential Streets Program designation,<sup>5</sup> if applicable [text, figure]

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

- Signal timing and phasing of traffic control devices, including presence of transit signal priority [text]
- Width of travel lanes [text, figure]
- Number of travel lanes by type at intersections (if different from the number of travel lanes along midblock) [text, figure]
- Nearby transit stations/stops amenities (e.g., shelters, boarding islands) and service information [i.e., frequency, time of day service, ridership, origins and destinations, and service type (See Attachment C for a description of service type and routes)] [text, figure, table]

### *Existing plus Project Conditions*

The following identifies the typical methodology:

#### Travel Demand Analysis

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

#### Transit Delay

Use the travel demand analysis and project elements to determine if the project would result in transit service delay. The department transit delay screening criteria is 300 inbound project vehicle trips during the peak hour. Attachment D provides additional notes on this screening criteria. If a project exceeds the screening criteria, then the methodology should conduct a quantitative transit delay analysis. Example quantitative approaches to assess transit delay include:

- Transit delay analysis based on three components – traffic congestion delay (calculated by summing the average vehicle delay along the transit routes), transit reentry delay (calculated as the sum at each transit stop using empirical data), and passenger boarding delay (calculated by using a second per passenger boarding/alighting and based on transit assignment<sup>6</sup>).
- Transit Cooperative Research Program 165 methodology.<sup>7</sup> The methodology assesses, among other things, bus stop operations, segment travel speeds, transit roadway facilities, bus facility

---

<sup>5</sup> Transit Preferential Streets Program designations are as follows: Primary Transit Streets (Transit Oriented or Transit Important) and Others (Secondary Transit Street or Transit center).

<sup>6</sup> Transit assignments refers to assignment of project person trips on transit routes

<sup>7</sup> Transit Cooperative Research Program 165 is a reference document that provides research-based guidance and quantitative techniques for calculating transit delays and other operational characteristics.

capacity, and intersection approach to determine transit travel time based on public transit route schedule time points.

Attachment E provides more detail regarding these approaches. The methodology should report delay from each applicable category: traffic congestion delay, passenger boarding/alighting delay, re-entry delay, and/or other delay types.

#### Potentially Hazardous Conditions

Use the travel demand analysis and project elements to determine if the project would result in potentially hazardous conditions for transit operations. The methodology should qualitatively and/or quantitatively assess:

- 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 travel lanes where transit vehicles operate and transit stop/station locations [text, figure]
- The number, type (e.g., left turn, right turn), sightlines, and speed of project vehicle movements at intersections and roadways in relation to the travel lanes where transit vehicles operate and transit stop/station 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 and substantial transit delay impacts for transit operations and people taking transit. 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 public transit operations and whether the project would create potential delays to public transit.

Refer to the guidelines for direction on what to typically 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 or public transit delay impact under existing plus project conditions.

#### *Potentially Hazardous Conditions*

This is not an exhaustive list of circumstances, under which potentially hazardous conditions could occur:

- A project would add a substantial number of moving vehicle trips (e.g., turning movement into the project driveway, curb cut) crossing a transit lane or transit facility (e.g., transit stop) used by a substantial number of people taking transit (e.g., based on Muni service type category or designation)
- 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 transit vehicle operating in travel lane next to the off-street facility
- A project would be unable to accommodate vehicle trips, including freight and delivery service vehicle trips, into its off-street facilities thereby resulting in queues on the transit only lane or

near a transit facility (e.g., bus stop) used by a substantial number of people taking transit (e.g., based on Muni service type category or designation)

### *Transit Delay*

For projects that meet the screening criteria as shown in Attachment D, the transit impact analysis must use a quantitative threshold of significance and qualitative criteria to determine whether the project would substantially delay public transit. For individual Muni routes, if the project would result in transit delay greater than or equal to four minutes, then it might result in a significant impact. For individual Muni routes with headways less than eight minutes, the department may use a threshold of significance less than four minutes. For individual surface lines operated by regional agencies, if the project would result in transit delay greater than one-half headway, then it might result in a significant impact. The department considers the following qualitative criteria for determining whether that delay would result in significant impacts due to a substantial number of people riding transit switching to riding in private or for-hire vehicles:

- Transit service routes headways and ridership,
- Origins and destinations of trips,
- Availability of other transit and modes, and
- Competitiveness with private vehicles including for-hire vehicles.

Based on the qualitative criteria, the department will determine the significance. The following examples are some of the circumstances that may result in substantial transit delay. This is not an exhaustive list of circumstances, under which substantial transit delay could occur:

- A project would add a substantial number of moving vehicle trips (e.g., turning movement into the project driveway, curb cut) crossing a transit lane or transit facility (e.g., transit stop) used by a substantial number of people taking transit, resulting in transit delay greater than four minutes, and the qualitative analysis shows that existing automobile travel time is substantially lower than transit travel time on study area roadways where transit operates that could result in people switching from transit to ride in private vehicles and/or for-hire vehicles.
- A project would add a substantial number of moving vehicle trips (e.g., turning movement,) that would require potential traffic signal retiming to the detriment of a substantial number of people taking transit, resulting in transit delay greater than four minutes, and the qualitative analysis shows that the potentially impacted transit routes have high ridership, and serve the same origins and destinations as other travel modes, thereby could result in people switching from transit to these other modes.

## **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.

## 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 potentially hazardous conditions to transit operations that were provided for existing plus project conditions apply here, except for cumulative conditions.

If cumulative projects combine to delay individual Muni routes by greater than or equal to four minutes, then it might result in a significant cumulative impact. For individual Muni routes with headways less than eight minutes, the department may use a threshold of significance less than four minutes to determine a significant cumulative impact. For individual surface lines operated by regional agencies, if cumulative projects would result in transit delay greater than one-half headway, then it might result in a significant impact. The department considers the same qualitative criteria as described in existing plus project conditions for determining whether that delay would result in significant impacts due to a substantial number of people riding transit switching to riding in private or for-hire vehicles. The department will determine significance regarding cumulative contribution, as a percentage of overall delay, on a project-by-project basis.

## OTHER

The guidance provided in this memorandum assumes a land use development project located outside of an area plan that requires a transportation study. This section describes the type of additional or different information that may be necessary to address transit impacts for the following circumstances: land use development project located within an area plan, an area plan or certain rezoning outside of area plans, unique land use or events, 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 F of this memorandum identifies mitigation and improvement measures from area plan EIRs related to emergency access. The department will list emergency access-related mitigation and improvement measures from future area plan EIRs in Attachment F after the Planning Commission or Board of Supervisors certifies those EIRs.

### Area Plans or Other Substantial Rezoning Outside of Area Plans

For area plans or projects that would require rezoning outside of area plans, such that the development density allowed at a site would substantially increase, the assessment will typically use the significance criteria identified herein.<sup>8</sup> The following subsections describe the type of additional or different information that may be necessary to address transit operations and impacts to people taking transit for project description, methodology, and impact analysis. For area plans that also include infrastructure

---

<sup>8</sup> Sometimes project sponsors propose redevelopment of large areas consisting of multi-structure, multi-phased development outside a formal plan area. These proposals often require rezoning in the form of special use districts or changes to zoning similar to the rezoning under an area plan. In terms of the project description, a project may have a well-defined aspects or phases, while other projects in the proposal may rely on consistency/conformance with associated design guidelines or performance standards.

changes (e.g., street redesigns), please see the Infrastructure Project subsection 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 area plan or rezoning as a result of its implementation. The department typically does not have all the project description outlines herein for an area plan or rezoning. However, for area plans, the project description may include policies that may relate to the methodology and impact analysis (e.g., curb-cut restrictions) or design guidelines or performance standards.

#### *Methodology*

The assessment will typically use the same methodology identified herein, except the methodology will use a larger geographical study area given the typical larger size of these types of projects (e.g., select streets and intersections along transit corridors most impacted by the area plan or rezoning). As described above, the assessment requires less site-specific information (e.g., driveway locations at each building may not be available) except to document circumstances where vehicles may not be allowed (e.g., curb-cut restrictions). Area plan rezoning typically may not require some of the project elements listed in the Existing and Existing plus Project Methodology subsection.

The assessment will evaluate potential changes to travel patterns and assign project transit trips to different transit routes. Based on these changes and transit trip assignment, the methodology may include qualitative and/or quantitative transit analysis as described under the Existing plus Project and Cumulative Impact Analysis subsections.

#### *Impact Analysis*

For analysis of area plans or rezoning, assess the projected amount of growth and infrastructure changes associated with the rezoning within the area plan boundaries or project site. The analysis of potentially hazardous conditions for people taking transit or analysis of transit travel delay should be similar to that described under the Existing plus Project Cumulative Impact Analysis subsections. If the area plan or rezoning 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 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 or the proposed project would be subject to property specific infrastructure changes (e.g., Better Streets Plan).

### **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, as infrastructure projects usually do not generate trips.<sup>9</sup> However, some infrastructure project may induce trips, such as

---

<sup>9</sup> Governor's Office of Planning and Research, *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA*, January 20, 2016.



the addition of through lanes on existing or new highways or streets.<sup>10</sup> In addition, infrastructure projects may generate short-term trips due to construction workers and vehicles accessing the project site.

#### *Project Description*

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, except the methodology will pay particular attention to proposed closures and rerouting.

#### *Impact Analysis*

The analysis of potentially hazardous conditions for public transit operations and substantial transit delay impacts 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 Existing plus Project Impact Analysis subsection. The following examples are some of the additional circumstances relevant to infrastructure projects, which may result in potentially hazardous conditions for people taking transit and substantial transit delay.

- The project proposes changes that divert vehicles from a roadway without transit service or facilities to a roadway used by a substantial number of people taking transit (e.g., based on Muni service type category or designation)
- A project would remove a travel lane(s) (e.g., for an on-street bicycle facility), thereby limiting to fewer mixed-flow lane(s) used by a substantial number of vehicle trips and a substantial number of people taking transit (e.g., based on Muni service type category or designation)

---

<sup>10</sup> 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.