

ORANGE COUNTY TRANSPORTATION AUTHORITY



# Congestion Management Program

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Preparation Manual

2011  
*Revised on April 19, 2011*

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## **Background**

Proposition 111, which was passed in June 1990, made additional funding available for transportation projects through a nine cent increase in the state gas tax and mandated that each county with an urbanized area of 50,000 or more residents develop a Congestion Management Program (CMP). Although the passage of AB 2419 (statutes of 1996) provided an opportunity to opt out of the CMP process, OCTA's Board of Directors elected to continue with it because the data helps to satisfy federal Congestion Management System requirements and similar efforts were required as part of the Measure M Growth Management Program (GMP). Although the GMP ends with the sunset of Measure M, the CMP will remain relevant as an eligibility requirement under Renewed Measure M.

### OCTA's role as CMA

As Orange County's designated Congestion Management Agency (CMA), OCTA is responsible for the conformance monitoring and biennial updating of Orange County's CMP.

### Purpose of the Manual

This manual is intended to help local jurisdictions comply with the requirements of the state CMP legislation (California Government Code Section 65088-65089.10). To maintain eligibility for transportation funding, local agencies must submit the following checklists to OCTA by June 30 of every odd year (i.e., 2011, 2013, etc.) to demonstrate compliance:

- Consistency with Level of Service (LOS) Standards
- Adoption of Capital Improvement Programs (CIPs)
- Adoption and Implementation of a Program to Analyze the Impacts of Land Use Decisions, Including an Estimate of the Costs Associated with Mitigating those Impacts
- Adoption and Implementation of Deficiency Plans When Highway and Roadway Level of Service Standards are Not Maintained

The chapters of this manual include instructions for completing these checklists as well as descriptions of the associated Orange County CMP elements. This manual replaces the Preparation Manual published in 1995 and will be updated as needed.

## Chapter 1 : CMP Schedule

<b>Every Odd Year</b>	
<b>January</b>	OCTA kicks-off the CMP updating process
<b>Feb/March</b>	OCTA Initiates Traffic Counts Data Collection
<b>April</b>	Local Jurisdictions Receive CMP Monitoring Checklists
<b>May</b>	OCTA Completes Traffic Counts
<b>June</b>	Local Jurisdictions Review Traffic Counts Data Local Jurisdictions and OCTA Identify Deficient Intersections Local Jurisdictions Submit Monitoring Checklists to OCTA (6/30) Local Jurisdictions Submit CIPs to OCTA (6/30)
<b>July/August</b>	OCTA Prepares Draft CMP
<b>September</b>	OCTA Releases Draft CMP for Public Review
<b>October</b>	OCTA Prepares Final Draft CMP
<b>November</b>	OCTA Holds Public Hearing for CMP Adoption OCTA Submits CMP to SCAG for RTP-consistency Review
<b>December</b>	OCTA Receives Finding of Consistency from SCAG
<b>Every Even Year</b>	
<b>June</b>	Local Jurisdictions Submit Deficiency Plans to OCTA

## Chapter 2 : Traffic Level of Service Standards

The CMP contains traffic level of service (LOS) standards for CMP intersections, as required by state legislation. During every odd year, OCTA collects traffic count data at all CMP intersections to demonstrate current LOS on the CMP Highway System (CMPHS).

- *Local jurisdictions must maintain the LOS standard on all CMP intersections under their control.*
- *Local jurisdictions must review and provide any comments on the traffic count data to OCTA, in addition to submitting the LOS Monitoring Checklist.*

### CMP Network

OCTA has designated all state highways and the OCTA-adopted Smart Street network as the CMPHS (Figure 1). The Smart Street network was adopted as part of Measure M. No designated highway or roadway shall be removed. All new state highways shall be designated as part of the system, except when they occur in an infill opportunity zone (subdivision (c) of Section 65088.4). Infill opportunity zones are specific areas designated by a city or county for new compact or mixed use developments and in close proximity to transit.

### Level of Service Standards

OCTA measures LOS at CMP intersections using the Intersection Capacity Utilization (ICU) methodology.<sup>1</sup> ICU ranges are assigned an LOS grade A-F to indicate decreasing performance (Table 1). A detailed description of the ICU methodology is included in Appendix A.

**Table 1**

LOS Grade	ICU Range
A	< 0.61
B	0.61 to 0.71
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

As required by CMP legislation, the LOS standard for CMPHS intersections is LOS E or better (i.e. an ICU of 1.00 or better). Intersections that had an LOS F in the 1992 CMP baseline are allowed to exceed the LOS E standard, but may not increase by more than 0.1 above the baseline ICU value (Appendix B).

If an intersection is found to exceed the LOS standard and is not statutorily exempt,<sup>2</sup> OCTA flags it as potentially deficient and the local jurisdiction must identify improvements necessary to meet the LOS standards.<sup>3</sup> This is accomplished either through existing plans (improvements scheduled for implementation within 18 months or programmed in the first year of the CIP) or through a deficiency plan.

<sup>1</sup> While the ICU is the established LOS standard for the CMP, it may not always be appropriate in determining significant impacts for the California Environmental Quality Act/National Environmental Policy Act.

<sup>2</sup> California Government Code Section 65089.4(f) exempts certain activities from LOS standards; see Chapter 5 for a list of exempt activities.

<sup>3</sup> The California Department of Transportation (Caltrans) is responsible for monitoring traffic and addressing deficiencies at state-controlled CMP intersections.

Figure 1: CMP Highway System



**CMP MONITORING CHECKLIST  
LEVEL OF SERVICE**

Responsibility:        Cities, County

**CMP CHECKLIST** **YES**   **NO**

1. Factoring out statutorily-exempt impacts, are all CMPHS intersections within your jurisdiction operating at LOS E (or the baseline level, if worse than E) or better?

**NOTE: Only those agencies that checked "No" for Question 1 need to answer the remaining questions.**

2. If not, which intersections, if any, are operating below the traffic LOS standards?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

3. Will the LOS at those intersections be improved by mitigation measures that will be implemented in the next 18 months or improvements programmed in the first year of any recent funding program (i.e., local agency CIP, CMP CIP, Measure M CIP)?

- a. If not, has a deficiency plan been developed for each intersection that will be operating below the traffic LOS standards?

\*Submitting jurisdiction is encouraged to provide a brief explanation of those questions for which a "No" reply was given.

## Chapter 3 : Capital Improvement Programs

The CMP includes a seven-year regional capital improvement program (CIP) that identifies funding for projects that maintain or improve the performance of the multimodal system. The CMP CIP is developed based on input from locally-adopted CIPs.

- *In order to be in conformance with the CMP requirements, local jurisdictions must adopt a local CIP and should submit it to OCTA by June 30th using the Measure M2 Eligibility process.*

Any project on the CMPHS and/or receiving Proposition 111 funds must be included in a CIP. Projects that address deficient CMPHS intersections must be included in the CIP within 12 months of the OCTA Board accepting the deficiency plan. Any traffic mitigation projects identified through the CMP Land Use Analysis Program (described in Chapter 4) shall also be included. Safety, maintenance, and rehabilitation projects that preserve existing facilities may be included.

CIPs should be developed using the CMP performance measures for the multimodal system with consideration of concurrent environmental quality concerns (e.g. air quality conformity and greenhouse gas emissions reduction). Therefore, local jurisdictions are encouraged to incorporate transportation demand management projects into their CIPs. This approach supports the use of modes such as bicycling and transit, in order to balance demand on the transportation system. Furthermore, CIPs must be consistent with any transportation-related air quality mitigation measures. Therefore, any transportation control measures identified in the most recent Southern California Air Quality Management Plan must be included in the CIP.

### Measure M2 Eligibility

It should be noted that CIPs are required for both the CMP, and the local agency's Measure M2 Eligibility Package. To avoid duplication, OCTA encourages local jurisdictions to use the Measure M2 Eligibility process to submit their CMP CIPs. Therefore, projects identified for CMP purposes may be folded into CIPs that are prepared for Measure M2 eligibility purposes and should be identified as CMP-related projects.

OCTA provides a database computer application, called SMART CIP, to assist local jurisdictions in developing their CIPs. The SMART CIP computer application and a user's manual are distributed with the Measure M2 eligibility package.



<p style="text-align: center;"><b>CMP MONITORING CHECKLIST CAPITAL IMPROVEMENT PROGRAM</b></p>
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Responsibility:        Cities, County, Caltrans, transit operators

**CMP CHECKLIST**

**YES    NO**

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Did you submit a seven-year Capital Improvement Program (CIP) to OCTA by June 30?  | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Have all improvement projects that are receiving Proposition 111 funds and/or are on the CMPHS (including capacity expansion, safety, maintenance, and rehabilitation) been included and identified as CMP projects? | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Have projects included as part of a deficiency plan been identified as such in the CIP and incorporated within 12 months of the OCTA Board's acceptance?   | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Is it consistent with air quality mitigation measures for transportation-related vehicle emissions?  | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Was the CIP database computer application used to prepare the CMP CIP?   | <input type="checkbox"/> | <input type="checkbox"/> |

## Chapter 4 : Land Use Impact Analysis

The CMP establishes a land use impact analysis program that requires local jurisdictions to analyze impacts to the CMPHS resulting from development projects and to estimate the costs of mitigating those impacts.

- *Local jurisdictions must choose either the CMP traffic impact analysis (TIA) guidelines (Appendix C) or a traffic-environmental analysis process that is consistent with the CMP TIA guidelines.*
- *Local jurisdictions must apply their selected TIA process consistently throughout each CMP cycle. Variation must be documented and submitted to OCTA with the CMP monitoring checklists.*

### Exemptions

The selected CMP TIA process is to be applied to all development projects submitted to the local jurisdiction for review and action during each biennial CMP cycle with certain exceptions including, but not limited to, the following:

- Any development application generating vehicular trips below the Average Daily Trips (ADT) threshold for CMP Traffic Impact Analysis (any project generating fewer than 2,400 ADT total, or any project generating fewer than 1,600 ADT if the project directly accesses the CMPHS).<sup>4</sup>
- Final tract and parcel maps<sup>4, 5, 6</sup>
- Issuance of building permits<sup>5</sup>
- Issuance of certificate of use and occupancy<sup>5</sup>
- Minor modifications to approved developments where the location and intensity of project uses have been approved through previous and separate local government actions prior to January 1, 1992.<sup>6</sup>

Any inquiries regarding exemptions for projects not listed above shall be transmitted in writing to the Orange County Transportation Authority, attention to the CMP Program Manager.

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<sup>4</sup> A CMP TIA is not required for these projects only in those instances where development approvals granting entitlement for the project sites were granted prior to the effective date of CMP TIA requirements (i.e. January 1, 1992)

<sup>5</sup> Exemption from conducting a CMP TIA shall not be considered an exemption from such projects' preparation of a TIA for other purposes including participation in approved, transportation fee programs established by the local jurisdiction.

<sup>6</sup> Vehicular trips generated by CMP TIA-exempt development applications shall not be factored out of any traffic analyses or level of service (LOS) calculations for the CMPHS.

### Traffic Impact Analysis Components

The CMP TIA guidelines suggest a number of essential elements to analyze, including trip generation, trip distribution and assignment, and capacity determinations. Appendix C includes detailed descriptions of how to address these elements and identify impacts. These guidelines allow for some flexibility, recognizing that some variations relating to professional judgment and local criteria and characteristics are necessary and appropriate to the process.

### Data and Modeling Consistency

Traffic projections should be developed using data and models consistent with the Orange County Subarea Modeling Guidelines Manual. The most recent manual can be accessed on the OCTA website. Appendix D describes these requirements as they relate specifically to the CMP.

### Mitigations

Mitigations should be identified for CMPHS links & intersections that are projected to be deficient.<sup>7</sup> This may include mitigation strategies that are scheduled for implementation within 18 months or programmed in the first year of the CIP, or a deficiency plan that addresses the projected impacts.

The costs of mitigations should also be identified in the TIA. The CMP TIA guidelines suggest a common way to calculate impact costs as the total of new development traffic on a roadway link requiring improvement, divided by the capacity of the improvement, and multiplied by the cost of the improvement:

$$\boxed{\text{IMPACT COST}} = \frac{\boxed{\text{Development Traffic}}}{\boxed{\text{Roadway Capacity}}} \times \boxed{\text{Improvement Cost}}$$

For mitigation measures that focus more on traffic demand management, impact costs can be similarly calculated with a credit or reduction in development traffic. These types of mitigation, such as phasing or reduction in project intensity, reduce the amount of impact that must be mitigated. These measures should be accompanied by a monitoring program to confirm that reductions are realized. \*Please note that cost estimates are not required for interregional traffic.

### Inter-Jurisdictional Impacts

Inter-jurisdictional impacts occur when a forecast LOS deficiency is determined to be caused by traffic to/from multiple jurisdictions. The methodology for determining inter-jurisdictional impacts shall be consistent with data and modeling requirements, described in Appendix D. If a deficiency is determined to be caused by multiple jurisdictions, the lead agency should notify relevant jurisdictions to begin coordination efforts. Appropriate mitigations should be identified and approved by all participating jurisdictions. Each jurisdiction should identify their fair share of the mitigation costs in the TIA. Mitigations should then be incorporated in the lead agency's CMP CIP.

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<sup>7</sup> While ICU ratings are used for analyzing and measuring impacts for CMP purposes, other measures may be additionally appropriate for traffic analysis conducted under California Environmental Quality Act (CEQA). For example, analysis of state-controlled highways typically utilizes HCM methodologies per Caltrans.

### Relationship with CEQA/NEPA

In order to avoid duplication, CMP traffic impact analyses may be done in concert with reporting under the California Environmental Quality Act and/or National Environmental Policy Act (CEQA/NEPA). However, standards established in the CMP do not necessarily satisfy other non-CMP standards that may also apply to the project. For analysis of intersections or mainline segments on the State Highway System, the California Department of Transportation (Caltrans) does not accept CMP thresholds or analysis methodologies to determine if significant impacts occur or to determine appropriate mitigation for impacts. Local agencies are encouraged to coordinate with the Caltrans Local Development / Intergovernmental Review Branch early in the project development process for guidance to determine what thresholds and methodologies should be used for CEQA traffic impact analysis.



**CMP CHECKLIST (cont.)**

**YES NO**

3. Did you use, or do you anticipate using, a local model for your traffic impact analysis on any projects initiated during this CMP cycle?
- a. If so, did you follow the data and modeling consistency requirements as described in the Data and Modeling Consistency Requirements (see CMP Preparation Manual online at <http://www.octa.net>)?

\* Submitting jurisdiction is encouraged to provide a brief explanation of those questions for which a "No" reply was given.

## Chapter 5 : Deficiency Plans

As the Congestion Management Agency, OCTA is responsible for providing procedures for local deficiency plan development (Figure 2). Deficiency plans address failure to meet the LOS standards at CMP intersections.

- *Local jurisdictions must prepare a deficiency plan when any CMP intersection is found to exceed the LOS standards, excluding exempt activities and accounting for scheduled improvements.*
- *Upon reviewing the traffic count data collected by OCTA, local jurisdictions are responsible for notifying OCTA if a potential deficiency may have been created by an exempt activity.*

The following activities are statutorily-exempt from deficiency determinations:

- interregional travel
- traffic generated by the provision of low and very low income housing
- construction rehabilitation or maintenance of facilities that impact the system
- freeway ramp metering
- traffic signal coordination by the state or multi-jurisdictional agencies
- traffic generated by high-density residential development within ¼ mile of a fixed-rail passenger station<sup>8</sup>
- traffic generated by mixed-use residential development within ¼ mile of a fixed-rail passenger station<sup>9</sup>

Therefore, a deficiency plan would not be required if a potential deficiency were state-controlled or a local jurisdiction demonstrated to meet LOS standards without the exempt activities. Furthermore, deficiency plans are not required if improvements are programmed in the first year of the CIP or are scheduled for implementation within 18 months. If these conditions are met, the OCTA Board shall make a finding of no deficiency.

### Deficiency Plan Components

The Deficiency Plan must include the following:

- analysis of the cause of the deficiency
- improvements needed to maintain the LOS standard, OR improvements or strategies that will improve system performance and air quality
- cost estimates of the improvements
- an action plan that includes a specific implementation schedule and that identifies funding sources to implement the improvements
- a monitoring program to ensure implementation

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<sup>8</sup> “High density” means residential development with a minimum of 24 dwelling units per acre and a minimum density per acre which is equal to or greater than 120% of the maximum residential density allowed under the local general plan and zoning ordinance. A project providing a minimum of 75 dwelling units per acre shall automatically be considered high density.

<sup>9</sup> “Mixed use” means residential development which integrates compatible commercial and/or retail uses with residential uses, and due to the proximity of job locations, shopping opportunities, and residences, will discourage new trip generation.

OCTA also encourages local jurisdictions to consider the precedence of local development projects in developing deficiency plans. Therefore, a process to allow development to proceed as the deficiency is corrected should be included. OCTA also encourages local jurisdictions to use innovative programs such as transportation demand management to address deficiencies.

#### Inter-jurisdictional Deficiencies

A deficiency may potentially be caused by traffic from another jurisdiction, in which case a multi-jurisdictional deficiency plan, adopted by all participating local jurisdictions, may be required. The local jurisdiction in which the deficiency occurs shall have lead responsibility for developing the deficiency plan and for coordinating with other impacting local jurisdictions.

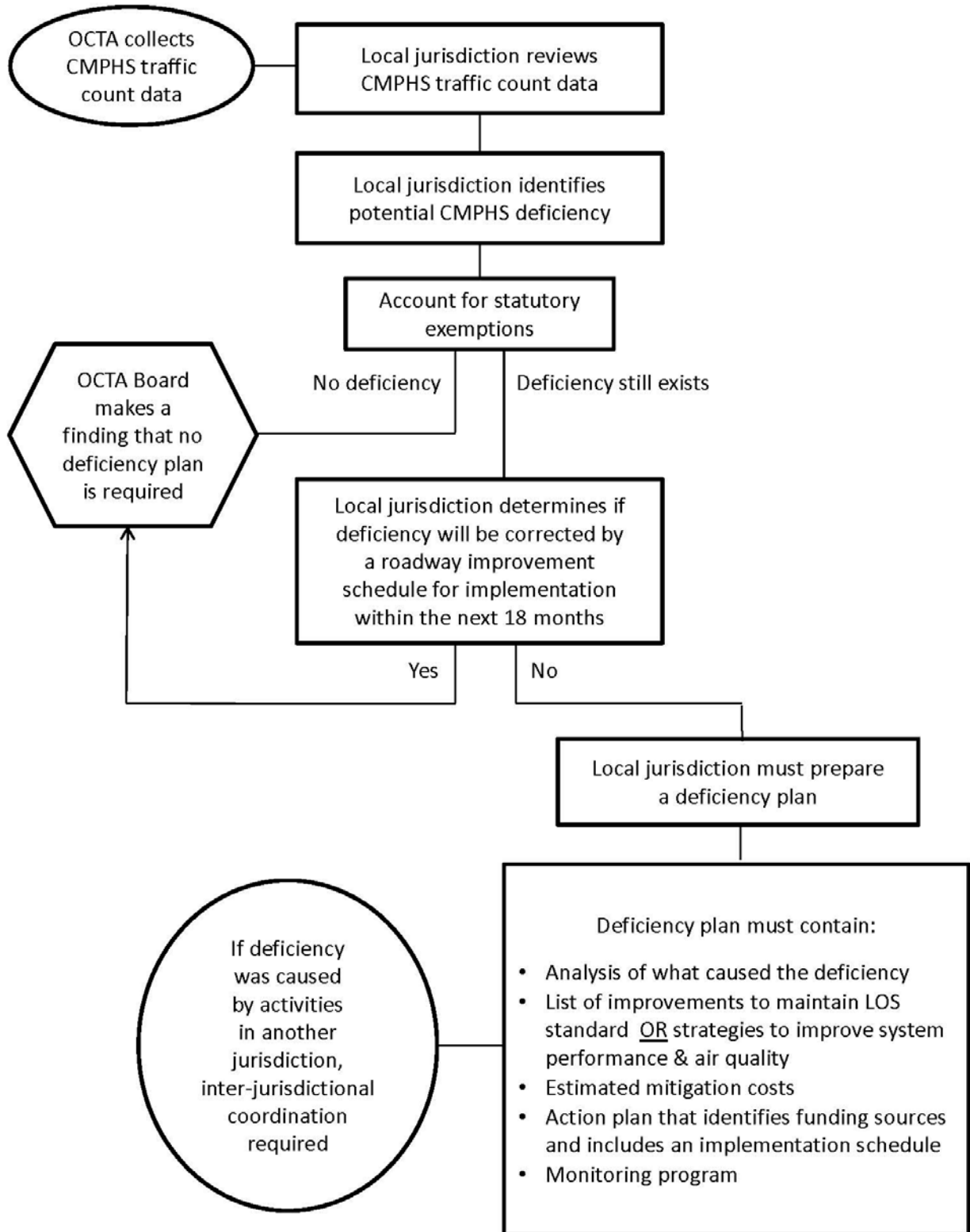
The method for determining inter-jurisdictional deficiencies shall be consistent with regional data and modeling requirements. OCTA will facilitate discussions and guide any conflict resolution efforts, as requested by local jurisdictions. If the deficiency is the result of activities in another county, OCTA will work with the local jurisdiction to coordinate with the appropriate congestion management agency.

#### Deficiency Plan Process

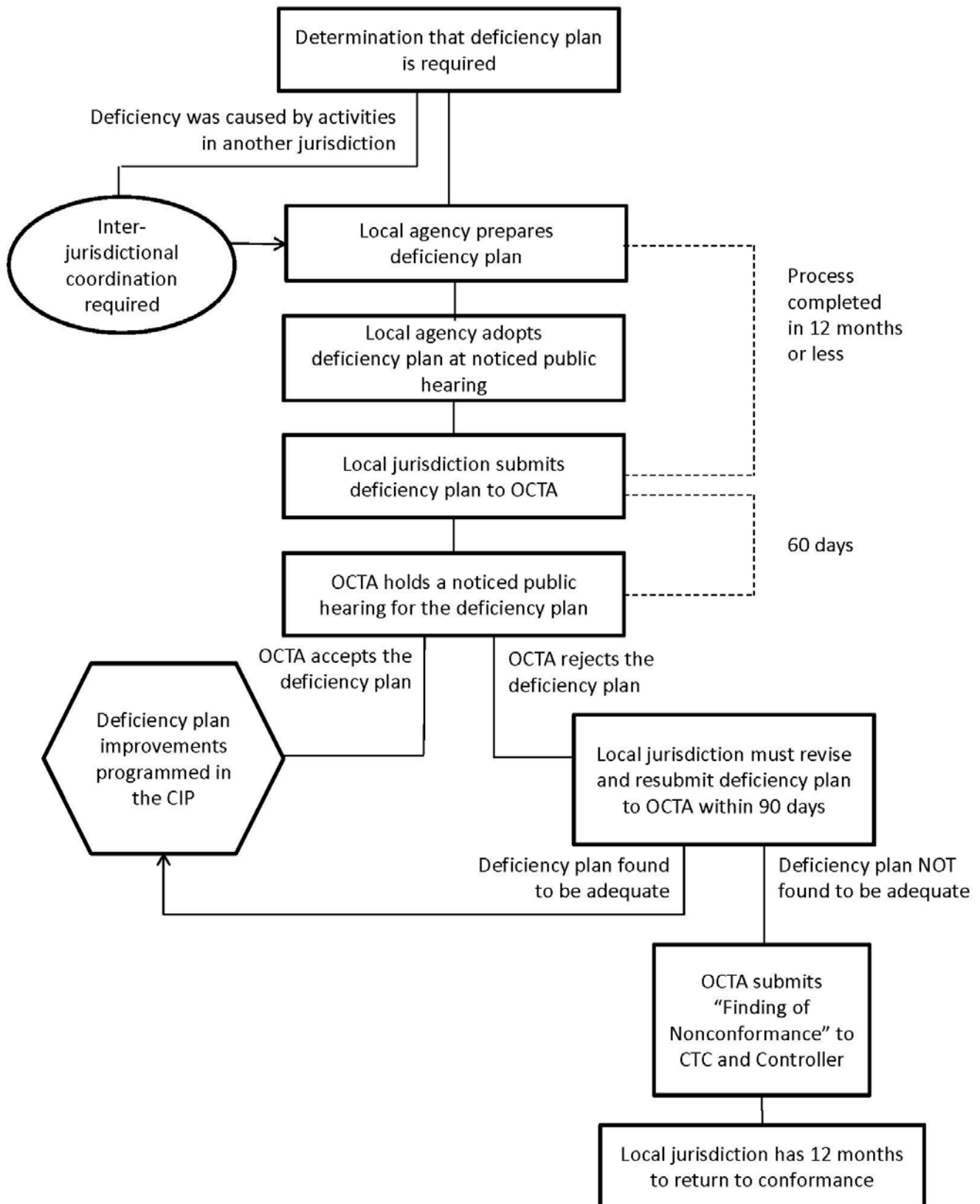
The Deficiency Plan must be locally-adopted and sent to OCTA within 12 months of identification. OCTA will hold a public hearing within 60 days of receipt. If the Deficiency Plan is adequate, the OCTA Board of Directors shall make a finding of no deficiency and the local jurisdiction shall include appropriate improvements in its CIP. If OCTA doesn't accept the Deficiency Plan, the local jurisdiction shall submit a revised plan to OCTA within 90 days of notice. If the revised plan does not address OCTA's concerns, OCTA will submit a finding of nonconformance to the California Transportation Commission and Controller. The local jurisdiction's Proposition 111 apportionments will be withheld, and the jurisdiction will have 12 months to return to conformance before their apportionments are allocated to OCTA.



**Figure 2: Deficiency Plan Development Process**



*Continued on next page*



<b>CMP MONITORING CHECKLIST DEFICIENCY PLANS</b>
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Responsibility:      Cities, County

**YES   NO\***

**CMP CHECKLIST**

1. Were all CMPHS intersections operating at LOS E (or baseline, if worse than E) or better, factoring out statutorily-exempt activities?

a. If not, which?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Will the deficiencies at these locations be corrected by improvements scheduled for completion during the next 18 months or programmed in the first year of the CIP?

**NOTE: Only those agencies that checked “No” for Question # 2 need to answer the remaining questions.**

3. Has a deficiency plan or a schedule for preparing a deficiency plan been submitted to OCTA?

4. Does the deficiency plan fulfill the following statutory requirements:

a. include an analysis of the causes of the deficiency?

b. include a list of improvements necessary to maintain minimum LOS standards on the CMPHS and the estimated costs of the improvements?

c. include a list of improvements, programs, or actions, and estimates of their costs, which will improve LOS on the CMPHS and improve air quality?

i. do the improvements, programs, or actions meet the criteria established by SCAQMD (see the CMP Preparation Manual)?

d. include an action plan and implementation schedule?

**CMP CHECKLIST (cont.)**

**YES NO**

- 5. Are the capital improvements identified in the deficiency plan programmed in your seven-year CMP CIP?
- 6. Does the deficiency plan include a monitoring program that will ensure its implementation?
- 7. Does the deficiency plan include a process to allow some level of development to proceed pending correction of the deficiency?
- 8. Has necessary inter-jurisdictional coordination occurred?
- 9. Please describe any innovative programs included in the deficiency plan:

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\*Submitting jurisdiction is encouraged to provide a brief explanation of those questions for which a "No" reply was given.

## **Appendix A: Intersection Capacity Utilization Methodology**

Traffic counts are manually collected at CMPHS intersections to initiate the ICU calculation process. The counts monitor the traffic flow, including the approach (northbound, eastbound, southbound, or westbound) and movement (left turn, through, or right turn) for each vehicle.

Each intersection has counts conducted in 15-minute increments, during peak periods in the AM (6:00-9:00) and PM (3:00-7:00) on three separate mid-week days (Tuesday, Wednesday, or Thursday). Irregular conditions (inclement weather, holidays, construction, etc.) will postpone counts.

The highest count total during any four consecutive 15-minute count intervals within a peak period represents the peak-hour count set. For each intersection, a peak-hour count set is determined for each day's AM and PM peak period, resulting in a group of three AM peak-hour count sets and a group of three PM peak-hour count sets.

The group of AM peak-hour count sets is averaged, as is the group of PM peak-hour count sets. The results are the volumes used to determine AM and PM volume-to-capacity (V/C) ratios for each movement through the intersection. A number of assumptions determine the capacities for each movement.

An example of an assumption used to determine capacity is the saturation flow-rate, which represents the theoretical maximum number of vehicles that can use a lane to move through an intersection. In 1991, OCTA and the technical staff members from local and state agencies agreed upon a saturation flow-rate of 1,700 vehicles per lane per hour. However, other factors can adjust this assumption.

Such factors include right turn lanes, which can increase the saturation flow-rate by 15% in specific circumstances. Right turn overlaps (signalized right turn lanes that are green during the cross traffic's left turn movements) and free right turns (the lane allows vehicles to turn right without stopping, even when the through signal is red) are some of the circumstances that will increase the saturation flow-rate. If right turns on red are permitted, a de facto right turn lane (approaches that do not have designated right turn lanes, but on-street parking is prohibited during peak hours, and the width from the curb through the rightmost through lane is at least 19 feet) may also increase the saturation flow rate.

The capacity can also be reduced under certain conditions. For example, if a lane is shared for through and turn movements, the saturation flow-rate of 1700 could be reduced. This occurs only when the turn movement volumes reach a certain threshold that is calculated for each intersection with shared lanes. The reduction represents the slower turning movements interfering with through movements.

Finally, if field observations indicate the presence of more than 100 pedestrians per hour at an intersection, then pedestrian counts are conducted simultaneously with vehicle counts. Saturation flow-rate calculations then factor impacts of pedestrian activity for effected lanes, using standard reductions, in accordance with Chapter 16 of the Highway Capacity Manual.

Once the V/C ratios are determined for each movement, critical V/C ratios are calculated. Conflicting movements determine which V/C ratios are included in the calculation of the critical V/C ratios. Conflicting movements represent a situation where a movement from one approach prevents a movement from the opposite approach. For example, if through movements are being made from the southbound approach, left turn movements cannot simultaneously be made from the northbound approach. For each set of opposing approaches (north/south and east/west), the two conflicting movements with the greatest summed V/C ratios are identified. These summed V/C ratios then become known as the critical V/C ratios.

OCTA and technical staff members from local and State agencies also agreed upon a lost time factor of 0.05, in 1991. The lost time factor represents the assumed amount of time it takes a vehicle to travel through an intersection. For each intersection, the critical V/C ratios are summed (north/south + east/west), and the lost time factor is added to the sum, producing the ICU rating for the intersection.

Based on a set of ICU rating ranges, which were agreed upon by OCTA and technical staff members from local and State agencies, grades are assigned to each intersection. The grades indicate the LOS for intersections, and are used to determine if the intersections meet the performance standards described at the beginning of the chapter.

## **Appendix B: Orange County CMP Intersection Baseline LOS**



Intersection/Interchange	Program	Baseline AM	
		LOS	ICU
<b>Anaheim</b>			
I-5 NB Ramp/ Anaheim Way/Katella Avenue	CMP	A	0.49
Harbor Blvd./Katella Avenue	CMP	A	0.53
I-5 NB Ramp/Harbor Boulevard	CMP	A	0.52
I-5 SB Ramp/Katella Avenue	CMP	A	0.48
I-5 SB Ramp\Harbor Boulevard	CMP	A	0.29
Imperial Highway/Orangethorpe Avenue	CMP	B	0.67
SR-57 NB Ramps/Katella Avenue	CMP	A	0.51
SR-57 SB Ramps/Katella Avenue	CMP	A	0.52
SR-91 EB Ramp/Harbor Boulevard	CMP	A	0.46
SR-91 EB Ramp/Imperial Highway	CMP	C	0.73
SR-91 EB Ramps/State College Boulevard	CMP	B	0.69
SR-91 EB Ramps/Tustin Avenue	CMP	B	0.66
SR-91 WB Ramp/Harbor Boulevard	CMP	B	0.61
SR-91 WB Ramp/Imperial Highway	CMP	C	0.71
SR-91 WB Ramp/State College Boulevard	CMP	A	0.55
SR-91 WB Ramps/Tustin Avenue	CMP	B	0.64
<b>Brea</b>			
SR-57 NB Ramps/Imperial Highway	CMP	C	0.78
SR-57 SB Ramps/Imperial Highway	CMP	B	0.68
State College Boulevard/Imperial Highway	CMP	C	0.73
Valencia Avenue/Imperial Highway	CMP	A	0.56
<b>Buena Park</b>			
Beach Boulevard/Orangethorpe Avenue	CMP	C	0.76
I-5 SB Ramps/Beach Boulevard	CMP	C	0.72
SR-91 EB Ramp/Beach Boulevard	CMP	C	0.74
SR-91 EB Ramp/Valley View Street	CMP	A	0.58
SR-91 WB Ramp/Beach Boulevard	CMP	A	0.58
SR-91 WB Ramp/Valley View Street	CMP	C	0.80
<b>Costa Mesa</b>			
Harbor Boulevard/Adams Avenue	CMP	E	0.99
I-405 NB Ramps/Harbor Boulevard	CMP	E	0.95
I-405 SB Ramps/Harbor Boulevard	CMP	A	0.53
<b>Cypress</b>			
Valley View Street/Katella Avenue	CMP	B	0.63
<b>Dana Point</b>			
Crown Valley Parkway/Bay Drive/PCH	CMP	F	1.41
Street of the Golden Lantern/Del Prado Avenue	CMP	A	0.32
Street of the Golden Lantern/PCH	CMP	A	0.42
<b>Fullerton</b>			
Harbor Boulevard/Orangethorpe Avenue	CMP	A	0.60

State College Boulevard/Orangethorpe Avenue	CMP	C	0.80
<b>Garden Grove</b>			
SR-22 WB Ramp/Valley View Street	CMP	C	0.76
SR-22 WB Ramps/Harbor Boulevard	CMP	F	1.10
<b>Huntington Beach</b>			
Beach Boulevard/405 SB Ramp/Edinger Avenue	CMP	B	0.63
Beach Boulevard/Adams Avenue	CMP	A	0.55
Beach Boulevard/Pacific Coast Highway	CMP	A	0.45
Beach Boulevard/Warner Avenue	CMP	C	0.78
Bolsa Chica Street/Bolsa Avenue	CMP	B	0.66
Bolsa Chica Street/Warner Avenue	CMP	A	0.57
Pacific Coast Highway/Warner Avenue	CMP	D	0.81
<b>Irvine</b>			
I-405 NB Ramps/Enterprise/Irvine Center Drive	CMP	E	0.95
I-405 NB Ramps/Jamboree Road	CMP	F	1.03
I-405 SB Ramps/Irvine Center Drive	CMP	E	1.00
I-405 SB Ramps/Jamboree Road	CMP	E	0.92
I-5 NB Ramps/Jamboree Road	CMP	A	0.54
I-5 SB Ramps/Jamboree Road	CMP	A	0.40
MacArthur Boulevard/Jamboree Road	CMP	B	0.61
SR-261 NB Ramps/Irvine Boulevard	CMP	A	0.38
SR-261 SB Ramps/Irvine Boulevard	CMP	A	0.42
SR-133 NB Ramps/Irvine Boulevard	CMP	A	0.37
SR-133 SB Ramps/Irvine Boulevard	CMP	A	0.37
<b>Laguna Beach</b>			
El Toro Road/SR-73 NB Ramps	CMP	E	0.91
El Toro Road/SR-73 SB Ramps	CMP	A	0.41
Laguna Canyon Rd/SR-73 NB Ramps	CMP	C	0.73
Laguna Canyon Rd/SR-73 SB Ramps	CMP	A	0.32
Laguna Canyon Road/El Toro Road	CMP	F	1.54
Laguna Canyon Road/Pacific Coast Highway	CMP	D	0.84
<b>Laguna Hills</b>			
I-5 SB Ramp/Avenue de la Carlotta/El Toro Road	CMP	F	1.18
<b>Laguna Niguel</b>			
Moulton Parkway/Crown Valley Parkway	CMP	A	0.56
Moulton Parkway/SR-73 SB Ramps	CMP	A	0.45
I-5 SB Ramps/Crown Valley Parkway	CMP	D	0.86
<b>Laguna Woods</b>			
Moulton Parkway/El Toro Road	CMP	E	0.94
<b>La Habra</b>			
Beach Boulevard/Imperial Highway	CMP	D	0.85
Beach Boulevard/Whittier Boulevard	CMP	A	0.33
Harbor Boulevard/Imperial Highway	CMP	D	0.81

<b>Lake Forest</b>			
I-5 NB/Bridger/El Toro Road	CMP	A	0.56
Trabuco Road/El Toro Road	CMP	F	1.03
<b>Los Alamitos</b>			
I-605 NB Ramps/Katella Avenue	CMP	B	0.69
<b>Mission Viejo</b>			
I-5 NB Ramps/Crown Valley Parkway	CMP	B	0.68
<b>Newport Beach</b>			
MacArthur Boulevard/Pacific Coast Highway	CMP	A	0.51
Newport Boulevard/Pacific Coast Highway	CMP	A	0.56
<b>Orange</b>			
SR-55 NB Ramps/Sacramento/Katella Avenue	CMP	C	0.75
SR-55 SB Ramps/Katella Avenue	CMP	C	0.73
<b>Placentia</b>			
Rose Drive/Imperial Highway	CMP	E	0.95
Rose Drive/Tustin Avenue/Orangethorpe Avenue	CMP	C	0.76
SR-57 NB Ramps/Orangethorpe Avenue	CMP	B	0.67
SR-57 SB Ramps/Iowa Place/Orangethorpe Avenue	CMP	C	0.74
<b>San Juan Capistrano</b>			
I-5 NB Ramps/Ortega Highway	CMP	A	0.52
I-5 SB Ramps/Ortega Highway	CMP	B	0.61
<b>Santa Ana</b>			
Harbor Boulevard/1st Street	CMP	A	0.48
Harbor Boulevard/Warner Avenue	CMP	E	0.93
I-5 SB Ramps/1st Street	CMP	A	0.29
SR-55 SB Ramp/Auto Mall/Edinger Avenue	CMP	D	0.90
SR-55 SB Ramps/Irvine Boulevard (4h Street)	CMP	B	0.68
Beach Boulevard/Katella Avenue	CMP	D	0.89
<b>Tustin</b>			
Jamboree Road/Edinger Avenue-NB Ramp	CMP	A	0.28
Jamboree Road/Edinger Avenue-SB Ramp	CMP	D	0.81
Jamboree Road/Irvine Boulevard	CMP	B	0.65
SR-55 NB Ramps/Edinger Avenue	CMP	C	0.72
SR-55 NB Ramps/Irvine Boulevard	CMP	A	0.59
<b>Westminster</b>			
Beach Boulevard/Bolsa Avenue	CMP	F	1.09
Bolsa Chica Road/Garden Grove Boulevard/I-405 NB	CMP	E	0.91

## **Appendix C: CMP Traffic Impact Analysis Guidelines**

**MEETING CMP TRAFFIC IMPACT ANALYSIS REQUIREMENTS**  
**AN OPTIONAL GUIDANCE FOR LOCAL JURISDICTIONS**

*Prepared for:*

**Orange County Environmental Management Agency  
Orange County Transportation Commission  
Orange County Transit District  
League of Cities, Orange County Division  
Transportation Corridor Agencies**

*Prepared by:*

**Kimley-Horn and Associates, Inc.  
and  
The Planning Center**

June 11, 1991

## **CMP-TIA REQUIREMENTS**

### **Requirements of CMP legislation**

- Analyze impacts of land use decisions on CMP Highway System.
- Estimate costs associated with mitigation of impacts on CMP Highway System.
- Exclude costs associated with mitigating the impacts of interregional travel.
- Allow credits against mitigation costs for local public and private contributions to improvements to the CMP Highway System.
  - For toll road facilities, allow credits only for local public and private contributions which will not be reimbursed from toll revenues or other state or federal sources.
- Report annually on actions taken to adopt and implement a program to analyze the impacts of land use decisions on the CMP Highway System and to estimate the costs of mitigating those impacts.

### **Year One Goal**

- Identify the impacts of development anticipated to occur over the next 7 years on the CMP Highway System and the projected costs of mitigating those impacts.

### **Actions Required of Local Jurisdictions**

- A TIA will be required for CMP purposes for all proposed developments generating 2,400 or more daily trips. For developments which will directly access a CMP Highway System link, the threshold for requiring a TIA should be reduced to 1,600 or more trips per day.
- Document procedures used to identify and analyze traffic impacts of new development on CMP Highway System. This documentation should include the following:
  - Identification of type of development proposals which are subject to a traffic impact analyses (TIA).
  - Description of required or acceptable TIA methodology
  - Description of inter-jurisdictional coordination process used when impacts cross local agency boundaries
- Document procedures/standards used to determine the costs of mitigation requirements for impacts of new development on CMP Highway System.
- Document methodology and procedures for determining applicable credits against mitigation costs including allowable credits associated with contributions to toll road facilities.

## **SECTION 1 – INTRODUCTION**

### **PURPOSE**

State legislation creating the Congestion Management Program (CMP) requires that the program contain a process to analyze the impacts of land use decisions by local governments on the regional transportation system. Once impacts of a land use decision are identified, the CMP also requires that the costs to mitigate the impacts be determined.

For CMP purposes, the regional transportation system is defined by the legislation as all state highways and principal arterials at a minimum. This system is referred to as the CMP Highway System. The identification and analysis of impacts along with estimated mitigation costs are determined with respect to this CMP Highway System.

The objectives of this report are to:

- Provide guidance to local agencies in conducting traffic impact analyses.
- Assist local agencies in maintaining eligibility for funds through documentation of CMP compliance.
- Make available minimum standards for jurisdictions wishing to use them for identifying and analyzing impacts on CMP Highway System.
- Establish CMP documentation requirements for those jurisdictions which elect to use their own TIA methodology.
- Establish a baseline from which TIA standardization may evolve as experience is gained in the CMP process.
- Cause the analysis of impacts on the CMP Highway System to be integrated into the local agency development review process.
- Provide a method for determining the costs associated with mitigating development impacts.
- Provide a framework for facilitating coordination between agencies when appropriate.

### **BACKGROUND**

Through a coordinated effort among local jurisdictions, public agencies, business and community groups, Orange County has developed a Congestion Management Program framework in response to the requirements of Assembly Bill 1791. This framework is contained in the Congestion Management Program Preparation Manual which was issued in January 1991 as a joint publication of the following agencies:

County of Orange  
Orange County Division, League of California Cities  
Orange County Transportation Commission  
Orange County Transit District  
Transportation Corridor Agencies

The CMP Manual describes the CMP Program requirements for each component prescribed by the CMP provision of AB 1791. The components include one entitled Land Use Coordination, which sets forth the basic requirements for the assessment, mitigation, and monitoring of traffic impacts to the CMP Highway System which are attributable to development projects.

### **Consolidation of Remaining Issues**

This report is intended to present a useful reference in addressing the remaining issues associated with the identification and treatment of development impacts on the CMP Highway System. It is desirable that a standardized approach be utilized for determining which projects require analysis and in carrying out the resulting traffic impact analysis (TIA). It is also desirable that a reasonably uniform approach be utilized in determining appropriate mitigation strategies and estimating the associated costs.

### **TIA Survey History**

In 1989, Kimley-Horn and Associates, Inc. conducted a survey of TIA procedures being used at the time by local jurisdictions within Orange County. The survey revealed that although there were some commonalities, there was considerable variation in approach, scope, evaluation methodology, and project disposition.

As part of the CMP process, it was determined that the identification of TIA elements which can or should be standardized should be accomplished. Additional documentation of cost estimating practices and the development of standardized costs and estimating procedures will be valuable in achieving desired consistency among jurisdictions.

In order to accomplish these objectives, Kimley-Horn's previous TIA survey was updated and additional information was solicited from each local agency within Orange County. The information was obtained through telephone interviews with City Engineers and Planners after they had an opportunity to examine the survey questionnaire which was mailed to them in advance of the interview. The information obtained was used in preparing the methodology recommendations contained in this report. A summary of the update survey results is provided in the Appendix.

### **Relationships with Other Components**

In addition to being an integral part of the Land Use Coordination component of the CMP, the traffic impact analysis requirements also relate to all other CMP components to a greater or lesser degree. These components include the following:

Modeling



Level of Service  
Transit Standards  
Traffic Demand Management  
Deficiency Plans  
Capital Improvement Program

The Land Use Coordination section in Chapter 3 of the CMP Preparation Manual dated January, 1991 contains a detailed description of each of the component linkages listed above.

## **SECTION 2- REQUIREMENTS OF CMP LEGISLATION**

The complete text of CMP legislation is contained in Appendix A to the Preparation Manual for the Congestion Management Program for Orange County dated January, 1991. For ease of reference, the requirements of this legislation related to analysis of the impacts of land use decisions made by local jurisdictions are summarized as follows.

- Analyze impacts of land use decisions on CMP Highway System.
- Estimate costs associated with mitigation of impacts on CMP Highway System.
- Exclude costs associated with mitigating the impacts of interregional travel.
- Allow credits against mitigation costs for local public and private contributions to improvements to the CMP Highway System.
  - For toll road facilities, allow credits only for local public and private contributions which will not be reimbursed from toll revenues or other state or federal sources.
- Report annually on actions taken to adopt and implement a program to analyze the impacts of land use decisions on the CMP Highway System and to estimate the costs of mitigating those impacts.

### **SECTION 3 - ACTIONS REQUIRED OF LOCAL AGENCIES**

The provisions of CMP legislation, as summarized in the preceding section, impose a requirement on local jurisdictions to carry out certain actions in order to demonstrate their compliance with the CMP program. This compliance will maintain eligibility to receive state gas tax funds made available by the voter approved Proposition 111. The actions and documentation requirements related to the identification and analysis of traffic impacts include the following:

- A TIA will be required for CMP purposes for all proposed developments generating 2,400 or more daily trips. For developments which will directly access a CMP Highway System link, the threshold for requiring a TIA should be reduced to 1,600 or more trips per day.
- Document procedures used to identify and analyze traffic impacts of new development on CMP Highway System. This documentation should include the following:
  - Identification of type of development proposals which are subject to a traffic impact analyses (TIA).
  - Description of required or acceptable TIA methodology
  - Description of inter-jurisdictional coordination process used when impacts cross local agency boundaries
- Document procedures/standards used to determine the costs of mitigation requirements for impacts of new development on CMP Highway System.
- Document methodology and procedures for determining applicable credits against mitigation costs including allowable credits associated with contributions to toll road facilities.
- Establish annual monitoring and reporting process to summarize activities performed in analyzing the impacts of land use decisions on the CMP Highway System and in estimating the associated mitigation costs. Procedures for incorporating mitigation measures into the Capital Improvement Program should also be established.
- For the first year, local jurisdictions may assume that all interregional travel occurs on the freeway system or they may develop an analysis methodology to determine the amount of interregional travel occurring on arterials which are part of the CMP Highway System. During the first year, TIAs need to analyze only the impacts to arterial portions of the CMP Highway System.

## **SECTION 4 - CMP TRAFFIC IMPACT ANALYSIS METHODOLOGY**

In order to assure that the CMP Program meets its objectives of linking land use decisions with the adequate evaluation of impacts related to those decisions, traffic impact analyses must often be undertaken. There are a number of essential elements which should be included in traffic impact analyses (TIA) used to support the program. Many local jurisdictions already employ development review processes which will be adequate for addressing CMP requirements. For those jurisdictions wishing technical guidance in carrying out the analysis of traffic impacts on the CMP Highway System, this section offers an appropriate TIA methodology.

### **PROJECTS REQUIRING TIA ANALYSIS**

All development in Orange County will use the CMP Network to a greater or lesser extent from time-to-time. The seven-year capital improvement program, together with deficiency plans to respond to deficiencies which cannot be resolved in the 7-year timeframe, are developed in response to anticipated growth in travel within a jurisdiction. Thus, a certain level of travel growth is addressed in the normal planning process and it is not necessary to evaluate relatively small projects with a TIA or to rely on TIA's as the primary means of identifying needed CMP Highway System improvements. Furthermore, County voters have approved a sales tax increase which will fund major improvements to the transit and highway systems serving the County.

Many jurisdictions will require an EIR for a proposed development project. When required, the EIR should include steps necessary to incorporate the required CMP analysis. Most or all of the TIA elements described in this section would normally be incorporated into the typical EIR traffic analysis.

Certain development projects not requiring an EIR should still be evaluated through a TIA process due to their land use type, intensity, proximity to the CMP network, and/or duration of development timeframe. In other words, developments which will significantly alter the anticipated demand on a CMP roadway should be evaluated through a TIA approach.

At the present time, there is a wide-ranging approach to determining which projects will require a TIA. In some jurisdictions, there are formal guidelines, while in others it depends primarily on the judgement of a member of staff relative to the probable significance of the project's impact on the surrounding road system.

The OCTC TIA guidelines recommended defining three percent of the level of service standard as significant impact. This seems reasonable for application for CMP purposes. Thus, project impacts of three percent or less can be mitigated by impact fees or other revenues. Projects with a potential to create an impact of more than three percent of Level of Service E capacity will require TIA's. On this basis, it is recommended that all development projects which generate more than 2,400 daily trips be subject to a TIA for CMP evaluation. For projects which will directly access or be in close proximity to a CMP Highway System link a reduced threshold of 1,600 trips/day would be appropriate. Appendix B provides background information of the derivation of these threshold values.

## **TIA PROCESS**

There are a number of essential elements in the TIA process itself. It is desirable that all of these elements be evaluated within an acceptable range of criteria in order to assure the objectives of the CMP process and to maintain a reasonable degree of equity from jurisdiction to jurisdiction. It is recognized, however, that for certain of the elements, some variations relating to professional judgement and local criteria and characteristics are necessary and appropriate to the process. These factors have been fully considered in developing the descriptions of the following elements.

- Evaluation of existing conditions
- Trip generation
- Internal capture and passer-by traffic
- Trip distribution and assignment
- Radius of development influence
- Background traffic
- Capacity analysis methodology
- Impact costs/mitigation

### **Evaluation of Existing Conditions**

In order to evaluate the relative impacts of a proposed development, determine CMP Highway System status and define appropriate mitigation for new impacts, it is necessary to understand the existing conditions on the affected roadway network. Evaluation of existing conditions is common to nearly all jurisdictions in Orange County. Given that most jurisdictions use link and intersection capacity analysis techniques compatible with the techniques identified in the level-of-service component, no changes in existing local jurisdiction procedures should be necessary in connection with the CMP Program.

### **Trip Generation**

At the foundation of traffic impact analyses is the quantification of trip generation. Use of the ITE Trip Generation Manual is common throughout Orange County. In addition, other widely accepted practices are being used when appropriate to supplement the lit data. These practices include use of acceptable rates published by local agencies and surveys conducted at similar sites, subject to approval of the reviewing agency. Given the uniformity of practice in Orange County to date, no major adjustments in this procedure should be required. It would be desirable however to establish a central library for reporting the results of special trip generation studies and making these results available to all other jurisdictions who wish them.

## **Internal Capture and Passer-by Traffic**

Techniques for identifying the internal relationship of travel within mixed-use developments and the degree to which development captures passer-by trips as opposed to creating new trips are being applied by approximately 2/3 of the local jurisdictions within Orange County. The use of guidelines in the ITE Trip Generation Manual and appropriate professional judgement are the predominant techniques employed. To supplement the guidance available through ITE documentation, local jurisdictions are encouraged to undertake additional studies to document rates applicable within their jurisdiction. The determination of applicable rates should be undertaken by experienced transportation engineering professionals with thorough documentation of the methodology, data, and assumptions used. It is recommended that those jurisdictions which do not currently allow these adjustments establish revised TIA procedures incorporating this element. As with trip generation data, a central library would be desirable for reporting of data and analyses performed locally related to determination of appropriate factors.

## **Trip Distribution and Assignment**

Several appropriate distribution and assignment techniques are used in Orange County, depending on the size of the development and the duration of buildout. Manual and computer modeling approaches are used as appropriate. Manual methods based on the best socio-economic information available to the agency and applicant should be acceptable except when a development's size makes a modeling approach more appropriate. Sources of this information include demographic surveys, market analyses, and previous studies.

## **Radius of Development Influence**

There are numerous ways to identify the study area to be evaluated in a TIA. These include both qualitative and quantitative approaches. One of the most effective ways is through the determination of the quantity of project traffic on CMP roadway links compared to a selected level of impact. The goal of a quantitative approach is to be sure that all elements of the CMP network are addressed in a comparable manner from jurisdiction to jurisdiction. This is important due to the potential for overlapping impacts among jurisdictions. It is also important to maintain flexibility within a quantitative process to allow transportation professionals at local jurisdictions to add areas to the study which are of specific concern. It is not intended that CMP practices should restrict this aspect of each agency's existing TIA process.

It is recommended that the study area for CMP Highway System links be defined by a measure of significant impact on the roadway links. As a starting point, it is proposed that the measure be three percent of existing roadway capacity. Thus, when a traffic impact analysis is being done it would require the inclusion of CMP roadway links that are impacted by 3 percent or more of their LOS E capacity. If a TIA is required only for CMP purposes, the study area would end when traffic falls below three percent of capacity on individual roadway links. If the TIA is also required for other purposes, additional analysis can be required by the local jurisdiction based on engineering judgement or local regulation as applicable.

## **Background Traffic**

In order for a reasonable assessment of the level of service on the CMP network, it is necessary to not only identify the proposed development impact, but also the other traffic which can be

expected to occur during the development of the project. There are numerous methods of evaluating background traffic. The implications of these alternative methods are that certain methodologies may result in deficiencies, while other methodologies may find an acceptable operating conditions.

The cost to mitigate impacts of a land use decision is unrelated to background traffic. Rather, it is related to the cost of replacing the capacity which is consumed by the proposed development. However, it is necessary to understand background traffic in order to evaluate level-of-service. Background traffic is composed of existing traffic demands and growth from new development which will occur over a specific period of time. Both the existing and the growth elements of background traffic contain sub-elements. These include traffic which is generated within Orange County, that which begins and/or ends within the County, and interregional traffic which has neither end in Orange County. CMP legislation stipulates that interregional traffic will not be considered in CMP evaluations with respect to LOS compliance or determining costs of mitigation.

Given that the CMP process is new, there is no existing practice of separating interregional traffic from locally generated traffic. Until a procedure for identifying interregional traffic is developed, local jurisdictions may assume that all interregional traffic occurs on the freeway system. Initially TIA's required for CMP purposes need only analyze the impacts to arterial portions of the CMP Highway System.

Local governments in Orange County are generally consistent in their approach to background traffic. There are three major approaches used. The first is to use historical growth factors which are applied to existing traffic volumes to project future demands. The second is to aggregate the impacts of specific individual projects which have been approved or planned but not built to identify the total approved background traffic on the study area roadway system. A third method is to use computer modeling to identify total traffic demands which represent both background traffic and project impact traffic. For the present CMP program, it is recommended that the discretion for the appropriate process lie within the local jurisdiction, however, the method to be used in the jurisdiction should be clearly defined in the agency's TIA rules and procedures. In addition, it is recommended that all jurisdictions create a listing of approved development projects and a map showing their locations which would be updated frequently and be available to other jurisdictions on request. The listing should include information related to type and size of land use and phasing for each project.

It is appropriate to periodically update long range forecasts based on development approvals and anticipated development growth in the region and plan a transportation system which will provide the necessary level-of-service for this amount of development. When a development proposal will significantly alter this long-term plan, it will be necessary to address the aggregate of all approved development to assure that there is a long-term solution. However, from a TIA perspective, it is reasonable and practical to consider only that development traffic which can be expected to exist at the time of buildout of a new development proposal. That is to say, for CMP purposes background traffic should be limited to that traffic which is generated by development which will exist at the time of buildout of a proposed development. CEQA requirements may dictate that other background traffic scenarios be analyzed as well.

## Capacity Analysis Methodology

Once the projected traffic demands are known, it is necessary to evaluate these demands relative to available and planned roadway capacity. The methodology used in capacity determination in Orange County is relatively uniform. Additionally, the level of service (LOS) component of the CMP Program has identified specific criteria which are to be used in determining level-of-service on the CMP Highway System.

## Impact Costs/Mitigation

This element is at the heart of the CMP process; that is to identify the costs of mitigating a land development decision on the CMP System.

The current practice throughout Orange County is to require mitigation only when the level-of-service standard is exceeded. However, some jurisdictions require regular impact mitigation fees and phasing road improvements with development. The growth management requirement of the sales tax Measure M mandates a traffic phasing program. Often, mitigation is equated to construction of roadway improvements to maintain an acceptable level-of-service and/or to maintain the existing level-of-service. In some instances, a pay and go mitigation approach is allowed. This means that new development may pay its fair share and go forward and the provision of improvements remain the responsibility for the local jurisdiction.

In order to assess responsibility for impacts, there are a variety of approaches. One approach is to consider impact traffic as a percent of total traffic. Impact traffic may also be taken as a percentage of existing capacity. Another common approach is to use the net impact of development as a percent of total future traffic demand.

Since CMP legislation requires the identification of costs of land use decisions and impacts across jurisdictional lines, it is desirable that the CMP program have a consistent method for identifying the costs of development impacts. On the other hand, a wide variety of mitigations can occur from jurisdiction to jurisdiction.

It is recommended that the impact costs be calculated as the total of new development traffic on a roadway link requiring improvement divided by the capacity of the improvement times the cost of the improvement. This can be expressed in a formula as follows.

$$\text{Impact Cost} = \frac{\text{development traffic}}{\text{capacity of improvement}} \times \text{improvement cost}$$

Improvements to be included in the cost analysis should be those identified in the jurisdiction's adopted Circulation Element and any additional improvements identified in the development TIA. The total impact cost for a development would be the sum of costs for all significantly impacted links. Funds collected from these assessments could be aggregated and applied to specific projects on an annual basis in accordance with locally established priorities. If project impacts extend across jurisdictional boundaries the impact costs calculated for significantly impacted links in an adjacent jurisdiction should be allocated to that jurisdiction for use in its program of prioritized improvements.



Through this process, progress can be achieved in implementing system improvements without having to wait for 100% of the funds being collected for each individual improvement. In theory, all required improvements will be accomplished over time as new developments are approved which will generate traffic to utilize available and planned system capacity. The costs should be based on recent Unit cost experience in Orange County and may include planning, permitting, preliminary engineering, design, right-of-way, construction, landscaping, construction inspection, and, if applicable, financing costs.

There are two approaches to mitigation. One is traffic reduction and the other is to build improvements to accommodate the new traffic. Traffic reduction through transportation demand ordinances or other regulations which will reduce impacts can be calculated in the same way a development impact would be calculated. But in this case, it would be taken as a credit or a reduction in impact. Mitigation techniques such as TDM or phasing or reduction in project intensity merely reduce for a new development the amount of impact which must be mitigated and are changes which should occur prior to the calculation of project impact costs. A monitoring program should be established to confirm that anticipated reductions are realized.

To comply with the CMP process, a local jurisdiction should accomplish two things. First, it should demonstrate that it is analyzing and mitigating the impact of new development on the CMP Highway System. Second, it should maintain the level-of-service standards or adopt a deficiency plan Consistent with CMP legislation. In order to demonstrate the mitigation which has been undertaken, the local jurisdiction should maintain a record of the cumulative impact cost of all development approvals and the cumulative mitigation value of improvements provided by the local jurisdiction. These could be construction programs or credits from a TDM ordinance or other traffic reduction measures. It is then only necessary to show on an annual basis that the total improvement costs plus traffic reduction credits are equal to or greater than the total impact cost of new development approvals to prove mitigation compliance.

The maintenance of level-of-service would come through implementation of improvements contained in the 7-year capital improvements element, Measure M and state-funded improvements, additional improvements which may be made in conjunction with development approvals, and from deficiency plans which may be required from time to time. From a TIA perspective, it would be necessary to document the following:

- a. the level-of-service on the CMP network at buildout of the proposed development will be: 1) level—of-service “E or better, or 2) will not result in a cumulative increase of more than 0.10 in v/c ratio if the established LOS standard is worse than LOS E.
- b. a deficiency plan exists to address the links for which level-of-service is not provided, and
- c. a deficiency plan will be developed for a new link when a deficiency will occur.

## **DOCUMENTATION OF RULES AND PROCEDURES**

To assure a clear understanding of the TIA procedures which are necessary to support a viable CMP program, it is recommended that a set of rules and procedures be established by each local jurisdiction. Ideally, these rules and procedures would cover the requirements for the full TIA analysis and would include minimum requirements for the CMP process. Local jurisdictions which prefer not to adopt separate CMP TIA standards could implement standards for CMP requirements within a TIA and maintain their existing approach for all other aspects of their existing TIA process. The following is a summary of the elements which should be included in CMP procedures documentation and the methodologies applicable to each element.

1. **Thresholds for Requiring a TIA for CMP** - Projects with the potential to create an impact of more than 3% of LOS “E” capacity on CMP Highway system links should require a TIA. All projects generating 2,400 or more daily trips should require a TM for CMP evaluation. If a project will have direct access to a CMP link this threshold should be reduced to 1,600 or more daily trips. A TIA should not be required again if one has already been performed for the project as part of an earlier development approval which takes the impact on the CMP Highway System into account.
2. **Existing Conditions Evaluation** - Identify current level-of-service on CMP roadways and intersections where the proposed development traffic will contribute to 3 percent of the existing capacity. Use procedures defined in the level-of-service component for evaluation of level—of-service.
3. **Trip Generation** - ITE trip generation rates or studies from other agencies and locally approved studies for specific land uses.
4. **Internal Capture and Passerby Traffic** - Justification for internal capture should be included in the discussion. Passerby traffic should be calculated based upon ITE data or approved special studies.
5. **Distribution and Assignment** - Basis for trip distribution should be discussed and should be linked to demographic or market data in the area. Quantitative and/or qualitative information can be used depending on the size of the proposed development. As the size of the project increases, there should be a tendency to use a detailed quantitative approach for trip distribution. Trip assignment should be based on existing and projected travel patterns and the future roadway network and its travel time characteristics.
6. **Radius of Impact/Project Influence** - The analysis should identify the traffic assignment on all CMP roadway links until the impact becomes less than 3 percent of level of service E capacity.

7. **Background Traffic** - Total traffic which is expected to occur at buildout of the proposed development should be identified.
8. **Impact Assessment Period** - This should be the buildout timeframe of the proposed development. -
9. **Capacity Analysis Methodology**- The methodology should be consistent with that specified in the level-of—service component of the CMP Program.
10. **Improvement Costs** - The cost of roadway improvements should include all costs of implementation including studies, design, right-of-way, construction, construction inspection, and financing costs, if applicable.
11. **Impact Costs and Mitigation** - The project impact divided by the capacity of a roadway improvement times the cost of the improvement should be identified for each significantly impacted CMP link and summed for the study area.
12. **Projected Level-of-Service** - The TIA should document that the projected level-of-service on all CMP links in the study area will be at Level-of-Service “E” or the existing level-of-service whichever is less, or that a deficiency plan exists or will be developed to address specific links or intersections.

## **SECTION 5 – APPENDICES**

Appendix A – Summary of TIA Update Survey Results (available under separate cover)

Appendix B – Derivation of Thresholds for Projects Requiring TIA Analysis

## **APPENDIX B – DERIVATION OF THRESHOLDS FOR PROJECTS REQUIRING TRAFFIC IMPACT ANALYSIS**

The TIA process recommendation is to require a TIA for any project generating 2,400 or more daily trips. This number is based on the desire to analyze any impacts which will be 3% or more of the existing capacity. Since most CMP Highway System will be four lanes or more, the capacity used to derive the threshold is a generalized capacity of 40,000 vehicles/day. The calculations are as follows:

$$\begin{aligned} 40,000 \text{ veh./day} \times 3\% &= 1,200 \text{ veh./day} \\ \text{Assuming 50/50 distribution of project traffic on a CMP link} \\ 1,200 \times 2 &= 2,400 \text{ veh./day total generation} \end{aligned}$$

As can be seen, a project which will generate 2,400 trips/day will have an expected maximum link impact on the CMP system of 1,200 trips/day based on a reasonably balanced distribution of project traffic. On a peak-hour basis, the 3% level of impact would be 120 peak-hour trips. For intersections, a 3% level of impact applied to the sum of critical volume (1,700 veh./hr.) would be 51 vehicles per hour.

A level of impact below 3% is not recommended because it sets thresholds which are generally too sensitive for the planning and analytical tools available. Minor changes in project assumptions can significantly alter the results of the analysis and the end result can be additional unnecessary cost to the developer and additional review time by staff with little benefit. Additionally, a lower threshold of significance will expand the study area, which also increases effort and costs, and increases the probability that the analysis would extend beyond jurisdictional boundaries.

The following illustration shows that the 2,400 trip/day threshold would be expected to produce a 3% impact on the CMP System only when the project has relatively direct access to a CMP link. As a project location moves further off the CMP System the expected impacts is reduced. With a more directional distribution of project traffic a development with direct CMP System access could produce a 3% impact with somewhat lower daily trip generation.

The table included on the following page illustrates the daily trip generation thresholds which would produce various levels of impact on the CMP System for project locations with and without direct access to the system. Based on a 3% impact the trip generation thresholds for requiring a TIA are 1,600 veh./day with direct CMP System access and 2,400 veh./day if a project does not have direct CMP System access.

**CMP Highway System Impacts for Development Generating 2,400 trips/day  
Based on proximity to CMP System**

	50		50		250	
	80	80		280	80	
100	100	100		300	100	300
200	600	800	2400	800	600	100
300	100	300		200	100	200

**MAXIMUM IMPACT < 1%**

400						200
200	600	700			600	800
	200	300	1200 1200		300	200
			2400			200

**MAXIMUM = 1.8%**

	400			100		200
200	800	1000	1200 1200	900	700	300
	200		2400	100		200

**MAXIMUM = 3%  
COULD BE 4.5% WITH 75/25 SPLIT**

**Alternative Criteria**

Assume 75/25 distribution

For direct access to CMP System:  
 $1,200 / .75 = 1,600 \text{ veh./day}$

For no direct CMP System Access:  
Approximately 1/3 less impact on CMP System  
 $1,600 \times 3/2 = 2,400 \text{ veh./day}$

Daily Trip Generation

Significant Impact	Direct Access	No Direct Access
1%	500	800
2%	1,100	1,600
3%	1,600	2,400

**Appendix D: Data and Modeling Consistency Requirements**

## **ORANGE COUNTY CONGESTION MANAGEMENT PROGRAM**

### **IMPLEMENTATION OF LAND USE/SOCIOECONOMIC DATA CONSISTENCY REQUIREMENT FOR MODELING IN CMP-REQUIRED TRAFFIC IMPACT ANALYSES**

#### **Data Consistency**

Data consistency is required under the terms of an agreement reached between OCTA and SCAG. This requirement was incorporated in the County's 1993/1994 CMP Preparation Manual as part of the Modeling Consistency component. In cases where a traffic model is used to perform a CMP-required traffic impact analysis, the requirement mandates the reconciliation between the City's land use/socioeconomic data (SED) and Orange County Projections (OCP) data.

OCP is typically approved by the Orange County Council of Governments (OCCOG) and the Orange County Board of Supervisors, and is also incorporated into the Southern California Association of Governments (SCAG) regional socioeconomic database. For consistency purposes Orange County agencies are obligated to implement this requirement. The Orange County Subarea Modeling Guidelines Manual details a potential process of converting land-use based data to socioeconomic data equivalents. This data consistency requirement has become part of a larger set of ongoing modeling consistency requirements under CMP.

#### **Model Consistency**

The Orange County Traffic Analysis Model (OCTAM) is a "state-of-the-practice" multi-modal transportation tool specifically designed to evaluate alternatives to support regional planning activities in Orange County. OCTAM is often supplemented with additional detailed analysis and/or requires judicious interpretation of its results when applied specifically for detailed sub-regional analysis. For this reason some local agencies develop subarea models to reflect local transportation conditions.

In order to support this level of detailed analysis and to ensure consistency, OCTA has developed procedures by which "subarea" traffic models could be used to supplement OCTAM regional data for project specific and local area analyses. The procedures on how this could be accomplished are documented in the most recently adopted Orange County Subarea Modeling Guidelines Manual.

On January 25, 1999, the OCTA Board of Directors adopted the Orange County Subarea Modeling Guidelines Manual and authorized staff to implement the guidelines' certification process, effective one year after completion of the Orange County Transportation Analysis Model, Version 3. Since then, the Subarea Modeling Guidelines Manual has been revised to reflect the regularly updated OCTAM and the OCP growth projections. The updated manual requires that the cities' subarea models must be certified by OCTA for consistency with OCTAM to satisfy Congestion Management Program (CMP) and OCTA funding program requirements.



## **Applicability**

Consistency requirements will apply in all situations where a CMP-required traffic impact analysis is performed using transportation modeling. This includes situations in which a local agency model or a consultant model is employed. The local agency having jurisdiction over the proposed project will be responsible for assuring that the reconciliation requirement is met through the traffic impact analysis process and through documentation in the traffic impact analysis report itself.

## **Effective Date**

### Data Consistency

The requirement is effective on March 1, 1994. Any proposed project for which a CMP-required traffic impact modeling analysis was initiated on or after March 1, 1994, must comply with this requirement. Any proposed project for which such analysis was already underway or completed before March 1, 1994, would not be affected by this requirement.

### Model Consistency

Subarea traffic models used for CMP purposes must be consistent with the most recently adopted OCTAM as specified in the Orange County Subarea Modeling Guidelines Manual.

## **Required Data Reconciliation**

The reconciliation would be required to be performed at the citywide level (or equivalent) in the jurisdiction in which the proposed project is located. The following data reconciliation check would need to be performed:

1. From the local model database, housing unit totals would be aggregated across all local database housing categories, and that total would be compared directly to the equivalent dwelling unit total from OCP.
2. All other nonresidential land uses from the local model database would be converted into an equivalent employment total across all land uses, and that total would be compared directly to the total employment from OCP.
3. Local agencies who have their own sets of conversion rates for converting land use data into equivalent employment totals would be free to use those conversion rates for the purposes of this reconciliation. Such agencies would simply be asked to provide a tabulation of the rates used and a brief documentation of how those rates historically have been used or how they were derived by the local agency.

4. For local agencies that would like employment conversion rates provided to them for their use in meeting this requirement, please refer to the most recently adopted Orange County Subarea Modeling Guidelines Manual for applicable land use to socioeconomic data conversion rates.
5. Local agencies would be free to include other rates for individual local land use categories where, in their judgment, different rates are justified, provided that the source of those rates is documented and the rationale for using them is explained.

### **Time Frames for Which the Data Reconciliation Is to Be Performed**

For each CMP-required traffic impact analysis using modeling, the reconciliation will be required to be performed for two different time frames:

#### **1. “Base year” time frame**

For the purposes of this requirement, “base year” will be taken to mean a current or recent year for which the model was calibrated. The local agency will be allowed considerable discretion in selecting the “base year” appropriate to the circumstance of the particular model that was employed in the traffic impact analysis.

The purpose of the “base year” reconciliation is to “benchmark” the local model data against OCP for “current” conditions. It is important that it be demonstrated that there are not any unexpected or unexplained significant discrepancies between the two databases before moving on to the “future year” reconciliation.

#### **2. “Future year” time frame**

For the purposes of this requirement, “future year” will be taken to mean the specific future year (or future scenario) for which the full impacts of the proposed project are analyzed. Any future year within the future time horizon covered by OCP could be used as the “future year” (see also the discussion which follows later in this section for “buildout” scenarios). The “future year” should match the “future year” for which the model was employed to forecast the full traffic impacts of the proposed project.

If the “future year” happens to match one of the five-year increment milestones employed by OCP, then the local data can be compared to the OCP data directly. If the “future year” happens to fall between the five-year increments, the local agency will be free to interpolate between the OCP data sets for the 5-year time frame immediately preceding and immediately following the “future year” in question. All source OCP data required to perform this reconciliation is included in the guidance document that has been produced to assist local agencies in performing this reconciliation.

In some cases, the “future year” used by local agencies are termed as “buildout”, a future scenario at which full general plan land use intensities are assumed to be in place. Such a “buildout” scenario is not necessarily associated with a specific future calendar year. Moreover, it would not be uncommon for “buildout” to occur later than the latest “future” year in the OCP forecast array. If the local agency uses “buildout” that is understood to be beyond the OCP horizon, then the local agency is requested to do the reconciliation exercise comparing local buildout data to the latest “future” year in OCP, with the understanding that buildout numbers can be substantially higher.

The purpose of the “future year” reconciliation is to assure that the land use or socioeconomic data on which future project traffic forecasts are based, will adequately account for future project impacts on the CMP highway system. This is key to the purposes of model consistency and data consistency requirements in CMP.

### **Tolerances for Satisfactory Data Reconciliation**

It is the ultimate goal to have models and databases be as consistent as possible. As a practical matter, and for the purposes of meeting this data reconciliation requirement, it will generally be considered that the local data and OCP data have been satisfactorily reconciled if the two databases can be shown to come within 10 percent for the “base year” and “future year” time frame.

Recognizing that a major purpose of the reconciliation requirement is to assure that project impacts to the CMP highway system are adequately accounted for and adequately mitigated, close attention should be given to any reconciliation that shows the local data totals being less than the comparable totals from OCP.

Particularly for “future year” reconciliation, there may be instances where differences in the assumed timing of future development lead to differences between the local data totals and the comparable OCP figures. In such cases, the reconciliation should account for those differences in assumptions as explicitly as possible, and the variance from such different assumptions should be documented.

In cases where the local agency employs “buildout” as the “future year”, and where “buildout” is understood to be beyond the OCP horizon year, the reconciliation will be considered satisfactorily performed if the buildout data is shown to meet or exceed the equivalent data from the latest “future” year in the OCP forecast series. It will be expected that a good faith effort will have been made to assure that the level to which “buildout” exceeds OCP horizon data has been examined and that its order of magnitude bears some logical relationship to the proportion of future development that the local agency anticipates to extend beyond the horizon year.

### **Documentation Requirement for the Reconciliation**

For any CMP-required traffic impact analysis in which modeling is used, it will be required that the above-defined data reconciliation be documented in writing and included as a section in the traffic impact analysis report that is ultimately prepared.

The required documentation need not be lengthy, but it should, as a minimum, include the following:

- A tabular accounting showing the conversion of the local model land use data to OCP equivalents, for both “base year” and “future year”;
- A clear presentation showing the raw numerical comparison and the percentage difference between the local model data totals and the comparable data from OCP, for both “base year” and “future year”;
- Brief text accounting for the nature and numerical extent of any significant differences between the two databases, for both “base year” and “future year”;
- A statement affirming that the two databases have been reconciled to within 10 tolerance for the “base year” and “future year”; or otherwise arguing why it is believed that the purposes of the reconciliation requirement have been met.

The local agency having jurisdiction over the proposed project will be responsible for assuring that the required reconciliation documentation is included in each CMP-required traffic impact analysis report where modeling is used.

Once each CMP cycle, each local agency will be required to affirm to OCTA that it has complied with this requirement. The affirmation will be in the form of a CMP compliance checklist response to OCTA, in which the local agency certifies that all CMP-required traffic impact analysis reports using modeling that have been submitted to the local agency or prepared by the local agency, do indeed include the required reconciliation documentation.

#### Clarification

The traffic models governed by this particular requirement are only those local traffic models which employ area wide existing and future land use data or socioeconomic data to estimate total future traffic.

This is to be distinguished from those local “traffic models” which build on current measured traffic volumes, and which use land use data only pertaining to specific proposed projects to estimate increments of traffic that would be added to those measured volumes. Such models do not employ the types of area wide existing or future land use databases that are the subject of this model consistency requirement.