

**Karen Taylor**

**From:** Dmitri Smith [Dfsmith@energy.state.ca.us]  
**Sent:** Thursday, April 13, 2006 10:38 AM  
**To:** jdballas@cityofindustry.org  
**Subject:** Walnut Creek Energy Park

**DOCKET**  
**05-AFC-2**  
**DATE** ~~APR 13 2006~~  
**RECD** ~~MAY 18 2006~~

Good morning John,

First of all, thank you for your help yesterday. I wanted to follow up our telephone conversation (4/12/2006, 9:10 am) with an e-mail to ensure that I captured everything correctly. In our conversation, we discussed intersection level of service (LOS) thresholds for the City and you stated that the City of Industry's Traffic Circulation Element identifies that a LOS "D" or volume capacity ratio of .9 should be maintained for local roadways. Additionally, we discussed the lane width of local roadways which you stated range between 11 to 12 feet. Also, you stated that you will fax a copy of the circulation element regarding the LOS threshold for roadways within the City of Industry. If I misstated or misunderstood anything, please let me know. If not, I will assume that this summary is accurate.

Again, thank you,

Dmitri

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Dmitri,  
Here is a copy of our  
Level of Service (LOS)  
standards.  
John B.  
Bsheets

lane configurations at the studied intersections are presented on Figure 5. Existing volumes on the studied freeway links were obtained from The 1997 Congestion Management Program document of L.A. County: Freeway Monitoring Stations and Level of Service section, and increased by a one percent per year growth rate. The 24-hour counts along the studied segments were also taken in May 1999.

## LEVEL OF SERVICE CRITERIA

The purpose of the City's circulation system is to provide convenient access within the community and to major regional destinations, as well as to minimize the disruption of through traffic. The performance of a given roadway segment or intersection is rated by its Level of Service (LOS). Roadway capacity has been defined as the maximum number of vehicles that can pass over a given roadway during a given time period under prevailing roadway and traffic conditions. By comparison, levels of service are a relative measure of driver satisfaction, with values ranging from A (free flow) to F (forced flow) as described in Table 1 for signalized intersections and Table 2 for unsignalized intersections. LOS reflects a number of factors such as speed and travel time, traffic interruptions, vehicle delay, freedom to maneuver, driver comfort and convenience, safety and vehicle operating costs. LOS D is generally regarded as the lowest acceptable LOS in built-out urban areas. Roadway segments operating below LOS D at any hour are considered to have a deficient number of traffic lanes to service the traffic volumes on the street. The CMP minimum level of service standard is LOS E, except where base year LOS is worse than E. In such cases where the base year LOS is worse than E the base year level of service will be the standard.

**TABLE 1  
LEVEL OF SERVICE CRITERIA<sup>2</sup> FOR INTERSECTIONS**

Level of Service	Traffic Flow Characteristics	Volume to Capacity (V/C) Ratio
A	Extremely favorable progression with very low delay. Most vehicles do not stop at all.	0.00 - 0.60
B	Good progression and stable flow with an occasional approach phase fully utilized.	0.61 - 0.70
C	Satisfactory operation with fair progression and longer cycle lengths. Individual cycle failures may begin to appear.	0.71 - 0.80
D	Tolerable delay where congestion becomes noticeable and many vehicles stop.	0.81 - 0.90
E	Unstable flow with poor progression and frequent cycle failures. This is considered the limit of acceptable delay.	0.91 - 1.00
F	Over saturation with arrival flow rates exceeding the capacity of the intersection. Considered unacceptable to most drivers.	1.01 +

**TABLE 2**  
**LEVEL OF SERVICE CRITERIA<sup>1</sup> FOR UNSIGNALIZED INTERSECTIONS**

Level of Service	Average Total Delay (sec/veh)
A	≤ 5
B	> 5 and ≤ 10
C	> 10 and ≤ 20
D	> 20 and ≤ 30
E	> 30 and ≤ 45
F	> 45

Tables 3 and 4 illustrate the evaluation criteria for roadway segments and freeway locations. Freeway mainline LOS is estimated through calculation of the demand-to-capacity (D/C) ratio and associated LOS. Calculation of LOS based on D/C ratios is a surrogate for the speed-based LOS used by Caltrans for traffic operational analysis. LOS F(1) through F(3) designations are assigned where severely congested (less than 25 MPH) conditions prevail for more than one hour, converted to an estimate of peak hour demand.

**TABLE 3**  
**ROADWAY CAPACITY VALUES, VEHICLES PER DAY**

Type of Roadway	Functional Classification	Maximum Average Daily Volumes at LOS				
		A	B	C	D	E
6 Lanes Divided	Major Arterial	33,900	39,400	45,000	50,600	56,300
4 Lanes Divided	Secondary Arterial	22,500	26,300	30,000	33,800	37,500
4 Lanes Undivided	Business Collector	15,000	17,500	20,000	22,500	25,000
2 Lanes Undivided	Business Collector Resident\Collector	7,500	8,800	10,000	11,300	12,500
2 Lanes Undivided	Local Residential	1,875	2,190	2,500	2,810	3,125

(Source: City of Diamond Bar Guidelines for the Preparation of Traffic Impact Analysis Reports, 1997.)

**TABLE 4**  
**FREEWAY SEGMENT LEVEL OF SERVICE**

D/C Ratio	LOS	D/C Ratio	LOS
0.00-0.35	A	> 1.00-1.25	F(0)
> 0.35-0.54	B	> 1.25-1.35	F(1)
> 0.54-0.77	C	> 1.35-1.45	F(2)
> 0.77-0.93	D	> 1.45	F(3)
> 0.93-1.00	E		

(Source: Metropolitan Transportation Authority 1997 Congestion Management Guidelines for Los Angeles County).

### EXISTING TRAFFIC CONDITIONS

CMP guidelines state that all TIA's must include conduct intersection LOS calculations using either the ICU method or the Circular 212 method. The methodology used herein is the Intersection Capacity Utilization (ICU) method for determining intersection LOS. In urban areas, intersections operating at or below LOS E during one of the peak hours are considered to be deficient.

The ability of a roadway to accommodate vehicular traffic can be measured by comparing the actual projected volume (V) of a roadway segment or intersection to its theoretical capacity (C). This can be done with daily traffic volumes or the peak hour volumes. Peak hour volume to capacity (V/C) calculations, particularly at intersections, give the most accurate picture of the relative level of congestion experienced by a motorist. The previously described qualitative LOS evaluation is used to express traffic flow conditions identified by an intersection capacity evaluation. The ICU methodology was utilized to determine the level of service for the study area intersections which are currently signalized. The intersections were analyzed using AM and PM peak hour turning movement volumes, the heaviest traffic volumes experienced during a typical day.

Generally, a V/C ratio of 0.80 (corresponding to the upper threshold of LOS C) represents the maximum desirable capacity utilization, a V/C ratio of 0.90 (LOS D) represents the maximum acceptable capacity utilization within urban areas, and a V/C ratio above 1.00 exceeds the theoretical capacity of an intersection, resulting in LOS F conditions. Any intersection operating worse than LOS D, the maximum acceptable LOS, is considered to be operating deficiently. Existing LOS and the related V/C ratios are summarized in Table 5 and detailed ICU calculations are included in the Technical Appendix. As the table indicates, deficiencies are currently noted at the following locations: