2011 Orange County Congestion Management Program

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Chapter 1: Introduction

Purpose & Need

In June 1990, the passage of the Proposition 111 gas tax increase required California's urbanized areas – areas with populations of 50,000 or more – to adopt a Congestion Management Program (CMP). The following year, Orange County's local governments designated the Orange County Transportation Authority (OCTA) as the Congestion Management Agency (CMA) for the County. As a result, OCTA is responsible for the development, monitoring, and biennial updating of Orange County's CMP.

The passage of Assembly Bill 2419, in July 1996, provided local agencies the option to elect out of the CMP process without the risk of losing state transportation funding. However, local jurisdictions in Orange County expressed a desire to continue the existing CMP process, because the requirements are similar to those of the Orange County Measure M Growth Management Program (GMP), and because it contributes to fulfilling federal requirements for the Congestion Management System (CMS), prepared by the Southern California Association of Governments (SCAG). The OCTA Board of Directors affirmed the decision to continue with the existing CMP process on January 13, 1997. Although the GMP ends with the sunset of Measure M, the CMP will remain relevant as an eligibility requirement under Measure M2.

As mentioned above, the CMP also contributes to federal CMS requirements, which work towards a systematic process to manage congestion and provide information to decision-makers on transportation system performance and alternative strategies for alleviating congestion and enhancing the mobility of persons and goods. This database of information on congestion can then be used for selecting and implementing cost effective strategies to manage new and existing facilities. The CMS also establishes performance measures to identify and monitor the extent of both recurring and non-recurring congestion and the effectiveness of congestion reduction and mobility enhancement strategies. Urban areas with populations over 200,000 and areas that are non-attainment for air quality such as Southern California are required to include projects in the Transportation Improvement Program (TIP) that are part of the regional CMS.

CMP Goals

The goals of Orange County's CMP are to support regional mobility and air quality objectives by reducing traffic congestion; to provide a mechanism for coordinating land use and development decisions that support the regional economy; and to determine gas tax fund eligibility.

To meet these goals, the CMP contains a number of policies designed to monitor and address system performance issues. OCTA developed the policies that makeup Orange County's CMP in coordination with local jurisdictions, the California Department of Transportation (Caltrans), and the South Coast Air Quality Management District (SCAQMD).

State Legislation

Required Elements

California Government Code Section 65089(b) requires the CMP to include specific elements, as summarized below. The full text of the Government Code can be viewed at www.leginfo.ca.gov/calaw.html, sections 65088-65089.10.

Traffic Level of Service Standards – §65089(b)(1)(A) & (B)

Traffic level of service (LOS) standards shall be established for a system of highways and roadways. The highways and roadway system shall be designated by OCTA and shall include, at minimum, all state highways and principal arterials. None of the designated facilities may be removed, and new state highways and principal arterials must be added, except if they are within an infill opportunity zone. The LOS must be measured using a method that is consistent with the Highway Capacity Manual.

The LOS standards must not be below level of service "E", unless the levels of service from the baseline CMP dataset were lower. If the LOS does not meet the minimum standard and is outside an infill opportunity zone, a deficiency plan must be adopted.

Chapter two specifically addresses this element.

Performance Measures – §65089(b)(2)

Performance measures shall be established to evaluate the current and future performance of the transportation system. At a minimum, measures must be established for the highway and roadway system, frequency and routing of public transit, and for the coordination of transit service by separate operators. These measures will be used to support improvements to mobility, air quality, land use, and economic objectives and shall be incorporated into the Capital Improvement Program, the Land Use Analysis Program, and any required deficiency plans.

Chapters two and three specifically address this element.

Travel Demand – §65089(b)(3)

A travel demand element shall be established to promote alternative transportation methods, improve the balance between jobs and housing, and other trip reduction strategies. These methods and strategies may

include, but are not limited to, carpools, vanpools, transit, bicycles, park-and-ride lots, flexible work hours, telecommuting, parking management programs, and parking cash-out programs.

Chapter four specifically addresses this element.

Land Use Analysis Program – §65089(b)(4)

A program shall be established to analyze the impacts of land use decisions on the transportation system, using the previously described performance measures. The analysis must also include cost estimates associated with mitigating those impacts. To avoid duplication, this program may require implementation through the requirements and analysis of the California Environmental Quality Act.

Chapter five specifically addresses this element.

Capital Improvement Program – §65089(b)(5)

The CMP shall use the performance measures described above to determine effective projects that mitigate impacts identified in the land use analysis program, through an adopted seven-year capital improvement program. This seven-year program will conform to transportation-related air quality mitigation measures and will include any projects that increase the capacity of the transportation system. Furthermore, consideration will be given to maintaining or improving bicycle access and safety within the project areas. Projects necessary for preserving investments in existing facilities may also be included.

Chapter six specifically addresses this element.

CMA Requirements

As Orange County's CMA, OCTA is responsible for the administration of the CMP, as well as providing data and models that are consistent with those used by the Southern California Association of Governments (SCAG). OCTA is also responsible for developing the deficiency plan processes. These requirements are described in the legislation, and are summarized below.

Modeling and Data Consistency – §65089(c)

In consultation with SCAG and local jurisdictions, OCTA shall develop a uniform data base on traffic impacts for use in a countywide transportation computer model. Moreover, OCTA shall approve transportation models that will be used by local jurisdictions to determine the quantitative impacts of development on the circulation system. Every local jurisdiction's traffic model must be based on the countywide model and standardized modeling assumptions and conventions. All models and databases shall be consistent with the modeling methodology and databases used by SCAG.

Appendix D, Attachment 1, addresses this requirement.

Deficiency Plan Procedures – §65089.4

OCTA is responsible for preparing and adopting procedures for local deficiency plan development and implementation.. OCTA's deficiency plan procedures must incorporate a methodology for determining if deficiency impacts are caused by more than one local jurisdiction within Orange County; in which case a multi-jurisdictional deficiency plan, adopted by all participating local jurisdictions, may be required. They must also establish a conflict resolution process for addressing conflicts or disputes between local jurisdictions in meeting the multi-jurisdictional deficiency plan responsibilities.

Chapter two discusses this requirement in more detail.

Chapter 2: Highway Level of Service

Level of Service Standards

In 1991, the OCTA implemented an Intersection Capacity Utilization (ICU) monitoring method, developed with technical staff members from local and State agencies, for measuring the Level of Service (LOS) at CMP Highway System (CMPHS) intersections. The CMP LOS grade chart is illustrated in Figure 1.

Figure 1: LOS Grade Chart

LOS Grade	ICU Rating
A	< .61
B	.61 - .70
C	.71 - .80
D	.81 - .90
E	.91 – 1.00
F	> 1.00

The first CMP LOS measurement recorded, which was in 1992 for most CMP intersections, established the baseline for comparing future measurements. During subsequent LOS monitoring, CMP statute requires that CMPHS intersections maintain a LOS grade of 'E' or better, unless the baseline is lower than 'E'; in which case, the ICU rating cannot increase by more than 0.1. The *Highway & Roadway System Performance Measures* section discusses the ICU method in more detail.

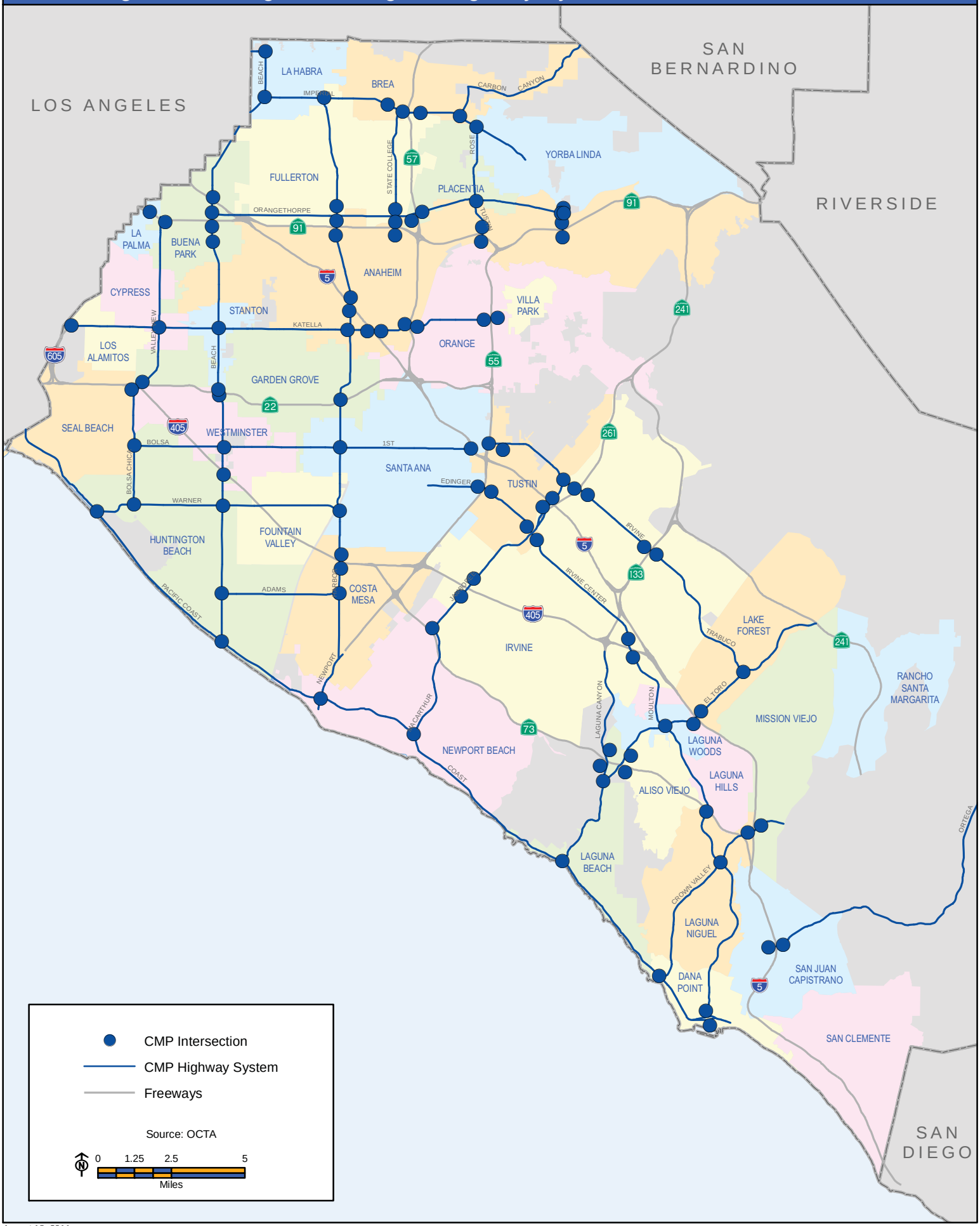
OCTA has an established CMPHS, consisting of Orange County's State highways and the arterials included in OCTA's Smart Street network (Figure 3). If, during any monitoring period, a CMPHS intersection is determined to be performing below the LOS standards the responsible agency must identify improvements necessary to meet the LOS standards. This is accomplished either through existing plans or capital improvement programs, or through the development of a deficiency plan. This is described in more detail in the *Deficiency Plans* section below.

The 2011 freeway monitoring results, provided by Caltrans District 12, are located in Appendix A. Caltrans is responsible for monitoring freeway performance and addressing any deficiencies on State operated facilities. Caltrans' responsibilities include, but are not limited to:

A. Evaluating current conditions and identifying deficiencies.
B. Developing plans and strategies to address deficiencies.
C. Evaluating development projects of local and regional significance to determine whether they will impact the State transportation system and, if so, working with lead agencies to develop potential mitigation measures.

For the State transportation system, Caltrans does not use CMP thresholds and analysis methodologies to determine if significant impacts occur under CEQA. Local agencies are encouraged to coordinate with the Caltrans Local Development/Intergovernmental Review Branch early in the development process to determine what methodologies and thresholds of significance should be used to identify impacts to the State transportation system.

Figure 2:
2011 Congestion Management Program Highway System



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Highway & Roadway System Performance Measures

This section discusses the process for determining ICU ratings, as well as how ICU ratings determine the LOS at CMPHS intersections. This method is generally consistent with the Highway Capacity Manual.

Overview of Intersection Capacity Utilization (ICU) 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). Counts are not taken during periods when irregular conditions exist (inclement weather, holidays, construction, etc.).

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 are able to move through an intersection in a single lane during a green light phase. 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 (lanes in which vehicles are allowed 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 which are at least 19 feet wide and prohibit on-street parking during peak hours) may also increase the saturation flow rate.

Roadway 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 1,700 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 in the 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 for 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 whether the intersections meet the performance standards described at the beginning of the chapter.

The 2011 LOS ratings for the CMP intersections have been mapped in Figure 3. The map in Figure 4 displays the LOS changes since the 2009 CMP report. Finally, a spreadsheet of the baseline and 2011 LOS ratings

for the CMP intersections, and corresponding ICU measurements, is located in Figure 5.

Note that in Figure 5, Orange County's average ICU rating has improved over the baseline. Between 1991 and 2011, the average AM ICU improved from 0.67 to 0.59 (a 12.97 percent improvement), and the PM ICU improved from 0.72 to 0.63 (a 13.24 percent improvement). The ICU improvements indicate that Orange County agencies are effectively operating, maintaining, and improving the CMP Highway System.

Figure 3:
2011 CMP Intersection Level of Service

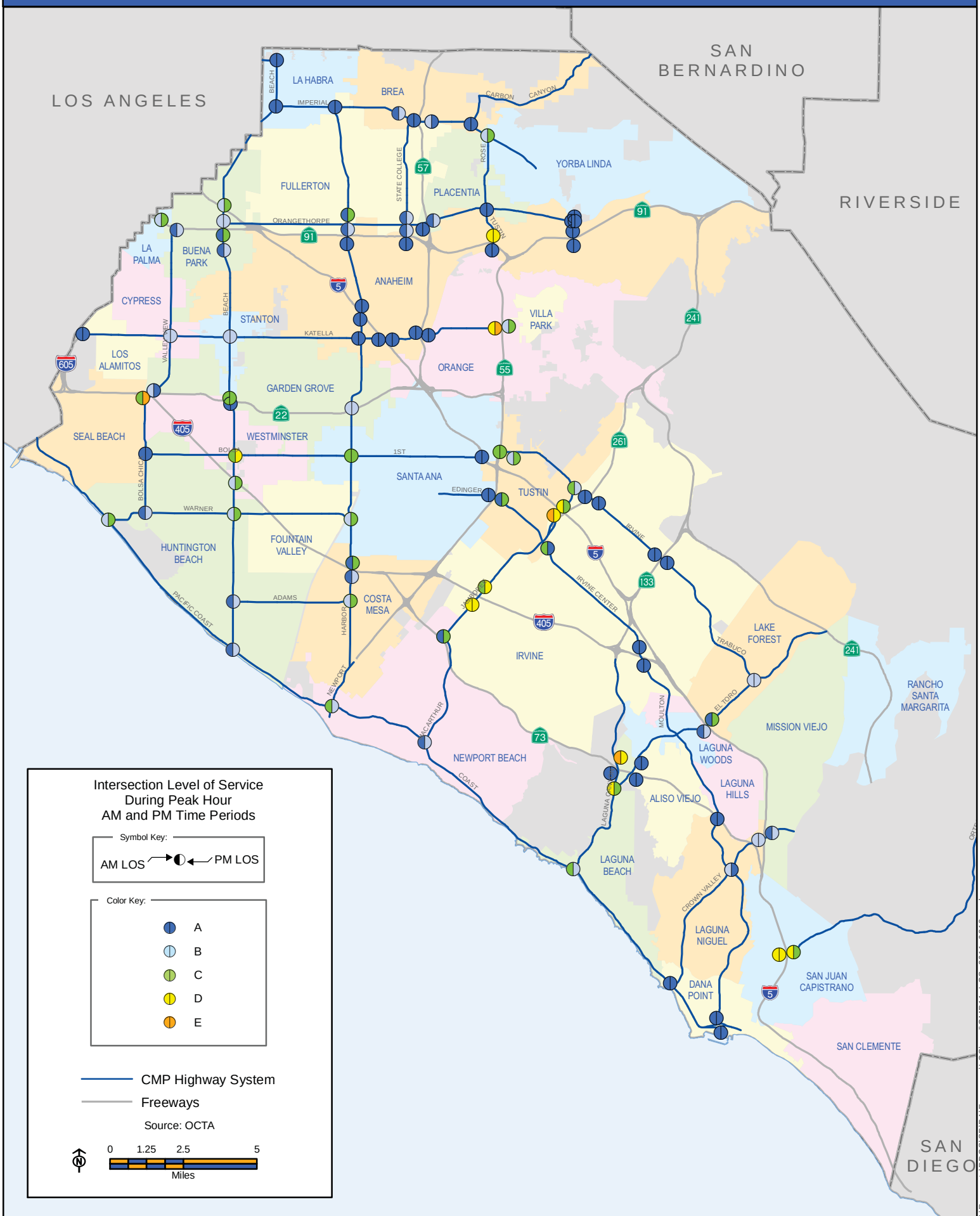

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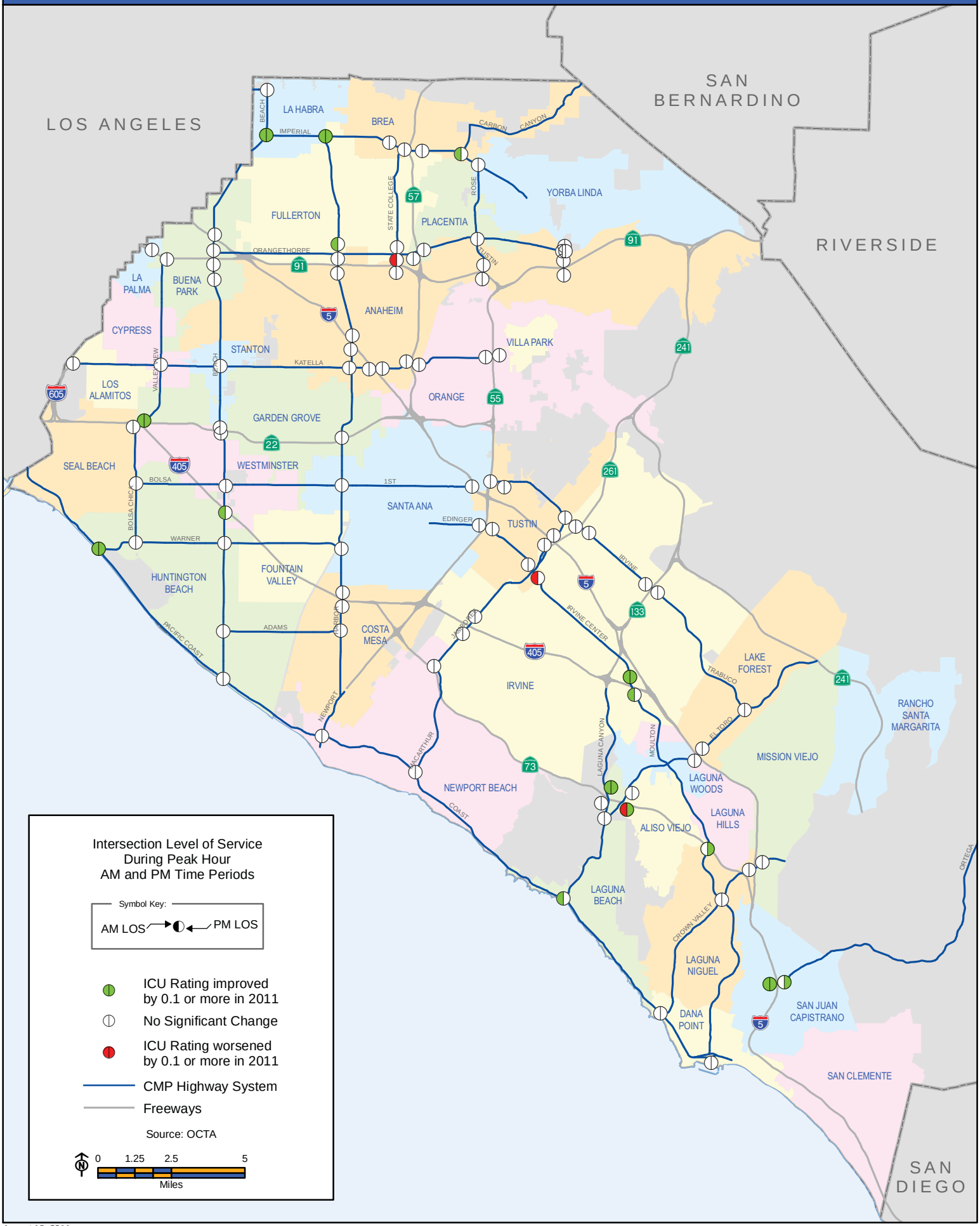
Figure 4:
2009 vs. 2011 CMP Intersection Level of Service



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Orange County Congestion Management Program
LEVEL OF SERVICE 2011

Intersection/Interchange	Jurisdiction	Baseline AM		2011 AM		Baseline PM		2011 PM		Percent Change	
		LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	AM ICU	PM ICU
Anaheim Blvd-I-5 NB Ramp/Katella Avenue	Anaheim	A	0.49	A	0.43	D	0.82	A	0.51	-12.24%	-37.80%
Harbor Blvd./Katella Avenue	Anaheim	A	0.53	A	0.49	B	0.67	A	0.60	-7.55%	-10.45%
I-5 SB Ramp\Harbor Boulevard	Anaheim	A	0.29	A	0.28	A	0.31	A	0.31	-3.45%	0.00%
SR-91 EB Ramp/Harbor Boulevard	Anaheim	A	0.46	A	0.48	A	0.52	A	0.59	4.35%	13.46%
I-5 NB Ramp/Harbor Boulevard	Anaheim	A	0.52	A	0.47	A	0.54	A	0.51	-9.62%	-5.56%
I-5 SB Ramp/Katella Avenue	Anaheim	A	0.48	A	0.52	A	0.41	A	0.54	8.33%	31.71%
Imperial Highway/Orangethorpe Avenue	Anaheim	B	0.67			D	0.89				
SR-57 NB Ramps/Katella Avenue	Anaheim	A	0.51	A	0.40	A	0.41	A	0.37	-21.57%	-9.76%
SR-57 SB Ramps/Katella Avenue	Anaheim	A	0.52	A	0.43	A	0.51	A	0.42	-17.31%	-17.65%
SR-91 EB Ramp/Imperial Highway	Anaheim	C	0.73	A	0.46	C	0.79	A	0.58	-36.99%	-26.58%
SR-91 EB Ramps/State College Boulevard	Anaheim	B	0.69	A	0.45	D	0.82	A	0.58	-34.78%	-29.27%
SR-91 EB Ramps/Tustin Avenue	Anaheim	B	0.66	A	0.57	D	0.84	A	0.50	-13.64%	-40.48%
SR-91 WB Ramp/Harbor Boulevard	Anaheim	B	0.61	A	0.53	C	0.77	B	0.61	-13.11%	-20.78%
SR-91 WB Ramp/Imperial Highway	Anaheim	C	0.71	A	0.43	B	0.63	A	0.54	-39.44%	-14.29%
SR-91 WB Ramp/State College Boulevard	Anaheim	A	0.55	A	0.55	B	0.63	B	0.64	0.00%	1.59%
SR-91 WB Ramps/Tustin Avenue	Anaheim	B	0.64	D	0.82	A	0.60	D	0.81	28.13%	35.00%
Imperial Highway SB Off-Ramp/Orangethorpe Avenue	Anaheim	A	0.41	A	0.41	A	0.42	A	0.42	0.00%	0.00%
Imperial Highway NB On-Ramp/Esperanza Avenue	Anaheim	A	0.26	A	0.26	A	0.30	A	0.30	0.00%	0.00%
Imperial Highway SB Off-Ramp	Anaheim	A	0.32	A	0.32	A	0.39	A	0.39	0.00%	0.00%
SR-57 SB Ramps/Imperial Highway	Brea	B	0.68	A	0.52	B	0.70	A	0.59	-23.53%	-15.71%
State College Boulevard/Imperial Highway	Brea	C	0.73	A	0.60	E	0.93	B	0.70	-17.81%	-24.73%
Valencia Avenue/Imperial Highway	Brea	A	0.56	A	0.45	A	0.59	A	0.43	-19.64%	-27.12%
SR-57 NB Ramps/Imperial Highway	Brea	C	0.78	B	0.63	E	0.91	A	0.60	-19.23%	-34.07%
Beach Boulevard/Orangethorpe Avenue	Buena Park	C	0.76	B	0.62	D	0.87	B	0.64	-18.42%	-26.44%
I-5 SB Ramps/Beach Boulevard	Buena Park	C	0.72	B	0.63	C	0.78	C	0.73	-12.50%	-6.41%
SR-91 EB Ramp/Beach Boulevard	Buena Park	C	0.74	A	0.54	D	0.84	B	0.67	-27.03%	-20.24%
SR-91 EB Ramp/Valley View Street	Buena Park	A	0.58	A	0.55	D	0.86	B	0.67	-5.17%	-22.09%
SR-91 WB Ramp/Beach Boulevard	Buena Park	A	0.58	A	0.58	A	0.59	C	0.74	0.00%	25.42%
SR-91 WB Ramp/Valley View Street	Buena Park	C	0.80	B	0.66	E	0.94	C	0.77	-17.50%	-18.09%
Harbor Boulevard/Adams Avenue	Costa Mesa	E	0.99	B	0.62	F	1.09	C	0.78	-37.37%	-28.44%
I-405 SB Ramps/Harbor Boulevard	Costa Mesa	A	0.53	A	0.51	B	0.63	B	0.62	-3.77%	-1.59%
I-405 NB Ramps/Harbor Boulevard	Costa Mesa	E	0.95	A	0.51	F	1.07	C	0.77	-46.32%	-28.04%
Valley View Street/Katella Avenue	Cypress	B	0.63	B	0.64	D	0.87	B	0.68	1.59%	-21.84%
Crown Valley Parkway/Bay Drive/PCH	Dana Point	F	1.41	A	0.56	F	1.62	A	0.56	-60.28%	-65.43%
Street of the Golden Lantern/Del Prado Avenue	Dana Point	A	0.32	A	0.33	A	0.53	A	0.46	3.13%	-13.21%
Street of the Golden Lantern/PCH	Dana Point	A	0.42	A	0.47	A	0.55	A	0.55	11.90%	0.00%
Harbor Boulevard/Orangethrope Avenue	Fullerton	A	0.60	A	0.57	E	0.94	C	0.75	-5.00%	-20.21%
State College Boulevard/Orangethorpe Avenue	Fullerton	C	0.80	A	0.57	D	0.86	B	0.66	-28.75%	-23.26%

Orange County Congestion Management Program
LEVEL OF SERVICE 2011

Intersection/Interchange	Jurisdiction	Baseline AM		2011 AM		Baseline PM		2011 PM		Percent Change	
		LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	AM ICU	PM ICU
SR-22 WB Ramp/Valley View Street	Garden Grove	C	0.76	B	0.61	D	0.87	A	0.60	-19.74%	-31.03%
SR-22 WB Ramps/Harbor Boulevard	Garden Grove	F	1.10	B	0.69	F	1.16	B	0.68	-37.27%	-41.38%
SR-22 WB/Beach Boulevard	Garden Grove	C	0.73	C	0.73	C	0.73	C	0.73	0.00%	0.00%
Beach Boulevard/405 SB Ramp/Edinger Avenue	Huntington Beach	B	0.63	B	0.68	E	1.03	C	0.79	7.94%	-23.30%
Beach Boulevard/Adams Avenue	Huntington Beach	A	0.55	A	0.52	C	0.67	B	0.66	-5.45%	-1.49%
Beach Boulevard/Pacific Coast Highway	Huntington Beach	A	0.45	A	0.52	A	0.47	B	0.64	15.56%	36.17%
Beach Boulevard/Warner Avenue	Huntington Beach	C	0.78	B	0.70	E	0.93	C	0.72	-10.26%	-22.58%
Bolsa Chica Street/Bolsa Avenue	Huntington Beach	B	0.66	A	0.55	A	0.53	A	0.48	-16.67%	-9.43%
Bolsa Chica Street/Warner Avenue	Huntington Beach	A	0.57	A	0.60	D	0.81	B	0.62	5.26%	-23.46%
Pacific Coast Highway/Warner Avenue	Huntington Beach	D	0.81	B	0.67	B	0.72	C	0.75	-17.28%	4.17%
SR-133 NB Ramps/Irvine Boulevard	Irvine	A	0.37	A	0.45	A	0.33	A	0.44	21.62%	33.33%
SR-133 SB Ramps/Irvine Boulevard	Irvine	A	0.37	A	0.38	A	0.29	A	0.39	2.70%	34.48%
SR-261 NB Ramps/Irvine Boulevard	Irvine	A	0.38	A	0.43	A	0.53	A	0.54	13.16%	1.89%
SR-261 SB Ramps/Irvine Boulevard	Irvine	A	0.42	A	0.41	A	0.40	A	0.43	-2.38%	7.50%
I-405 NB Ramps/Enterprise/Irvine Center Drive	Irvine	E	0.95	A	0.52	A	0.39	A	0.49	-45.26%	25.64%
I-405 NB Ramps/Jamboree Road	Irvine	F	1.03	C	0.74	C	0.78	D	0.81	-28.16%	3.85%
I-405 SB Ramps/Irvine Center Drive	Irvine	E	1.00	A	0.54	A	0.57	A	0.53	-46.00%	-7.02%
I-405 SB Ramps/Jamboree Road	Irvine	E	0.92	D	0.89	B	0.66	D	0.82	-3.26%	24.24%
I-5 NB Ramps/Jamboree Road	Irvine	A	0.54	D	0.86	C	0.75	C	0.79	59.26%	5.33%
I-5 SB Ramps/Jamboree Road	Irvine	A	0.40	E	0.95	A	0.35	D	0.86	137.50%	145.71%
MacArthur Boulevard/Jamboree Road	Irvine	B	0.61	A	0.60	B	0.69	C	0.76	-1.64%	10.14%
Harbor Boulevard/Imperial Highway	La Habra	D	0.81	A	0.49	D	0.86	A	0.55	-39.51%	-36.05%
Beach Boulevard/Imperial Highway	La Habra	D	0.85	A	0.56	D	0.87	A	0.57	-34.12%	-34.48%
Beach Boulevard/Whittier Boulevard	La Habra	A	0.33	A	0.43	A	0.29	A	0.45	30.30%	55.17%
El Toro Road/SR-73 NB Ramps	Laguna Beach	E	0.91	A	0.56	A	0.59	A	0.59	-38.46%	0.00%
El Toro Road/SR-73 SB Ramps	Laguna Beach	A	0.41	A	0.56	B	0.67	A	0.55	36.59%	-17.91%
Laguna Canyon Rd/SR-73 NB Ramps	Laguna Beach	C	0.73	E	0.96	C	0.72	D	0.81	31.51%	12.50%
Laguna Canyon Rd/SR-73 SB Ramps	Laguna Beach	A	0.32	A	0.38	A	0.33	A	0.39	18.75%	18.18%
Laguna Canyon Road/El Toro Road	Laguna Beach	F	1.54	D	0.87	F	1.16	C	0.78	-43.51%	-32.76%
Laguna Canyon Road/Pacific Coast Highway	Laguna Beach	D	0.84	C	0.76	C	0.74	B	0.66	-9.52%	-10.81%
I-5 SB Ramp/Avenue de la Carlotta/El Toro Road	Laguna Hills	F	1.18	A	0.53	F	1.13	B	0.61	-55.08%	-46.02%
Moulton Parkway/SR-73 SB Ramps	Laguna Niguel	A	0.45	A	0.40	A	0.38	A	0.29	-11.11%	-23.68%
Moulton Parkway/Crown Valley Parkway	Laguna Niguel	A	0.56	B	0.68	B	0.65	A	0.58	21.43%	-10.77%
Moulton Parkway/El Toro Road	Laguna Woods	E	0.94			F	1.26				
I-5 NB/Bridger/El Toro Road	Lake Forest	A	0.56	A	0.57	D	0.81	C	0.77	1.79%	-4.94%
Trabuco Road/El Toro Road	Lake Forest	F	1.03	B	0.66	C	0.80	B	0.68	-35.92%	-15.00%

Orange County Congestion Management Program
LEVEL OF SERVICE 2011

Intersection/Interchange	Jurisdiction	Baseline AM		2011 AM		Baseline PM		2011 PM		Percent Change	
		LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	AM ICU	PM ICU
I-605 NB Ramps/Katella Avenue	Los Alamitos	B	0.69	A	0.39	B	0.65	A	0.54	-43.48%	-16.92%
I-5 NB Ramps/Crown Valley Parkway	Mission Viejo	B	0.68	A	0.60	B	0.69	B	0.65	-11.76%	-5.80%
I-5 SB Ramps/Crown Valley Parkway	Mission Viejo	D	0.86	B	0.64	F	1.01	B	0.69	-25.58%	-31.68%
MacArthur Boulevard/Pacific Coast Highway	Newport Beach	A	0.51	A	0.58	B	0.70	B	0.70	13.73%	0.00%
Newport Boulevard/Pacific Coast Highway	Newport Beach	A	0.56	C	0.76	A	0.49	B	0.69	35.71%	40.82%
SR-55 NB Ramps/Sacramento/Katella Avenue	Orange	C	0.75	B	0.66	D	0.85	C	0.75	-12.00%	-11.76%
SR-55 SB Ramps/Katella Avenue	Orange	C	0.73	D	0.90	E	0.95	E	0.91	23.29%	-4.21%
Rose Drive/Imperial Highway	Placentia	E	0.95	B	0.64	E	0.99	C	0.76	-32.63%	-23.23%
Rose Drive/Tustin Avenue/Orangethorpe Avenue	Placentia	C	0.76	A	0.49	F	1.03	A	0.47	-35.53%	-54.37%
SR-57 NB Ramps/Orangethorpe Avenue	Placentia	B	0.67	A	0.57	C	0.80	B	0.63	-14.93%	-21.25%
SR-57 SB Ramps/Iowa Place/Orangethrope Avenue	Placentia	C	0.74	A	0.46	B	0.69	A	0.47	-37.84%	-31.88%
I-5 NB Ramps/Ortega Highway	San Juan Capistrano	A	0.52	D	0.90	A	0.58	C	0.79	73.08%	36.21%
I-5 SB Ramps/Ortega Highway	San Juan Capistrano	B	0.61	D	0.83	C	0.77	D	0.85	36.07%	10.39%
Harbor Boulevard/1st Street	Santa Ana	A	0.48	C	0.73	D	0.81	C	0.76	52.08%	-6.17%
Harbor Boulevard/Warner Avenue	Santa Ana	E	0.93	B	0.66	E	0.98	C	0.72	-29.03%	-26.53%
I-5 SB Ramps/1st Street	Santa Ana	A	0.29	A	0.44	A	0.46	A	0.54	51.72%	17.39%
SR-55 SB Ramp/Auto Mall/Edinger Avenue	Santa Ana	D	0.90	A	0.56	F	1.06	A	0.60	-37.78%	-43.40%
SR-55 SB Ramps/Irvine Boulevard (Fourth Street)	Santa Ana	B	0.68	C	0.75	D	0.83	C	0.71	10.29%	-14.46%
Beach Boulevard/Katella Avenue	Stanton	D	0.89	B	0.68	F	1.02	B	0.64	-23.60%	-37.25%
Jamboree Road/Edinger Avenue-NB Ramp	Tustin	A	0.28	C	0.76	A	0.32	A	0.46	171.43%	43.75%
Jamboree Road/Edinger Avenue-SB Ramp	Tustin	D	0.81			A	0.41				
Jamboree Road/Irvine Boulevard	Tustin	B	0.65	C	0.78	A	0.59	B	0.69	20.00%	16.95%
SR-55 NB Ramps/Edinger Avenue	Tustin	C	0.72	A	0.50	B	0.65	C	0.74	-30.56%	13.85%
SR-55 NB Ramps/Irvine Boulevard	Tustin	A	0.59	B	0.68	A	0.45	C	0.77	15.25%	71.11%
Beach Boulevard/Bolsa Avenue	Westminster	F	1.09	C	0.79	F	1.11	D	0.86	-27.52%	-22.52%
Bolsa Chica Road/Garden Grove Boulevard	Westminster	E	0.91	C	0.75	E	0.97	E	0.92	-17.58%	-5.15%
SR-22 EB/Beach Boulevard	Westminster	A	0.53	A	0.53	A	0.54	A	0.54	0.00%	0.00%
COUNTY AVERAGE			0.67		0.59		0.72		0.63	-12.97%	-13.24%

Deficiency Plans

If an intersection does not meet the LOS standards, then a deficiency plan is required, as described under Government Code Section 65089.4. The deficiency plan identifies the cause of congestion, the improvements needed to solve the problem, and the cost and timing for implementing the proposed improvements.

A deficiency plan process has been developed by the CMP Technical Advisory Committee to provide local jurisdictions with a framework for maintaining compliance with the CMP when a portion of the CMPHS fails to meet its established LOS standard (Appendix C-1). The Deficiency Plan Decision Tree (Appendix C-2) illustrates the individual steps that must be taken in order for a local jurisdiction to meet CMP deficiency plan requirements.

Deficiency plans are not required if a deficient intersection is brought into compliance within 18 months of its initial detection, using improvements that have been previously planned and programmed in the CMP Capital Improvement Program. In addition, CMP legislation specifies that the following shall be excluded from deficiency determinations:

- Interregional travel (trips with origins outside the Orange County CMPHS)
- 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 the provision of low-income and very low-income housing
- Traffic generated by high-density residential development located within one-quarter mile of a fixed rail passenger station
- Traffic generated by any mixed-use development located within one-quarter mile of a fixed rail passenger station, but only if more than half of the land area, or floor area, of the mixed-use development is used for high-density residential housing.

Chapter 3: Transit Service

As Orange County's transit provider, OCTA continually monitors the frequency and routing of its transit services. Bus and rail transit are essential components of Orange County's transportation system, and are important tools for achieving a balanced multi-modal transportation system capable of maintaining level of service standards.

Unfortunately, since the adoption of the 2007 Congestion Management Program (CMP) report, OCTA has reduced revenue vehicle hours (hours of service provided by all fixed route buses in operation) by 20 percent, due to transit budget cuts precipitated by the downturn in the economy resulting in a lack of revenue. Additionally, fixed route bus ridership has decreased by approximately 20 percent.

The CMP performance measures provide an index of the effectiveness and efficiency of Orange County's fixed-route bus and commuter rail services. ACCESS, OCTA's paratransit service, is not included in the CMP analysis because it is not considered a congestion management service.

Indices used in OCTA's long-range planning process are the basis for the performance measures included in the CMP. The performance measures allow for identification of areas in need of improved transit service. Furthermore, once adequate transit operating funds are available, the transit performance measures will work to ensure that bus and rail services meet demand and are coordinated between counties.

Fixed-Route Bus Service

OCTA's fixed route bus service includes local routes, express routes, community routes, rail feeder routes and shuttles.

- Local routes provide a basic level of transit access; they operate primarily in the arterial corridors and are intended to provide intra-county service to meet the minimum service standard.
- Express routes provide limited-stop, freeway-based service to major employment areas in Orange and Los Angeles counties.
- Community routes feed the local fixed route network, and provide greater access and relatively high levels of service during peak periods, and off-peak periods when warranted by demand.
- Rail feeder routes provide access to and from employment centers for commuters using Metrolink commuter rail service.
- Shuttles serve local areas, connecting to specialty destinations.

- Shuttles serve local areas, connecting to specialty destinations.

Currently (August 2011), OCTA's fixed route bus service has a total of 77 routes which is comprised of 40 local routes, 14 community routes, 5 intra-county and 5 inter-county express routes and 13 rail feeder routes (StationLink).

Service Standards and Measures

Service Standards

OCTA bus service standards direct the development, implementation, monitoring, and modification of OCTA bus services. These standards are intended to govern the planning and design of the service. As such, they depict a desirable state against which existing service is assessed. The standards currently in place were adopted by the OCTA Board of Directors in 1994 and are summarized in Figure 7.

The current (June 2011) adherence to these standards is detailed below:

- Eighty-eight percent of OCTA bus routes (excluding Express, Shuttle, and Rail Feeder service) fall within the minimum span of service standards. Not all routes meet the performance standards because the highest demand routes use a large portion of the limited resources, resulting in some shortcomings for other routes.
- Sixty-five percent of OCTA bus routes (excluding Express, Shuttle and Rail Feeder service) meet the minimum headway (frequency) standard. Again, this is primarily due to the need to allocate limited resources to the routes with the greatest demand.

Service standards are important instruments to ensure the transit system meets the needs of the users while balancing those needs against the cost effectiveness of the system. Actual service levels often reflect conditions and changes that have occurred in the operating, policy, and financial environments.

Figure 6: Service Standards for the OCTA Bus System

Bus System Improvement Project — FY95

Service Standards for OCTA Bus System

STANDARDS	BASIC NETWORK		SUPPORT SYSTEM			
	BASE ROUTES	CONNECTOR ROUTES	LOCAL FIXED ROUTES	COMMUNITY SERVICE	EXPRESS SERVICE	RAIL FEEDER SERVICE
SERVICE STANDARDS						
WALKING DISTANCE CRITERIA: % OF POPULATION WITHIN 1/4 MILE OF BUS ROUTE						
• INCREMENT	50%	10%	30%		n/a	n/a
• ACCUMULATIVE	50%	60%	90%		n/a	n/a
MINIMUM SPAN OF SERVICE						
• WEEKDAY AND SATURDAY	5:30am-8:30pm	5:30am-8:30pm	(1)	(1)	(1)	(1)
• SUNDAY	7:00am-7:00pm	7:00am-7:00pm	(1)	(1)	(1)	(1)
MINIMUM HEADWAYS						
• PEAK WEEKDAY PERIOD (6-9a, 3-6p)	30 min.	30 min.	30 min.	30 min.	(2)	(2)
• SATURDAY	30 min.	60 min.	60 min.	60 min.	n/a	n/a
• SUNDAY	30 min.	60 min.	(1)	(1)	n/a	n/a
MAXIMUM TRANSFER WAIT TIME						
• PEAK WEEKDAY PERIOD	15 min.	15 min.	15 min.	15 min.	n/a	n/a
• OTHER PERIODS (3)	15 min.	30 min.	30 min.	30 min.	n/a	n/a
LOADING STANDARDS (MAX)						
• PEAK 60 MINUTES	125%	125%	125%	125%	100%	125%
• PEAK AND OFF PEAK PERIODS	100%	100%	100%	100%	100%	100%
PERFORMANCE STANDARDS (4)						
BOARDINGS / RVH						
• ROUTE	30	20	20	10	20	10
• SYSTEM	40	25	25	25	n/a	n/a

(1) Based on demand.

(2) Minimum of two (2) trips each way per peak weekday period.

(3) May be reduced by interlining and/or timed transfers.

(4) Performance standards apply to changed existing routes and new routes after one year.

Performance Measures

While service standards guide the delivery of service, performance measures evaluate the effectiveness of the service.

Performance Measure 1: Productivity

As a widely accepted industry measure, productivity measures the average number of riders using a bus route for each hour of service that is provided. At OCTA, productivity standards range from 10 to 30 riders per revenue vehicle hour (RVH), depending on the type of service. Specialized services such as rail feeders, community routes and shuttles are not expected to handle as many riders as high demand services operating on major arterials. For the month of March 2011, 85 percent of the Local routes, 79 percent of the Community routes, and 69 percent of the Rail feeder routes met the productivity standards. None of the Express routes met the productivity standards.

Performance Measure 2: Vehicle Load Factor

Vehicle load factor is the ratio of the average number of passengers onboard buses to the average number of seats scheduled for a given time period. Generally, a route with a high load factor is very productive, has a high fare box recovery, and a high boardings -per-service hour ranking. Load factor is often used to justify service levels and vehicle size on a route as it gives perspective on seat utilization, crowding, and compulsory bypass. Establishing a reasonable balance between the high cost of operating service and the comfort of passengers using the service is an important factor in transit service planning.

Maximum load standards differ among the classes of service operated by the OCTA and are either 100 percent or 125 percent of seated capacity depending on the type of service and the time interval measured. The exception to this is express service where passengers generally travel much greater distances and remain on-board longer than the average local bus rider. In the case of OCTA express service, trips are scheduled to average no more than 100 percent of seated capacity.

The most recent load factor analysis (2008) revealed that approximately three percent of OCTA's fixed route trips exceed the maximum load of 125 percent.

Performance Measure 3: On-time Performance (OTP)

The on-time performance (OTP) goal is set at 85 percent of all bus trips system-wide, at the line level, and at the base level. Failure to achieve the goal will trigger activities to move the target service into compliance.

Currently, the OTP measurement is applied to the time-point nearest the maximum load point (MLP) of the bus route under review. As more automated measurement tools become available, measurements will be made at all time-points in the system, not just the MLP for each route.

OTP is reported to executive leadership and bus operations management on a monthly basis in the On-Time Performance Report. Currently (June 2011), system-wide 90.5 percent of OCTA's fixed route bus trips are on-time.

Other Bus Service Measures

General Service Expansion Measures

OCTA bases its decision to expand service of any of its family of bus services on the route's potential to achieve a specific minimum productivity level for that type of service within one year of operation. New lines or major extensions of established lines usually are associated with the development of major employment locations, large new residential centers or increased residential density, large retail centers or educational centers, or major medical facilities. A major consideration of service expansion to serve new markets is to ensure that the benefit of the new service will outweigh that of the established service that may have to be deleted or modified to provide resources for the new service.

General Service Contraction Measures

Routes or parts of routes that perform consistently below performance measures are candidates for service reduction or deletion to provide resources to (1) maintain measures on more productive routes, and (2) provide new services. A major consideration of service reduction is to ensure that the benefits of re-deployed resources outweigh that of retaining the service. Other considerations to be taken into account include service area coverage and service span.

Coordination of Transit Service with Other Carriers

OCTA coordinates the delivery of transit services with several other transit agencies. They include Laguna Beach Transit, the City of Irvine, Riverside Transit Agency, Norwalk Transit System, Los Angeles County Metropolitan Transportation Authority, Long Beach Transit, North County Transit District, Omnitrans, Anaheim Resort Transit, various specialized charter bus services, and commuter rail services. Except for the City of Irvine and charter services, OCTA has interagency agreements with each of these agencies, which allow riders to transfer from one agency's services to another. However, Irvine does accept OCTA's pre-paid fare media on The *i*shuttle. In addition, OCTA coordinates schedules and bus stops with neighboring agencies and commuter rail service.

Commuter Rail Service

Metrolink is Southern California's commuter rail system that links residential communities to employment and activity centers. Metrolink is operated by the Southern California Regional Rail Authority (SCRRA), a joint powers authority of five member agencies representing the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura.

Currently, Metrolink provides service on seven routes, covering 512 miles through six counties in Southern California. On an average weekday, there are 144 trains operating, serving roughly 41,000 riders (one-way trips) at 55 stations. Orange County plays an important, and growing, role within this system.

As one of the five SCRRA member agencies, OCTA administers and funds Orange County's portion of the Metrolink commuter rail system. Orange County's share of Metrolink service covers 68 route miles and sees approximately 15,000 average weekday boardings, comprising more than 30 percent of Metrolink's total system-wide boardings. There are eleven stations in Orange County that serve a total of 42 round trips each weekday on three lines:

- Orange County (OC) Line: with daily service from Los Angeles Union Station to Oceanside
- Inland Empire-Orange County (IEOC) Line: with daily service from San Bernardino, Riverside, via Orange to Oceanside
- 91 Line: serving Riverside, Fullerton and Los Angeles Union Station

On June 3, 2006, Metrolink Weekends service was introduced on the OC Line, and Sunday service began July 2, 2006. Metrolink Weekends Saturday and Sunday service on the IEOC Line started July 15, 2006.

OCTA also has 13 dedicated bus routes that connect with Orange County Metrolink stations in Anaheim Canyon, Anaheim, Orange, Santa Ana, Tustin, Irvine and Laguna Niguel/Mission Viejo. These StationLink routes offer Metrolink ticket holders free connections between stations and major employment and activity centers, with schedules designed to meet Metrolink weekday train arrivals and departures.

Performance Measures

SCRRA publishes a Strategic Assessment document that examines a number of performance measures and identifies preferred strategies for future improvements. The performance measures examined within the Strategic Assessment include the following:

- Available capacity (i.e. – the number of trains operating)
- Annual train miles
- Expenses and revenues per train mile
- Increase in service frequency per $1,000 invested
- Average weekday ridership
- Passenger miles carried
- Passenger miles traveled per $1,000 invested
- Expenses and revenues per passenger mile
- Farebox recovery

Future Transit Improvements

OCTA's 2010 Long-Range Transportation Plan (LRTP) outlines a vision for multi-modal transportation improvements throughout Orange County. OCTA is continuing to work towards implementing all of the components presented in the LRTP, although delivery timelines will likely need adjustments due to current economic conditions.

The components of the Preferred Plan, as presented in the 2010 LRTP, include transit improvements such as: (1) implementing bus rapid transit service on three high-demand corridors, (2) expanding the level of Metrolink commuter rail service to Los Angeles, (3) improving local connections to and from Metrolink stations, (4) expanding community shuttles, and (5) connecting Metrolink service to new regional transportation systems and centers.

The LRTP includes the following goals related to transit system operations.

Fixed-Route Bus Service Improvements

- Improve bus frequency, thereby reducing headways on major routes within the core service area, including those zones with the highest transit demand;
- Expand local bus service into areas outside the urbanized core;

- Accommodate Orange County's growing and aging population;
- Implement three new Bus Rapid Transit routes;
- Expand Express Bus service routes;
- Increase rail feeder service to complement anticipated increases in Metrolink rail service; and
- OCTA will work with local jurisdictions to implement additional transit services through the Renewed Measure M Go Local (Project S) and Community Circulators (Project V) programs.

While the improvements listed above remain long-term goals for OCTA, the loss of transit operation funds and reduced sales tax revenues have required OCTA to implement a transit service reduction plan. OCTA is experiencing a very significant loss of transit operations funding; therefore, the service reduction program must adjust OCTA transit services accordingly. As of March 2010, 383,000 hours of bus service had been cut.

Faced with the current economic conditions, OCTA is preparing a new study, called the Transit System Study (TSS). The primary goal of this study will be to develop recommendations for new and efficient ways to provide sustainable transit services that are consistent with the current budget and funding forecasts. Upon the conclusion of the TSS, the proposed transit service described below may be implemented in the future as resources become available.

Bus Rapid Transit Service

Bus Rapid Transit (BRT) typically includes bus services that are, at a minimum, faster than traditional 'local bus' service and that, at a maximum, include separate facilities for bus operations. BRT represents a way to improve mobility at relatively low cost through incremental investment in a combination of bus infrastructure, equipment, operational improvements, and technology. Depending on available funding, OCTA's BRT system will eventually include transit signal priority, customized bus shelters that display real-time bus arrival information, and a branded system image that is uniquely identifiable to the public.

Three BRT routes, known as Harbor (Route 543), Westminster/17th Street (Route 560) and 28-mile (Route 557), may be the first routes to begin service pending the results of the TSS. Additionally, other BRT corridors have been identified, along Beach Boulevard, Katella Avenue, La Palma Avenue, 1st Street/Bolsa Avenue, Lincoln Avenue, Main Street, and Edinger Avenue. Implementation of these routes will be subject to further study and availability of funding. Also included in the BRT

program is Irvine's *i*-Shuttle, which will provide feeder service to the 28-mile BRT in the Irvine Business Complex, and currently provides feeder service to the Tustin Metrolink station.

Express Bus Service

In addition to increasing Local Fixed Route service and implementing new BRT service, OCTA is planning to expand its express bus service. Traffic congestion is anticipated to increase as new residential construction in neighboring counties, especially Riverside County, continues to provide affordable housing for individuals employed in Orange County. To address the problem, OCTA is evaluating the possibility of adding more express routes to the ten existing OCTA express routes. Potential corridors to be served by these proposed routes include:

- San Clemente to Laguna Hills (Route 214)
- San Clemente to South Coast Metro (Route 215)
- Rancho Santa Margarita to Irvine (Route 217)
- Riverside/Corona to Irvine (Route 793)
- Long Beach to South Coast Metro (Route 723)
- Long Beach to Orange (Route 722)
- Riverside to California State University at Fullerton (Route 791)
- Riverside to Anaheim Resort (Route 792)

These new services will be implemented as resources are available.

Commuter Rail Service Improvements

Metrolink commuter rail service in Orange County will be enhanced through OCTA's Metrolink Service Expansion Program (MSEP). SCRRA and OCTA staff have developed an implementation plan to provide high-frequency Metrolink service on the OC Line between the Laguna Niguel/Mission Viejo station and the Fullerton Transportation Center. The increased Orange County Metrolink service will provide additional passenger capacity as well as new off-peak trips, making Metrolink a more convenient travel alternative.

The MSEP also includes significant track and switch improvements, railroad signal and communication upgrades, station and platform improvements, including added parking capacity, and safety enhancements, as well as the addition of a new Metrolink station in the city of Placentia. These improvements will be needed to accommodate the expected growth in ridership that will come with the service expansion. Funding for the MSEP is being provided though Measure M, Orange County's half-cent sales tax for transportation improvements.

Chapter 4: Transportation Demand Management

Transportation Demand Management (TDM) strategies are geared toward increasing vehicle occupancy, promoting the use of alternative modes, reducing the number of automobile trips, decreasing overall trip lengths, and improving air quality. The adoption of a TDM ordinance was required of every local jurisdiction for Orange County's 1991 Congestion Management Program (CMP). The adoption of these ordinances is no longer a statutory requirement, however OCTA continues to encourage local jurisdictions to maintain these ordinances as a means of reducing greenhouse gas emissions.

TDM Ordinances

The model TDM ordinance, prepared by OCTA, promotes carpools, vanpools, alternate work hours, park and ride facilities, telecommuting, and other traffic reduction strategies. OCTA updated the model ordinance in 2001 to reflect the adoption of Rule 2202 by the South Coast Air Quality Management District (SCAQMD), which requires employers with 250 or more employees at a worksite to develop an emission reduction program to help meet an emission reduction target set by the SCAQMD.

Principal provisions of the TDM model ordinance are as follows:

- Applies to non-residential public and private development proposals expected to generate more than 250 employees
- Contains a methodology for determining projected employment for specified land use proposals
- Includes mandatory facility-based development standards (conditions of approval) that apply to proposals that exceed the established employment threshold
- Presents optional provisions for implementing operational TDM programs and strategies that target the property owner or employer, and requires annual reporting on the effectiveness of programs and strategies proposed for facilities
- Contains implementation and monitoring provisions
- Includes enforcement and penalty provisions

Several jurisdictions have adopted ordinances that go beyond those contained in the model TDM ordinance. Such strategies include:

- Encouraging employers to establish and help subsidize telecommuting, provide monetary incentives for ridesharing, and implement alternative work hour programs
- Proposing that new development projects establish and/or participate in Transportation Management Associations (TMAs)
- Implementing bus loading facilities at worksites
- Implementing pedestrian facilities such as sidewalks, paved pathways, and pedestrian grade separations over arterial streets to connect worksites to shopping, eating, recreation, parking, or transit facilities
- Participating in the development of remote parking facilities and the high-occupancy vehicles (i.e., shuttles, etc.) to serve them

Additional TDM Programs

TDM efforts in Orange County are not just limited to the implementation of the TDM ordinance provisions. Other TDM efforts, as described below, are also active throughout the County.

Freeway Construction Mitigation

OCTA and Caltrans developed a comprehensive public outreach program for commuters impacted by construction projects and improvements on Orange County freeways. The outreach program alleviates traffic congestion during freeway construction by providing up-to-date ramp, lane, and bridge closure information; as well as suggestions for alternate routes and travel modes.

Outreach efforts include public workshops, open houses, fast fax construction alerts, flyers and newsletters, as well as other materials and presentation events. Also, OCTA's website (www.octa.net), and the Orange County Freeway Construction Helpline (1-800 724-0353), make detour and closure information available. In addition, most jurisdictions implement traffic management plans to alleviate roadway congestion during construction

Transit/Shuttle Services

Local fixed-route bus service comprises the largest portion of OCTA's transit services. In addition, OCTA provides fixed-route bus service to commuter rail (Metrolink) stations. Express bus service provides patrons with longer routes that utilize freeways to connect residential areas to Orange County's main employment centers. Furthermore, ACCESS

provides elderly and disabled residents with a convenient paratransit service for daily commutes.

Transportation Management Associations

Transportation Management Associations (TMAs) are comprised of groups of employers who work together to solve mutual transportation problems by implementing programs to increase average vehicle ridership. Presently, Orange County has TMAs located in the following areas:

- Newport Beach (Newport Center TMA)
- Irvine (Irvine Spectrum TMA)
- Anaheim (Anaheim Transportation Network)

Park-and-Ride Lots

Currently there are 30 park-and-ride lots in Orange County providing about 6,000 parking spaces. Of the 30 lots, 11 are located at Metrolink stations, accounting for about 3,700 of the parking spaces. Also, four of the lots are located at OCTA transit centers, which account for another 1,180 parking spaces.

Park-and-ride lots serve as transfer points for commuters to change from one mode of travel (usually single-occupancy automobile) to another, higher capacity mode (bus, train, carpool, or vanpool). Providing a convenient system of park-and-ride transfer points throughout Orange County encourages ridesharing and the use of higher capacity transit systems, which improves the efficiency of the transportation system. Park-and-ride lots are also a natural companion to Orange County's network of High Occupancy Vehicle (HOV) lanes and transitways on the freeways.

Parking Cash-Out Programs

Parking cash-out programs are employer-funded programs that provide cash incentives to employees who do not drive to work. The most effective programs provide an incentive equal to the full cost of employee parking.

Bicycle and Pedestrian Facilities

Between 1990 and 2011, OCTA allocated more than $58 million for bicycle and bus stop improvement projects. Historically, OCTA has solicited and allocated funding to bicycle and pedestrian facility projects from Orange County local jurisdictions. Unfortunately, due to the recent loss of transit operation resources, the funds traditionally used by OCTA to support bicycle and pedestrian projects have been diverted to transit

operations. However, OCTA is continually looking for funding sources to support bicycle and pedestrian projects.

Currently, the 2011 Federal Transportation Improvement Program has approximately $35 million programmed for trail investment projects in Orange County. In an effort to encourage this type of investment, OCTA developed a Commuter Bikeways Strategic Plan (CBSP), with Orange County agencies and groups, to provide local jurisdictions with easier access to the state funded Bicycle Transportation Account program. The primary focus of the CBSP is to provide an attractive alternative to driving, with bicycle facilities that link residential areas with activity centers and intermodal transportation centers.

OCTA updated the CBSP in 2009 to ensure consistency with the requirements of California Streets and Highways Code 891.2. Local jurisdictions may choose to adopt the 2009 CBSP as their own bicycle transportation plan, which will allow them to apply for the State Bicycle Transportation Account funds.

In 1995, OCTA launched a successful demonstration project to install bicycle racks on buses along four routes that served work sites, schools, shopping malls, and the beach. The success of the demonstration program led to a decision to equip all large buses in the OCTA fleet with bicycle racks. OCTA completed this program in June 1998. Bicycle racks are also provided on Metrolink trains; and bicycle lockers are available at Metrolink stations in Fullerton, Tustin, Santa Ana, and Orange, as well as at OCTA-owned park-and-ride lots.

OCTA is also currently engaging local jurisdictions in a collaborative effort to identify and create regional bikeway corridors. Initiated in the 4th Supervisorial District, the regional bikeways initiative is intended to be replicated in other districts throughout Orange County. Furthermore, OCTA was recently awarded grant funding to study non-motorized access at Orange County Metrolink stations. The results of this study will identify opportunity areas for non-motorized improvements that may include bike stations, bikesharing, new bikeways & crosswalks, etc.

Guaranteed Ride Home Program

Employers throughout Orange County have the option to participate in OCTA's Guaranteed Ride Home Program. This program provides reliability for those who rideshare but are faced with an unexpected illness, at-home emergency, or unexpected overtime.

Chapter 5: Land Use Impact Analysis

The Congestion Management Program (CMP) Traffic Impact Analysis (TIA) measures impacts of proposed development project on the CMP Highway System (CMPHS). Each jurisdiction in Orange County was allowed to select either the process outlined in the CMP TIA guidelines (Appendix B-1), or their existing traffic-environmental analysis process, as long as consistency is maintained with the CMP TIA guidelines.

Since 1994, the selected TIA process has been consistently applied to all development projects meeting the adopted trip generation thresholds (i.e., 2,400 or more daily trips for projects adjacent to the CMPHS, and 1,600 or more daily trips for projects that directly access the CMPHS).

OCTA allowed exemptions from this requirement for selected categories of development projects, consistent with State legislation (Appendix B-2 for a listing of exempt projects). Each of the traffic impact analyses conducted focused on:

- Identifying locations where, and the extent to which, trips generated by the proposed project caused CMPHS intersections to exceed their Level of Service (LOS) standards;
- Assessing feasible mitigation strategies capable of reducing the identified impact, thereby maintaining the LOS standard; and,
- Utilizing existing environmental processes and inter-jurisdictional forums to conduct cooperative, inter-jurisdictional discussion when proposed CMP mitigation strategies included modifications to roadway networks beyond the jurisdiction's boundaries; and/or, when a proposed development was identified that will increase traffic at CMPHS locations outside the jurisdiction's boundaries.

The biennial reporting process enables jurisdictions to report any locations where projected measurements would not meet the CMPHS LOS standards; as well as to discuss the projected impacts from development projects undergoing CMP traffic impact analyses. All jurisdictions in Orange County comply with the CMP land use coordination requirement.

Chapter 6: Capital Improvement Program

The Capital Improvement Program (CIP) is a seven-year program of projects and programs that is adopted by each Orange County jurisdiction and integrated into a countywide CIP by the OCTA. It includes projects that will help to maintain or improve traffic conditions on the Congestion Management Program Highway System (CMPHS) and adjacent facilities. In addition to traditional capital projects, which preserve investments in existing facilities, the CIP can include projects that increase the capacity of the multi-modal system and provide air quality benefits, such as transit projects. Consistency with statewide standards is emphasized in order for projects in the CIP to compete for State funding.

The CIP projects, prepared by local jurisdictions for inclusion in the Orange County CMP, mitigate transportation impacts identified in the Land Use Impact Analysis component of the CMP, and preserve and maintain CMPHS infrastructure. Many types of CIP projects have been submitted by local jurisdictions in the past, including freeway ramp widenings, transportation systems management projects such as bus turnouts, intersection improvements, roadway widenings, signal coordination projects, and roadway resurfacing projects.

Each Orange County jurisdiction's CIP is included in Appendix E, which is published separately. All projects in the CIP that are State or federally funded, or locally funded but of regional significance, are included in the Orange County portion of the Federal Transportation Improvement Program (FTIP), and are consistent with the Regional Transportation Plan (RTP), both of which are approved by SCAG.

Chapter 7: CMP Conformance

As Orange County's Congestion Management Agency, the Orange County Transportation Authority (OCTA) is legislatively required to monitor the implementation of all elements of the Congestion Management Program (CMP), and biennially determine conformance. In so doing, OCTA consults with local jurisdictions.

OCTA determines if the local jurisdictions are in conformance with the CMP by monitoring the following:

- Consistency with level of service standards
- Adoption of Capital Improvement Programs
- 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

OCTA gathers local traffic data to determine the levels of service (LOS) at intersections throughout the CMP Highway System (CMPHS), as discussed in Chapter 2. In addition, the local jurisdictions complete a set of checklists, developed by OCTA, that guide them through the CMP conformity process (Appendix D). The checklists address the legislative requirements of the CMP, including land use coordination, the Capital Improvement Program, and transportation demand management strategies.

Based on the LOS data and CMP checklists completed by the local jurisdictions, as summarized in Figure 8, the following was determined for the 2011 CMP Update:

Level of Service

The LOS data, collected by OCTA, was provided to local jurisdictions for verification. A few discrepancies in LOS reporting occurred as a result of slight variations in the data collection methodology used by the cities and OCTA, or due to erroneously reported intersection geometry. Any discrepancies in the LOS reporting were resolved through an interactive, cooperative process between the cities and OCTA. The data shows that all local jurisdictions are in compliance with the established LOS standards.

Capital Improvement Program

All local jurisdictions submitted adopted seven-year capital improvement programs that included projects to maintain or improve the traffic LOS on the CMPHS or adjacent facilities, which benefit the CMPHS.

Land Use Coordination

All local jurisdictions have adopted CMP Traffic Impact Analysis (TIA) processes for analyzing the impacts of land use decisions on the CMP Highway System. All local jurisdictions have applied their TIA processes to development projects that met the CMP minimum threshold of 2,400 or more daily trips (1,600 or more trips per day for development projects that will directly access the CMPHS).

Deficiency plans

Based on the data exhibited in Figure 5, all non-exempt intersections on the CMP highway system were found in compliance with LOS requirements. Therefore, no deficiency plans were required for the 2011 CMP.

OCTA Transit Performance Measures

OCTA has an established set of performance measures and standards used to monitor transit services. Moreover, in 2007, OCTA agreed to cooperative procedures for carrying out regional transit planning and programming by signing a memorandum of understanding with SCAG.

Regional Consistency

To ensure consistency between CMPs within the Southern California Association of Governments (SCAG) region, OCTA submits each biennial update of the Orange County CMP to SCAG. As the regional agency, SCAG evaluates consistency with the Regional Transportation Plan and with the CMPs of adjoining counties, and incorporates the program into the Federal Transportation Improvement Program (FTIP), once consistency is determined.

Figure 7: Summary of Compliance

Jurisdiction	Capital Improvement Program	Deficiency Plan	Land Use	Level of Service	2011 Compliance
Aliso Viejo *	Yes	N/A	Yes	N/A	Yes
Anaheim	Yes	N/A	Yes	Yes	Yes
Brea	Yes	N/A	Yes	Yes	Yes
Buena Park	Yes	N/A	Yes	Yes	Yes
Costa Mesa	Yes	N/A	Yes	Yes	Yes
Cypress	Yes	N/A	Yes	Yes	Yes
Dana Point	Yes	N/A	Yes	Yes	Yes
Fountain Valley *	Yes	N/A	Yes	N/A	Yes
Fullerton	Yes	N/A	Yes	Yes	Yes
Garden Grove	Yes	N/A	Yes	Yes	Yes
Huntington Beach	Yes	N/A	Yes	Yes	Yes
Irvine	Yes	N/A	Yes	Yes	Yes
La Habra	Yes	N/A	Yes	Yes	Yes
La Palma*	Yes	N/A	Yes	N/A	Yes
Laguna Beach	Yes	N/A	Yes	Yes	Yes
Laguna Hills	Yes	N/A	Yes	Yes	Yes
Laguna Niguel	Yes	N/A	Yes	Yes	Yes
Laguna Woods	Yes	N/A	Yes	Yes	Yes
Lake Forest	Yes	N/A	Yes	Yes	Yes
Los Alamitos	Yes	N/A	Yes	Yes	Yes
Mission Viejo	Yes	N/A	Yes	Yes	Yes
Newport Beach	Yes	N/A	Yes	Yes	Yes
Orange	Yes	N/A	Yes	Yes	Yes
Placentia	Yes	N/A	Yes	Yes	Yes
Rancho Santa Margarita *	Yes	N/A	Yes	N/A	Yes
San Clemente *	Yes	N/A	Yes	N/A	Yes
San Juan Capistrano	Yes	N/A	Yes	Yes	Yes
Santa Ana	Yes	N/A	Yes	Yes	Yes
Seal Beach *	Yes	N/A	Yes	N/A	Yes
Stanton	Yes	N/A	Yes	Yes	Yes
Tustin	Yes	N/A	Yes	Yes	Yes
Villa Park *	Yes	N/A	Yes	N/A	Yes
Westminster	Yes	N/A	Yes	Yes	Yes
Yorba Linda *	Yes	N/A	Yes	N/A	Yes
County *	Yes	N/A	Yes	Yes	Yes

*No CMP intersections within jurisdiction

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Appendix A: Freeway Levels of Service

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Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
5	0.00	SAN DIEGO-ORANGE COUNTY LINE AT CHRISTIANITOS	139,000	C	C	B	C
5	1.00	AVENIDA CALIFIA	148,000	C	C	B	C
5	1.63	EL CAMINO REAL	162,000	D	C	B	D
5	2.31	AVENIDA PRESIDIO	164,000	D	C	B	D
5	2.66	AVENIDA PALIZADA	192,000	C	C	C	D
5	3.39	AVENIDA PICO	207,000	D	C	C	E
5	5.80	CAMINO ESTRELLA	240,000	D	E	E	F
5	6.78	JCT. RTE. 1, PACIFIC COAST HIGHWAY	231,000	C	C	F	F
5	7.34	CAMINO CAPISTRANO On-Ramp	246,000	C	D	F	F
5	8.80	SAN JUAN CREEK ROAD	246,000	D	E	F	F
5	9.60	JCT. RTE. 74, ORTEGA HIGHWAY EAST	265,000	D	F	F	F
5	10.91	JUNIPERO SERRA ROAD	271,000	C	D	E	F
5	12.94	AVERY PARKWAY	231,000	D	D	F	F
5	13.78	CROWN VALLEY PARKWAY	272,000	E	F	F	F
5	15.22	OSO PARKWAY	282,000	E	F	F	F
5	16.53	LA PAZ ROAD	293,000	F	F	F	F
5	17.47	ALICIA PARKWAY	328,000	F	F	F	F
5	18.69	EL TORO ROAD	342,000	F	F	F	F
5	19.89	LAKE FOREST DRIVE	275,000	E	D	E	D
5	21.30	JCT. RTE. 405, SANTA ANA FREEWAY	152,000	E	F	C	C
5	22.21	ALTON PARKWAY	209,000	E	F	C	D
5	23.12	JCT. RTE. 133	199,000	E	E	D	E
5	23.94	SAND CANYON AVENUE	254,000	E	F	F	C
5	24.99	JEFFREY ROAD	269,000	F	F	D	D
5	26.58	CULVER DRIVE	314,000	E	F	F	F
5	27.58	JAMBOREE ROAD	322,000	F	F	F	F
5	28.25	TUSTIN RANCH ROAD	322,000	F	F	F	F

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
5	29.09	RED HILL AVENUE	323,000	F	F	F	F
5	29.62	NEWPORT AVENUE	277,000	E	E	E	E
5	30.26	JCT. RTE. 55, COSTA MESA FREEWAY	324,000	D	F	F	F
5	30.90	FIRST/FOURTH STREETS	347,000	F	F	E	F
5	31.76	GRAND AVENUE	354,000	F	F	E	F
5	32.46	17TH STREET	354,000	F	F	F	F
5	33.09	MAIN STREET	357,000	F	F	E	D
5	34.00	FREEWAYS	357,000	F	F	F	F
5	34.83	CHAPMAN AVENUE	279,000	E	F	C	C
5	35.20	STATE COLLEGE BOULEVARD	247,000	D	E	C	C
5	36.37	KATELLA AVENUE	259,000	F	F	F	E
5	36.61	HASTER STREET	259,000	F	F	F	E
5	37.40	HARBOR BOULEVARD	259,000	F	F	F	E
5	37.67	BALL ROAD	272,000	F	F	D	D
5	38.95	LINCOLN AVENUE	272,000	E	F	D	D
5	39.49	EUCLID AVENUE	262,000	F	F	F	F
5	40.71	BROOKHURST STREET	257,000	F	F	F	E
5	42.10	JCT. RTE. 91, RIVERSIDE/ARTESIA FREEWAYS	120,000	C	C	B	B
5	43.13	STANTON AVENUE	192,000	C	C	C	C
5	43.43	JCT. RTE. 39 (BEACH BOULEVARD OVERCROSS	192,000	C	C	D	C
5	44.26	ARTESIA AVENUE	168,000	D	D	C	C
5	44.38	ORA-LA COUNTY LINE (BUENA PARK CITY LIMITS)	168,000	D	D	D	D

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
22	0.34	BEGIN GARDEN GROVE FREEWAY	93,000	E	E	E	E
22	0.37	JCT. RTE. 605 NORTH	93,000	E	E	E	E
22	0.65	WEST JCT. RTE. 405	96,000	E	E	E	E
22	0.66	EAST JCT. RTE. 405, SAN DIEG FREEWAY AT BOLSA	138,000	D	D	F	F
22	2.65	KNOTT AVENUE/ GOLDEN WEST STREET	163,000	F	E	F	F
22	3.59	BEACH BOULEVARD	190,000	E	D	E	F
22	4.81	MAGNOLIA STREET	202,000	E	D	E	F
22	5.82	BROOKHURST STREET	205,000	E	D	E	F
22	6.81	EUCLID STREET	216,000	E	D	E	F
22	7.83	HARBOR BOULEVARD	231,000	F	F	F	F
22	8.82	GARDEN GROVE BOULEVARD	247,000	F	F	F	F
22	9.73	ORANGE, MANCHESTER AVENUE/CITY DRIVE	254,000	F	F	F	F
22	10.48	JCT. RTES. 5 AND 57; SANTA ANA/ORANGE FREEWAYS	254,000	F	F	F	F
22	10.99	SANTA ANA, MAIN STREET	144,000	C	E	C	D
22	11.83	ORANGE, GLASSELL STREET	140,000	D	E	D	D
22	12.87	ORANGE, TUSTIN AVENUE	139,000	B	C	B	D
22	13.16	JCT. RTE. 55, COSTA MESA FREEWAY	118,000	C	C	C	B

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
55	0.00	FINLEY AVENUE	47,000	N/A	N/A	N/A	N/A
55	0.27	JCT. RTE. 1, PACIFIC COAST HIGHWAY	54,000	N/A	N/A	N/A	N/A
55	1.51	EAST 17TH STREET	86,000	N/A	N/A	N/A	N/A
55	1.82	HARBOR BOULEVARD	86,000	N/A	N/A	N/A	N/A
55	2.02	19TH STREET	96,000	N/A	N/A	N/A	N/A
55	2.77	VICTORIA/22ND STREETS	127,000	C	C	C	C
55	4.02	MESA DRIVE	142,000	E	D	B	B
55	4.74	JCT. RTE. 73, CORONA DEL MAR FREEWAY	142,000	E	D	B	B
55	5.99	JCT. RTE. 405, SAN DIEGO FREEWAY	232,000	E	F	F	D
55	6.99	SANTA ANA, MAC ARTHUR BOULEVARD INTERCHANGE	251,000	E	F	F	D
55	7.85	SANTA ANA, DYER ROAD	252,000	E	F	F	D
55	9.44	SANTA ANA, EDINGER AVENUE	269,000	D	F	F	D
55	9.96	TUSTIN, MC FADDEN STREET	269,000	D	F	F	D
55	10.45	TUSTIN, JCT. RTE. 5, SANTA ANA FREEWAY	259,000	F	F	F	F
55	10.98	SANTA ANA, FOURTH STREET	243,000	D	F	F	F
55	11.79	TUSTIN, SEVENTEENTH STREET	251,000	E	F	F	F
55	12.97	JCT. RTE. 22 WEST, GARDEN GROVE FREEWAY	251,000	E	F	F	F
55	13.70	ORANGE, CHAPMAN AVENUE	251,000	C	F	F	D
55	15.24	ORANGE, KATELLA AVENUE	230,000	D	F	F	E
55	16.98	ORANGE, LINCOLN AVENUE	214,000	D	F	F	E
55	17.83	JCT. RTE. 91, RIVERSIDE FREEWAY	213,000	F	F	F	E

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
57	10.83	JCT. RTES. 5 AND 22, SANTA ANA/GARDEN GROVE	110,000	B	B	C	C
57	11.24	CHAPMAN AVENUE	240,000	C	C	F	F
57	11.80	ORANGEWOOD AVENUE	240,000	C	C	F	F
57	12.53	KATELLA AVENUE	242,000	E	D	F	F
57	13.42	BALL ROAD	242,000	E	D	E	F
57	14.78	LINCOLN AVENUE	242,000	D	C	E	D
57	15.60	JCT. RTE. 91, RIVERSIDE FREEWAY	273,000	E	E	F	F
57	16.39	ORANGETHORPE AVENUE	275,000	D	D	D	E
57	17.30	CHAPMAN AVENUE	275,000	E	E	F	F
57	17.57	NUTWOOD AVENUE	252,000	C	D	F	F
57	18.34	YORBA LINDA BOULEVARD	248,000	C	D	F	E
57	19.86	JCT. RTE. 90, IMPERIAL HIGHWAY	248,000	C	D	F	F
57	20.88	LAMBERT ROAD	236,000	C	F	F	F
57	21.78	TONNER CANYON ROAD	230,000	C	F	F	D
57	22.55	ORANGE-LOS ANGELES COUNTY LINE	205,000	C	F	F	D
73	10.00	JCT. INTERSTATE 5	39,200	B	A	A	B
73	11.76	GREENFIELD ROAD	39,200	B	A	A	B
73	13.40	LA PAZ ROAD	48,300	C	A	A	C
73	14.39	ALISO CREEK ROAD	48,300	B	A	A	C
73	16.25	EL TORO ROAD	57,000	C	A	A	C
73	18.69	TOLL PLAZA	67,000	C	B	A	C
73	21.43	NEWPORT COAST DRIVE	67,100	C	B	A	C
73	22.45	BONITA CANYON DRIVE/FORD ROAD	64,000	C	A	A	C
73	24.78	JAMBOREE ROAD	171,000	E	F	F	F
73	26.58	JCT. RTE. 55	171,000	F	F	F	F
73	27.28	BEAR STREET	113,300	C	C	C	C
73	27.81	JCT. RTE. 405, SAN DIEGO FREEWAY	85,000	C	C	C	C

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
91	0.00	LOS ANGELES-ORANGE COUNTY LINE	232,000	E	F	E	E
91	0.49	LA PALMA, ORANGETHORPE AVENUE	253,400	F	F	F	F
91	0.85	BUENA PARK, VALLEY VIEW STREET	253,400	F	F	F	F
91	1.84	BUENA PARK, KNOTT AVENUE	266,000	F	F	F	F
91	2.62	BUENA PARK, JCT. RTE. 39, BEACH BOULEVARD	276,000	F	F	F	F
91	3.64	FULLERTON, JCT. RTE. 5, SANTA ANA FREEWAY	145,000	D	D	C	D
91	1.23	ANAHEIM, BROOKHURST AVENUE	279,900	F	F	F	F
91	2.23	ANAHEIM, EUCLID AVENUE	280,000	F	F	F	F
91	3.26	FULLERTON, HARBOR BOULEVARD	280,000	F	F	F	F
91	3.51	ANAHEIM, LEMON STREET/HARVARD AVENUE	270,000	F	F	F	F
91	4.26	ANAHEIM, EAST STREET	270,000	F	F	F	F
91	5.26	ANAHEIM, STATE COLLEGE BOULEVARD	261,600	F	F	F	F
91	6.12	ANAHEIM, JCT. RTE. 57, ORANGE FREEWAY	256,000	F	F	F	F
91	7.35	ANAHEIM, KRAEMER BOULEVARD/GLASSELL STREET	223,000	D	E	F	E
91	8.40	ANAHEIM, TUSTIN AVENUE	230,800	C	D	F	F
91	9.19	ANAHEIM, JCT. RTE. 55 SOUTH, COSTA MESA FRWY	321,000	F	F	F	F
91	10.09	ANAHEIM, LAKEVIEW AVENUE	321,000	D	D	F	F
91	11.54	ANAHEIM, JCT. RTE. 90 WEST, IMPERIAL HIGHWAY	302,000	E	E	F	F
91	14.43	WEIR CANYON ROAD	128,000	B	B	C	C
91	15.93	JCT. RTE. 241	279,000	D	F	F	F
91	16.40	GYPSUM CANYON ROAD	279,000	D	F	F	F
91	17.95	COAL CANYON ROAD	279,000	C	D	F	F
91	18.91	Orange Riverside County line, Green River Rd	264,000	C	D	E	D

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
133	8.08	BEGIN FREEWAY	34,500	A	D	D	A
133	8.38	IRVINE, JCT. RTE. 405, SAN DIEGO FREEWAY	34,500	A	D	D	A
133	8.93	BARRANCA PARKWAY	32,500	A	D	D	A
133	9.52	IRVINE, JCT. RTE. 5, SANTA ANA FREEWAY	45,400	B	F	F	B
241	14.55	OSO PARKWAY	7,000	A	A	A	A
241	17.54	ANTONIO PARKWAY	17,000	B	A	A	A
241	18.49	SANTA MARGARITA PARKWAY	37,000	C	A	A	C
241	20.08	LOS ALISOS BOULEVARD	37,000	C	A	A	C
241	21.80	PORTOLA PARKWAY SOUTH	33,000	B	A	A	B
241	23.42	ALTON PARKWAY	40,300	C	A	A	C
241	27.38	JCT. ROUTE 133	40,000	B	A	A	B
241	32.54	CHAPMAN-SANTIAGO ROAD	40,000	A	C	C	A
241	36.10	WINDY RIDGE TOLL PLAZA	43,000	A	B	B	A
241	39.08	JCT. ROUTE 91	43,000	A	B	B	A

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
261	0.00	WALNUT AVENUE	72,400	A	C	B	A
261	1.64	IRVINE BOULEVARD	34,600	A	C	C	A
261	2.85	PORTOLA PARKWAY	34,600	A	B	B	A
261	6.21	JCT. ROUTE 241	33,200	A	B	B	A

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
405	0.23	IRVINE, JCT. RTE. 5, SAN DIEGO FREEWAY CONTINUES	192000	F	F	F	F
405	0.95	IRVINE, IRVINE CENTER DRIVE	215,000	E	F	E	F
405	1.80	IRVINE, JCT. RTE. 133, LAGUNA FREEWAY	248,000	E	F	E	F
405	2.88	IRVINE, SAND CANYON AVENUE	260,000	E	F	E	F
405	3.95	IRVINE, JEFFREY ROAD/UNIVERSITY DRIVE	253,000	E	F	E	F
405	5.62	IRVINE, CULVER DRIVE	279,000	D	D	E	F
405	6.92	IRVINE, JAMBOREE BOULEVARD	295,000	E	F	E	F
405	7.80	IRVINE, MAC ARTHUR BOULEVARD	301,000	D	D	E	F
405	8.74	JCT. RTE. 55, COSTA MESA FREEWAY	301,000	F	E	F	F
405	9.51	COSTA MESA, BRISTOL STREET	255,000	E	C	F	F
405	10.28	FREEWAY, FAIRVIEW ROAD	305,000	D	C	D	E
405	11.45	COSTA MESA, HARBOR BOULEVARD	305,000	D	E	D	D
405	12.64	FOUNTAIN VALLEY, EUCLID STREET	323,000	E	E	D	E
405	13.78	FOUNTAIN VALLEY, BROOKHURST STREET	301,000	F	F	F	F
405	14.82	FOUNTAIN VALLEY, WARNER AVENUE	275,000	F	F	F	F
405	15.21	HUNTINGTON BEACH, MAGNOLIA STREET	270,000	F	F	F	F
405	16.54	BOULEVARD	271,000	F	F	F	F
405	17.75	STREET	270,000	F	F	F	F
405	19.16	WESTMINSTER, WESTMINSTER AVENUE	257,000	F	F	F	F
405	20.75	JCT. RTE. 22 EAST, GARDEN GROVE FREEWAY	257,000	F	F	F	F
405	22.64	SEAL BEACH, SEAL BEACH BOULEVARD	383,000	F	F	F	F
405	23.28	SEAL BEACH, JCT. RTE. 22 WEST	374,000	F	F	F	F
405	23.98	SEAL BEACH, JCT. RTE. 605	374,000	F	F	F	F
405	24.18	ORANGE-LOS ANGELES COUNTY LINE	256,000	F	F	F	F

Caltrans District 12 CMP DATA

Orange Route	Post Mile	Description	2010 AADT	NB or EB LOS		SB or WB LOS	
				AM	PM	AM	PM
605	3.09	SEAL BEACH, JCT. RTE. 22; BEGIN FREEWAY	44,500	B	B	A	A
605	3.50	SEAL BEACH, JCT. RTE. 405, SAN DIEGO FREEWAY	44,500	B	B	A	A
605	1.41	LOS ALAMITOS, KATELLA AVENUE	169,000	D	C	C	C
605	1.64	ORANGE-LOS ANGELES COUNTY LINE	178,000	D	D	C	C

Appendix B-1: Meeting CMP Traffic Impact Analysis Requirements

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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; and
    - 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; and
    - 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 judgment 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 judgment 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 judgment 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 judgment 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 Upon Request)

Appendix B – Deviation 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:

40,000 veh./day x 3% = 1,200 veh./day
Assuming 50/50 distribution of project traffic on a CMP link
1,200 x 2 = 2,400 veh./day total generation

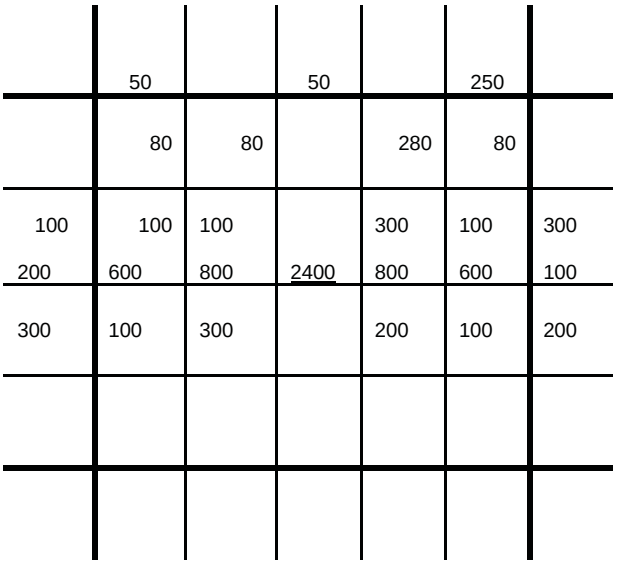
As can be seen, a project which will generate 2,400 trips/day will have an expected maximum link impact on the CMP system of 1,200 trips/day based on a reasonably balanced distribution of project traffic. On a peak-hour basis, the 3% level of impact would be 120 peak-hour trips. For intersections, a 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.

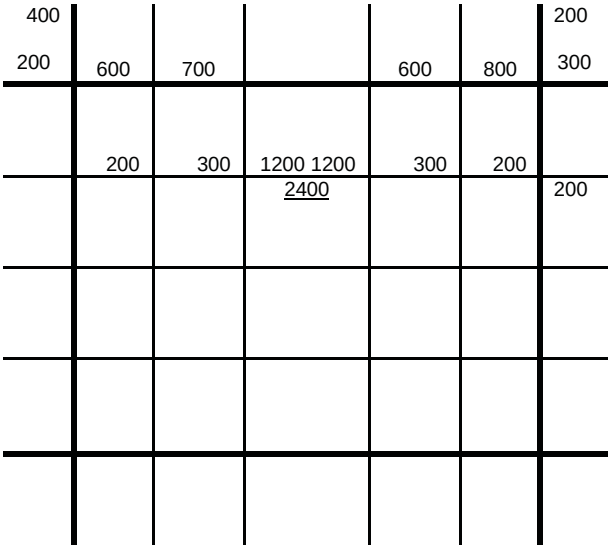
The following illustration shows that the 2,400 trip/day threshold would be expected to produce a 3% impact on the CMP System only when the project has relatively direct access to a CMP link. As a project location moves further off the CMP System the expected impacts is reduced. With a more directional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

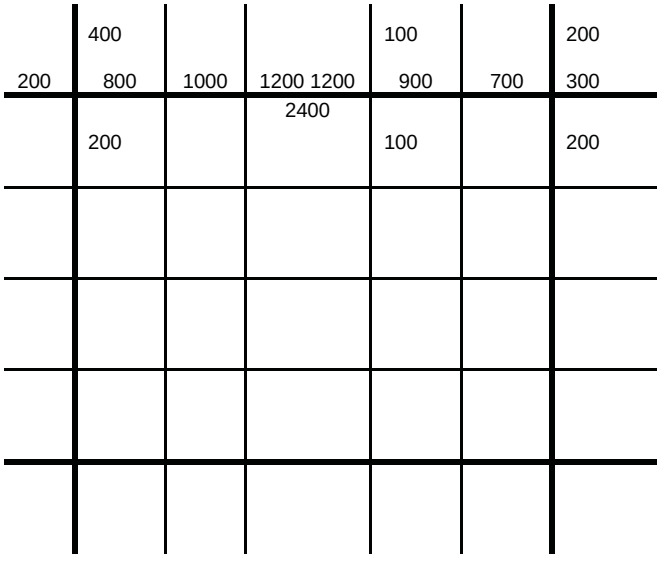
CMP Highway System Impacts for Development Generating 2,400 trips/day
Based on proximity to CMP System



MAXIMUM IMPACT < 1%



MAXIMUM = 1.8%



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 veh./day

For no direct CMP System Access:
Approximately 1/3 less impact on CMP System
1,600 x 3/2 = 2,400 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 B-2: Traffic Impact Analysis Exempt Projects

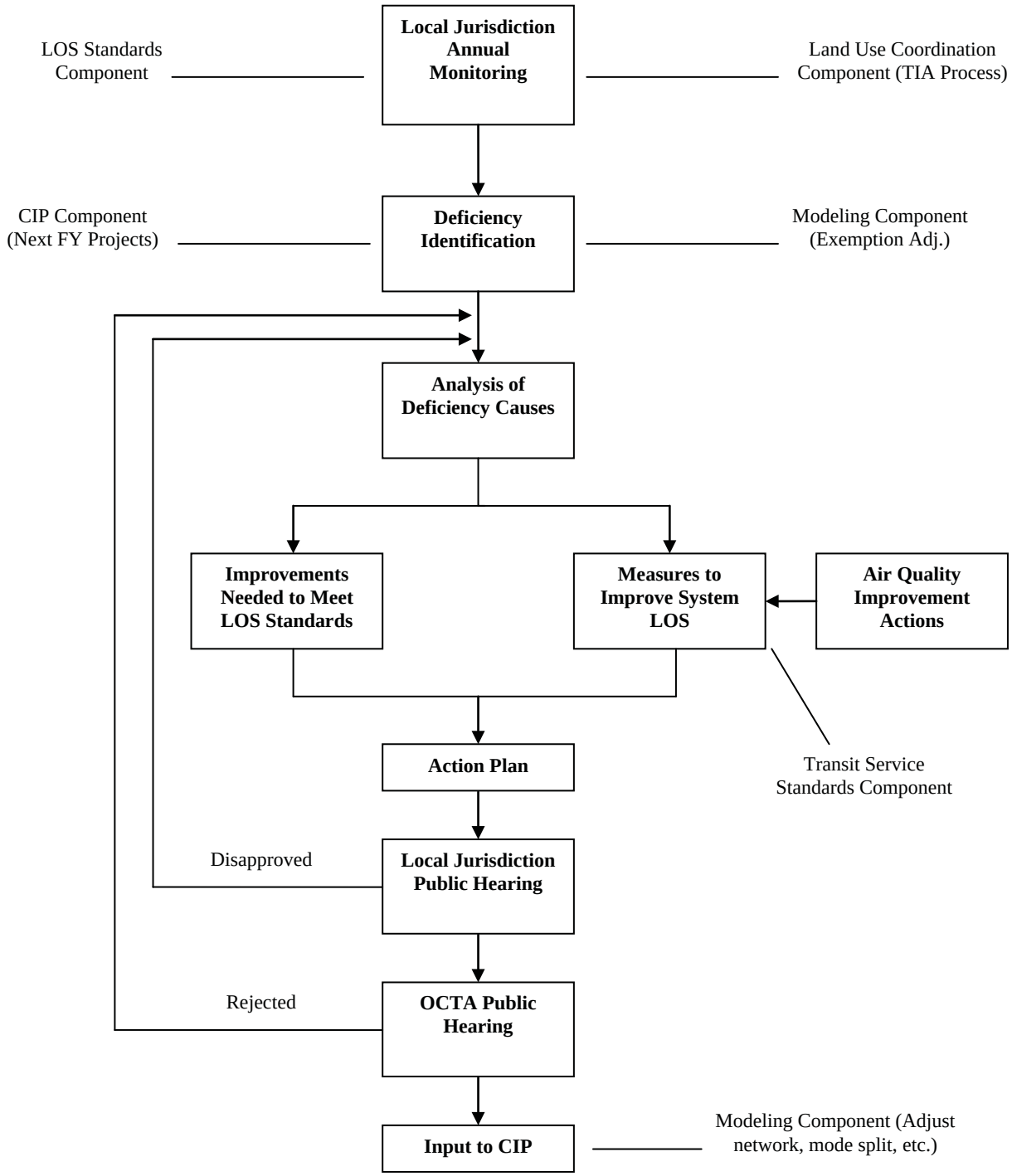
Projects exempt from the requirements of a mandatory, CMP Traffic Impact Analysis are listed below. This list is not meant to be all-inclusive. Any inquiries regarding additional exemptions shall be transmitted in writing to the Orange County Transportation Authority, attention CMP Program Manager.

Project Not Requiring a CMP TIA Analysis:

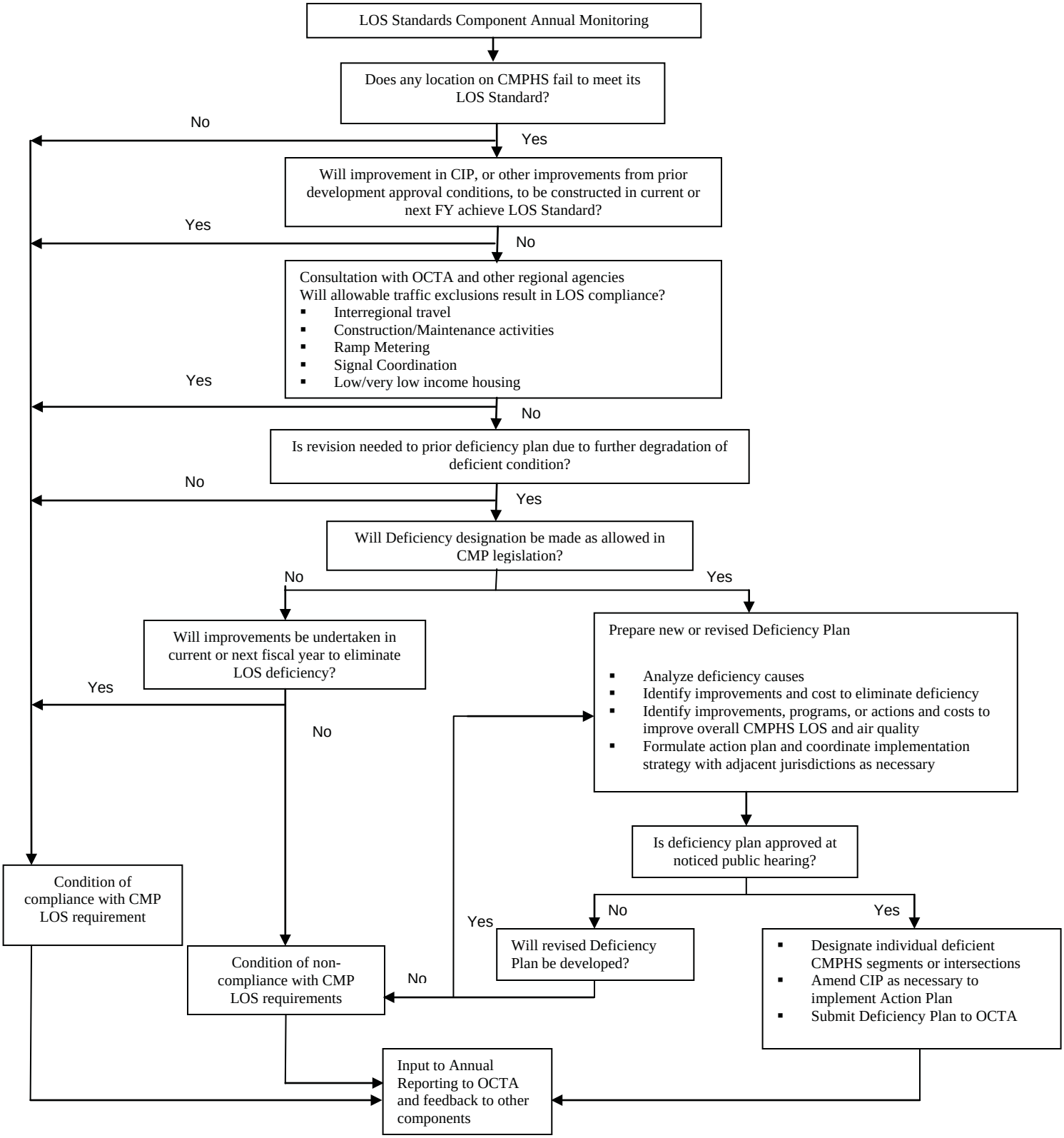
1. Applicants for subsequent development permits (i.e., conditional use permits, subdivision maps, site plans, etc.) for entitlement specified in and granted in a development agreement entered into prior to July 10, 1989.[1]
2. Any development application generating vehicular trips below the Average Daily Trip (ADT) threshold for CMP Traffic Impact Analysis, specifically, any project generating less than 2,400 ADT total, or any project generating less than 1,600 ADT directly onto the CMPHS. [1, 2]
3. Final tract and parcel maps. [1, 2, 3]
4. Issuance of building permits. [1, 2, 3]
5. Issuance of certificates of use and occupancy. [1, 2, 3]
6. 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. [1, 2, 3]

[1] Vehicular trips generated by CMP TIA-exempt development applications shall not be factored out in any traffic analyses or levels of service calculations for the CMPHS.
[2] Exemption from conduction a CMP TIA shall not be considered an exemption from such projects' participation in approved, transportation fee programs established by the local jurisdiction.
[3] 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 1992).

APPENDIX C-1: CMP Deficiency Plan Flow Chart



APPENDIX C-2: Deficiency Plan Decision Flow Chart



APPENDIX D: CMP Monitoring Checklists

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.

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:

_____

_____

_____

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

CMP MONITORING CHECKLIST
DEFICIENCY PLANS

Responsibility: Cities, County

CMP CHECKLIST	**YES**	**NO***
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
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.

CMP MONITORING CHECKLIST
LAND USE COORDINATION

Responsibility: Cities, County

CMP CHECKLIST	**YES**	**NO***
CMP Traffic Impact Analysis:		
1. Have you maintained the CMP traffic impact analysis (TIA) process you selected for the previous CMP?	☐	☐
a. If not, have you submitted documentation of the revised TIA approach and methodology to OCTA for review and approval?	☐	☐
2. Was your CMP TIA process applied to all applicable, non-exempt development projects in review during this CMP cycle?	☐	☐
a. How many approved development projects were required to conduct a CMP TIA? _____ _____		
b. Were CMP links &intersections projected to perform at LOS E (or the baseline level, if worse than E) or better?	☐	☐
i. If not, were mitigation measures and costs identified for CMP links & intersections exceeding LOS standards? If not, please list these intersections. _____ _____ _____	☐	☐
c. Were all CMP intersections that were projected to exceed LOS standards located within your jurisdiction?	☐	☐
i. If not, did your agency participate in inter-jurisdictional discussions with other affected jurisdictions to develop a mitigation strategy for each impacted link & intersection? Please list the CMPHS links & intersections that were outside? _____ _____ _____	☐	☐

CMP MONITORING CHECKLIST
CAPITAL IMPROVEMENT PROGRAM

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?	☐	☐
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?	☐	☐
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?	☐	☐
c. Is it consistent with air quality mitigation measures for transportation-related vehicle emissions?	☐	☐
d. Was the CIP database computer application used to prepare the CMP CIP?	☐	☐

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APPENDIX E: Capital Improvement Programs

(Under Separate Cover)

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APPENDIX F: Orange County Subarea Modeling Guidelines

(Under Separate Cover)