CMP Transportation Impact Analysis Technical Guidelines

Project Trip Generation Methodologies

The ITE trip generation handbook should be used to determine project trip generation.

Projects near transit or in infill development areas may apply one of the following methodologies to adjust project vehicle trip generation to reflect project context. Other alternative trip generation methodologies will be considered on a case-by-case basis.

EPA's Trip Generation Tool for Mixed Use Development (MXD model):

A description of this method can be found online at: http://www.epa.gov/smartgrowth/mxd tripgeneration.html

Caltrans/UC Davis Smart Growth Trip Generation Adjustment Method

A description of this method can be found online at: http://ultrans.its.ucdavis.edu/projects/smart-growth-trip-generation

MTC's Station Area Residents (STARS) Mode Split Based Adjustment Method

This method uses household travel survey data to determine how mode share varies by land use characteristics and then use this information to reduce ITE trip generation rates. The key assumption is that ITE rates produce a reasonably accurate estimate of person-trips, but that in a more dense, transit accessible setting, many of these person-trips may use modes other than driving, so the vehicle-trip rate will be lower.

In the Bay Area, MTC conducted extensive analysis of the 2000 Bay Area Travel Survey (BATS 2000), the most recent household travel survey, as part of its Station Area Residents Study (STARS). This analysis looked at how mode shares differ as a function of proximity to transit and land use density. The findings of this study are well-suited to producing urban trip generation rate estimates. For instance, the driving mode share of residents living within a half-mile of transit is only 48.2 percent, while for residents living more than a mile from transit, in a lower density area, this share is 87.0 percent.

This information can be used to adjust ITE trip generation rates. For instance, for a development located more than a mile from transit in a high-suburban density area, an adjusted ITE rate could be computed as:

Adjusted Rate = ITE Rate X 0.82

Note that the STARS analysis examined mode share for specific trip purposes (e.g., school trips, shopping trips, social/recreation trips) and depending on the type of development project, an analyst may wish to use this information instead of the mode share for all trips to adjust ITE rates.

Types of Impacts and Impact Assessment Methodologies

Autos

Projects should consider auto impacts on MTS roadway segments including:

- **Vehicle delay:** the analysis should assess impacts to vehicle delay on MTS roadway segments.

The Highway Capacity Manual 2010 (HCM 2010) freeway and urban streets methodologies are the preferred methodologies to study vehicle delay impacts. However, project sponsors may use the

HCM 2000 if conformance with local requirements is required.

Consistency with adopted plans: the analysis should disclose whether the project is consistent with plans including future Alameda Countywide Arterial Corridors Plan, and should consider opportunities to implement the plan in the project vicinity.

Transit

Projects should consider impacts to MTS transit operators and riders, including:

- **Effects of vehicle traffic on mixed flow transit operations:** the analysis should evaluate if vehicle trips generated by the project will cause congestion that degrades transit vehicle operations. Analysis may be qualitative and may be based on auto traffic circulation analysis, but should consider that transit vehicles may have unique considerations compared to autos (e.g., pulling into and out of stops, longer gaps needed for left turns). For instance, the analysis may use information about delay on a key segment or intersection with transit service to determine that impacts to transit operations will exist. It should not be assumed that transit operational impacts will not exist if a roadway operates at better than automobile LOS F. Furthermore, the mitigations required to address transit operations impacts may not be the same as those to address vehicle delay.
- **Transit capacity:** the analysis should evaluate if transit trips generated by the project will cause ridership to exceed existing transit capacity. Both vehicle and station circulation should be considered, as appropriate. Transit operators should be consulted to see if any routes or stations in the project area require capacity analysis. If a project will cause transit capacity impacts such that additional service will be required, funding for transit operations cannot be assumed and appropriate mitigations considered. If such analysis is required, it should consider volume to capacity ratios. The Alameda CTC can assist in providing ridership data by line or route if needed.

  Transit access/egress: the analysis should assess whether pedestrian connections between the project site and transit stops are adequate to support any project trip generation assumed to be served by transit. The site plan should provide good access between buildings and from buildings to transit stops and stations. Sidewalks should be provided on both sides of all streets to provide access to bus stops. Sidewalks and curb cuts at intersections should be designed for ADA accessibility. Designs should avoid requiring pedestrians to walk through parking lots to access transit service. The assessment should include consideration of the safety of crossing opportunities, as needed. Qualitative analysis is sufficient to assess this impact type.
- **Future transit service:** developments in areas without current transit service should seek to avoid designs which preclude future transit service. Trip generation estimates should assess the potential for new transit service, and if warranted by demand, the environmental review should address a funding mechanism to support service. Transit operators should be consulted to ensure that project design and surrounding roadway networks can accommodate transit vehicles (e.g., grades, turning radii, lane widths are appropriate). Where a project proposes private shuttle services, a cost analysis of providing this service versus subsidizing existing transit service should be included. Qualitative analysis is sufficient to assess this impact type.
- **Consistency with adopted plans:** the analysis should disclose whether the project is consistent with plans including transit operators Short Range Transit Plan and Long Range Transit Plan and the future Alameda Countywide Transit Plan, and should consider opportunities to implement the plan in the project vicinity.
- **Circulation Element:** for projects involving major update to a General Plan Circulation Element,

local jurisdictions are encouraged to develop and maintain a transit component of their Circulation Element.

Bicycles

Projects should consider impacts including:

- **Effects of vehicle traffic on bicyclist conditions:** the analysis should evaluate if vehicle trips generated by the project will present barriers to bicyclists safely crossing roadways or executing turning movements as well as whether project traffic volumes necessitate greater separation between bicyclists and vehicles. This analysis may be qualitative and may be based on auto traffic circulation analysis.
- **Site development and roadway improvements:** the analysis should evaluate if the project or its mitigations will reduce or sever existing bicycle access or circulation in the area as well as whether the project could produce conflicting movements between bicyclists and vehicle turning into and out of project driveways. Qualitative analysis is sufficient to assess this impact type.
- **Consistency with adopted plans:** the analysis should disclose whether the project is consistent with the Alameda Countywide Bicycle Plan, and should consider opportunities to implement the plan in the project vicinity, either in conjunction with other roadway improvements required by the project or as a mitigation measure for air quality or traffic circulation impacts. Qualitative analysis is sufficient to assess this impact type.

Pedestrians

Projects should consider impacts including:

- **Effects of vehicle traffic on pedestrian conditions:** the analysis should evaluate if vehicle trips generated by the project will present barriers to pedestrians safely crossing roadways at intersections and mid-block crossings. This analysis may be qualitative and may be based on auto traffic circulation analysis.
- **Site development and roadway improvements:** the analysis should evaluate if the project or its mitigations will reduce or sever existing pedestrian access or circulation in the area as well as whether the project could produce conflicting movements between pedestrian and vehicle turning into and out of project driveways. The need for new crossing opportunities or circulation given project pedestrian access points and likely access/egress routes should be considered. Qualitative analysis is sufficient to assess this impact type.
- **Consistency with adopted plans:** the analysis should disclose whether the project is consistent with the most recent Alameda Countywide Pedestrian Plan, and should consider opportunities to implement the plan in the project vicinity, either in conjunction with other roadway improvements required by the project or as a mitigation measure for air quality or traffic circulation impacts. Qualitative analysis is sufficient to assess this impact type.

Other Impacts and Opportunities

Projects should consider impacts including:

- Noise impacts: for projects adjacent to state roadway facilities, the analysis should address noise impacts of the project. If the analysis finds an impact, then mitigation measures (i.e., soundwalls) should be incorporated as part of the conditions of approval of the proposed project. It should not be assumed that federal or state funding is available.
- Transit Oriented Development access: local jurisdictions are encouraged to adopt a comprehensive Transit Oriented Development (TOD) program, including environmentally clearing all access improvements necessary to support TOD as part of environmental documentation.

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