

1993

Congestion Management Program for Los Angeles County

Countywide Deficiency Plan Background Study



Los Angeles County
Metropolitan Transportation Authority — MTA

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1993 CONGESTION MANAGEMENT PROGRAM

**COUNTYWIDE DEFICIENCY PLAN
BACKGROUND STUDY**

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1. INTRODUCTION

The first Congestion Management Program (CMP) for Los Angeles County was adopted by the Los Angeles County Transportation Commission (LACTC) in November 1992. Linking transportation, land use and air quality decisions for the first time, the CMP is designed to address regional congestion in a comprehensive manner. The first year CMP consisted of all the elements required under statute: a designated highway system with level of service (LOS) standards, transit analysis, transportation demand management, land use analysis, a capital improvement program, and a countywide transportation model. In addition to these core elements, CMP statute requires the preparation of deficiency plans when highway LOS standards cannot be maintained.

The newly formed Los Angeles County Metropolitan Transportation Authority (MTA) is the successor agency to LACTC in its role as the Congestion Management Agency for Los Angeles County. The MTA has developed a countywide approach to meet deficiency plan requirements of the CMP. This approach determines long-range countywide congestion mitigation needs and local jurisdiction participation goals, identifies a toolbox of mobility improving measures through which to achieve these goals, and establishes a system for assigning credit to local jurisdictions for implementing these measures.

This background study documents the development of this countywide deficiency plan for Los Angeles County, and provides detailed discussion of associated technical and policy issues. It is intended as a companion document to the 1993 CMP. In order to avoid duplication, references are made to the 1993 Congestion Management Program for Los Angeles County where appropriate. Copies of the CMP can be obtained by contacting the MTA's CMP Hotline at (213) 244-6599.

1.1 STATUTORY REQUIREMENT

California Government Code Section 65089.3 (b), provided in Appendix AA, specifies the necessary elements of deficiency plans. Deficiency plans are required when portions of the CMP highway system deteriorate to LOS F, or worsen within LOS F. In summary, a deficiency plan must include:

- (A) An analysis of the cause of deficiency.
- (B) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

- (C) A list of improvements, programs, or actions, and estimates of costs, that will (i) measurably improve the level of service of the system, and (ii) contribute to significant improvements in air quality.
- (D) An action plan, consisting of improvements identified in (B) or (C) above and including a specific implementation schedule.

Statute also provides guidelines for the determination of deficiencies, and agencies that must be consulted during development of the deficiency plan. Statute further specifies that the city or county must forward its adopted deficiency plan to the Congestion Management Agency for approval.

1.2 STUDY BACKGROUND

MTA developed the CMP in an open, participatory process. Since December 1990, staff has met monthly with a Policy Advisory Committee (PAC) on all aspects of the CMP. The PAC membership consists of representatives from local government, state and regional agencies, transit operators, environmental interests, and the private sector. A CMP Technical Forum has also met monthly to discuss technical and administrative aspects of issues discussed by the PAC. At least two contacts from each of the 89 local jurisdictions within the county received monthly updates on CMP development. Additionally, there have been ongoing meetings with individual jurisdictions, groups of jurisdictions, and other interested parties. These meetings and related activities will continue as the program is further refined through implementation.

In March 1992, LACTC held a workshop to discuss CMP land use and deficiency plan requirements. In response to previous Commission direction, staff reported on various CMP deficiency plan alternatives that would not require a countywide fee.

Testimony at the workshop was provided by individuals representing local jurisdictions, the private sector, and environmental interests. The testimony mirrored issues that had been raised previously, and subsequently, by the many interests tracking CMP development. The testimony discussed:

- Countywide Deficiency Plan Approach - Because of the complexity and interrelatedness of transportation impacts, local jurisdictions could not bear the burden of addressing deficiencies by themselves. There was overwhelming support from both local jurisdictions and the development community for a countywide approach to meet deficiency plan requirements.
- Effectiveness & Flexibility of Actions - Mitigation resulting through the deficiency plan must be effective at addressing congestion on the regional system. Furthermore, the program should remain flexible to accommodate new ideas, as well as the diversity of community characteristics within Los Angeles County.

- Minimizing Administrative Costs - The deficiency plan should be as simple as possible, focus on mitigation implementation, and build upon existing processes rather than creating new analysis or bureaucratic requirements.
- Sensitivity to the Economy & Jobs - The program should be responsive to cycles in the economy.
- Consistency and Fairness Among Communities & Developments - The program should establish consistent requirements throughout the county, and account for the cumulative impacts of growth rather than focusing on specific types or thresholds of development.
- Promoting Inter-Jurisdictional Mitigation - The program should encourage mitigation of impacts that cross jurisdictional boundaries.
- Transit Enhancing Land Use - Due to the impact of land use patterns on transportation, the program should create incentives for appropriate land use densities that make transit alternatives viable transportation options.

In consideration of these issues, the Commission directed staff to develop a coordinated, countywide approach to meet deficiency plan responsibilities. Staff subsequently worked with the CMP Policy Advisory Committee, technical contacts from each local jurisdiction, and other interested parties to develop an effective and equitable approach for implementation of a countywide deficiency plan.

1.3 REASONS FOR A COUNTYWIDE APPROACH

A countywide approach, requiring the participation of all local jurisdictions, was selected as best able to address the issues listed above. After consideration of several alternatives, a countywide deficiency plan was selected based on the following benefits:

- It is best able to account for and address the cumulative impacts of all types and sizes of development;
- The high level of traffic congestion in Los Angeles County, and the long and interrelated travel patterns that exist, mean that a deficiency at any one location has multiple causes;
- Many of the most effective mitigation strategies will require partnerships that combine the resources of multiple jurisdictions and other government agencies;
- A uniform countywide approach provides certainty & predictability among jurisdictions as well as to the business community; and
- It provides a framework which can be integrated with existing mitigation programs, and avoids delay to development approvals.

Alternatives considered to this uniform countywide approach can be generally described as project-by-project impact analysis and monitoring-based mitigation.

Project-by-project or subarea impact analysis would require that development proposals (or combined proposals within an area) individually analyze travel demands generated by each project. This analysis would determine which specific CMP facilities will be impacted. If the development will cause the facility to drop below the level of service standard, a deficiency plan must then be prepared to mitigate that impact.

The project-by-project analysis approach was rejected for several reasons. First, responsibility for cumulative impacts would be overlooked. Such impacts could be generated by numerous developments occurring below any threshold for analysis or by growth outside the impacted jurisdiction. Second, due to the long and interrelated travel patterns among the 89 local jurisdictions in Los Angeles County, project impact analyses will frequently cross several jurisdictional boundaries and require multi-agency negotiations that could substantially delay project approvals. Finally, individual project impact studies could result in duplicative or conflicting findings where multiple developments impact a single deficient facility, and would require significant administrative resources for study preparation and review. For these reasons, the project-by-project analysis approach was rejected in favor of the proposed program which requires uniform participation by all local jurisdictions.

A monitoring-based mitigation approach was also examined. This approach differs from the uniform countywide program in that the values assigned to mitigation measures would be determined through individual monitoring of project effectiveness. This approach was viewed as infeasible since it would also be administratively burdensome to local jurisdictions, who would bear the monitoring responsibility for assessing project effectiveness. Project-level effectiveness monitoring is not necessary for the CMP, since such monitoring would duplicate system-level monitoring already provided through annual CMP highway and transit monitoring, established literature, and other ongoing case study project evaluations.

1.4 STUDY APPROACH

The basic intent of the Countywide Study was to develop a framework for the implementation of congestion mitigation, in order to avoid or address deficiencies on the regional transportation system. To accomplish this, the framework considered a number of issues such as how to accommodate the diversity of Los Angeles communities within the program. This framework also considered how to achieve a technically sound mitigation value system which is simple to implement by all local jurisdictions, versus a system of maximum technical sophistication but which therefore requires specialized staff for implementation at the local level. The paragraphs below summarize the approach to these issues; detailed discussion of the findings at each step is provided in following chapters.

- The first step in developing this countywide approach was to quantify the size of the problem. This has been dubbed the "congestion gap," and refers to the magnitude of

deficiencies remaining on the CMP system after forecasting the impact of growth and the benefits of expected transportation improvements by the year 2010 (see Chapter 3).

In general terms, MTA's model runs indicate that roughly 15% of the trips generated by new development within Los Angeles County through 2010 will contribute to CMP deficiencies. This represents the size of the congestion gap to be addressed through the deficiency plan. To put this into some perspective, this fifteen percent of new development trips is equivalent to 3% of all trips in 2010; the Air Quality Management Plan calls for the reduction of 10% of all trips within the same time frame.

- The second step was to develop an equitable program for assigning responsibility for addressing this congestion gap. After thorough evaluation of options, monitoring new development activity was selected as providing the best indicator for attributing mitigation responsibility to individual jurisdictions (see Chapter 4).

This will allow the program to respond to economic cycles, increasing mitigation goals during periods of rapid growth and reducing goals during downturns. It will also ensure assignment of mitigation responsibilities to those jurisdictions that contribute to the impacts. It is proactive as it allows jurisdictions to plan for mitigation before the impact occurs. Finally, it controls for the variability of regional growth forecasts since mitigation goals are based on actual growth rather than assumed regional growth trends.

- The third step in developing a countywide approach was to decide how to mitigate these deficiencies. Based on review of the range of mitigation strategies being developed throughout the region and the desire of many local jurisdictions to maintain flexibility for local characteristics, the countywide deficiency plan uses a "toolbox" approach to mitigation. Mitigation strategies fall into three broad categories -- land use, capital improvements, and transportation demand management (see Chapter 5).

Each local jurisdiction may thereby select the actions it deems most appropriate for its community. Mitigation measures can be applied throughout the jurisdiction, in a subarea, or to a specific development. Jurisdictions can also work together on corridor or sub-regional strategies. Once the jurisdiction chooses its mitigation strategies, the basic requirement is that the overall value of the mitigation program be commensurate with the jurisdiction's mitigation goal as determined by new development activity.

This system provides local jurisdictions with the flexibility for local choices and provides incentive for jurisdictions to participate in multi-agency corridor improvements by crediting local contributions to those improvements. Finally, this approach allows the program to broaden the range of mitigation options beyond "traditional" measures and promote non-capital improvements such as land use densification and parking management.

Success of the program at improving transportation will require ongoing review and reevaluation of program elements during implementation. The MTA is committed to working with local jurisdictions to ensure smooth implementation of CMP requirements. MTA staff will be available to assist local jurisdictions at all phases of the deficiency plan process.

1.5 DEVELOPMENT OF THE CURRENT PROGRAM VS. CONCURRENT EFFORTS AND FUTURE UPDATES

The following chapters present the results of analysis and countywide deficiency plan development. Through this work, it should be recognized that bodies of knowledge, assumptions, and technical methodologies are continually evolving and improving. In addition, work is proceeding outside the CMP effort, such as MTA's pilot program of transportation demand management projects and Phase II TDM program, the South Coast Air Quality Management District's (SCAQMD) implementation of transportation control measures, and the Southern California Association of Government's (SCAG) ongoing Regional Comprehensive Plan development.

The basic approach of this study was to establish the scope, responsibilities and procedures of a countywide deficiency plan for the CMP. Individual components of the program will continue to evolve over time, such as growth forecasts and regional plans and programs that feed into the deficiency plan, and methods for evaluating the effectiveness of transportation demand management measures. Such improvements will be incorporated into future updates of the deficiency plan based on the best available information at that time.

In addition, the results of this study will feed back into updates of various regional plans by addressing issues such as implementability, the effectiveness of existing programs, and the applicability of analytical assumptions. The countywide deficiency plan will thereby evolve through experience - starting with a relatively simple, core program which can be reexamined and refined over time.

2. OVERVIEW OF DEFICIENCY PLAN IMPLEMENTATION

This chapter provides an overview and brief description of the countywide deficiency plan. Detailed descriptions of each element and related issues are provided in the chapters that follow.

2.1 SUMMARY

As a countywide program, all local jurisdictions must participate in the deficiency plan process, regardless of the number of CMP intersections or congestion levels specifically within their geographic limits.

The program involves each local jurisdiction tracking new development activity in order to establish its annual congestion mitigation goal. The goal links CMP deficiencies to development activity, and is set using a uniform point system (based on trips generated and impact to the CMP system). These points have become known as "debits". The local jurisdiction then implements mitigation measures, by selecting from a toolbox of capital, demand reducing, and land use strategies, with point values ("credits") assigned to each mitigation strategy. The jurisdiction is responsible for implementing sufficient credits to equal or exceed its debits. Both the debit and credit point systems will be refined over time.

Local jurisdictions claim credits upon implementation of mitigation strategies. The actions for which credit can be claimed and the amount of credit is determined by the CMP mitigation toolbox and value system. If a local jurisdiction contributes partial funding to a mitigation project, the credit is based on the mitigation value of the project and the proportion contributed by the jurisdiction. The credit system is discussed in Chapter 5.

Local jurisdictions are responsible for tracking and annually reporting *new development activity*, and must also report their *implementation* of mitigation actions. The MTA is responsible for assessing the *effectiveness* of mitigation actions, and refining the program accordingly through biennial CMP updates.

Since mitigation goals are determined for each jurisdiction based on annual total new development activity, there is no required linkage of mitigation to project-by-project development approvals. A jurisdiction may therefore choose to implement mitigation actions which are not related to new development. Each jurisdiction has the flexibility to choose the strategies - multi-jurisdictional, citywide, subarea, or project-specific - it deems most appropriate.

Funding for implementation of mitigation actions can be from any source programmed by the local jurisdiction, such as State Proposition 111 (Section 2105) and Federal Surface Transportation Program (STP 110%) formula allocations, Propositions A & C local return, and private contributions or assessments. Projects funded through MTA discretionary sources, such

as State Flexible Congestion Relief (FCR) funds, do not count toward meeting local jurisdiction deficiency plan obligations.

Local CMP conformance is determined by participation in the program, defined by: (1) tracking new development activity, (2) selecting commensurate mitigation strategies, and (3) implementing selected mitigation strategies. First year CMP conformance requirements (highway and transit monitoring, TDM ordinance and land use analysis program implementation) also continue.

2.2 ROLES & RESPONSIBILITIES

In keeping with the original goals for the program, this approach minimizes the administrative responsibilities and analysis requirements for local jurisdictions. MTA bears the bulk of the responsibility for analyzing the regional impact of growth and the effectiveness of improvement strategies.

Local jurisdictions are responsible for:

- Tracking new development activity, from which the jurisdiction's annual congestion mitigation goal is calculated;
- Selecting and implementing strategies commensurate with its mitigation goal; and
- Annually reporting these activities to the MTA.

The MTA is responsible for:

- Developing the countywide impact and mitigation point systems;
- Assisting local jurisdictions in selecting mitigation strategies;
- Reviewing reports from local jurisdictions as part of CMP conformance determination; and,
- Evaluating countywide congestion levels and the effectiveness of mitigation strategies, and refining the program accordingly.

3. FORECASTING THE COUNTYWIDE CONGESTION GAP

A key component in development of a countywide deficiency plan is effective use of the CMP travel demand forecasting model, which has been downloaded from the SCAG/LARTS regional model. The SCAG/LARTS model was developed to simulate travel patterns throughout the five county Southern California region. The model therefore has limited ability to replicate conditions on specific facilities (e.g., individual CMP arterials) and to reflect improvements resulting from certain mitigation strategies such as traffic signal synchronization and transportation demand management.

In view of the model's system-level perspective, the deficiency plan study was structured so that the role of the model was generally restricted to analyzing the impact of countywide growth on the transportation system (macro-analysis). Given the flexibility provided by the countywide deficiency plan, the effectiveness of mitigation projects in offsetting this impact was analyzed categorically, through project-specific case studies (micro-analysis). In other words, the model was used to define the magnitude of the long-range congestion problem; project case studies were used to define the effectiveness of solutions. This approach is described in detail below.

3.1 DEFINITION OF THE CONGESTION GAP

Under statute, a CMP highway segment or intersection becomes deficient when Levels of Service standards (defined in Los Angeles County as LOS F, or existing conditions if already at F) are not maintained. Through development of this study, the term "congestion gap" has evolved as a convenient expression for the magnitude of CMP deficiencies expected throughout Los Angeles County by the year 2010.

Technically, deficiencies are interpreted as an increase in traffic demand resulting in a volume-to-capacity ratio greater than 1.00 on any given CMP route. In order to improve the accuracy of the travel demand model on individual CMP routes, a post-model adjustment module was developed for the purpose of this study. This module compares model-generated traffic estimates to actual CMP traffic counts collected for each route. These base year model adjustments are then applied to future year modelling scenarios, resulting in substantially more reliable traffic volume and level of service estimates on individual CMP routes.

There are several ways of presenting this congestion gap. One approach would be to identify the specific street and freeway segments on the CMP system which are expected to become deficient. However, such detail would not be an appropriate representation of the congestion gap given the long range perspective of socioeconomic forecasts. Furthermore, the countywide model is intended to provide a broad picture of congestion on the countywide system rather than facility-specific analysis. As a result, the model was used to measure overall congestion impacts to the CMP system.

The countywide deficiency plan therefore focuses on totalling individual facility deficiencies into countywide aggregates, such as the total mileage of "deficient" CMP routes, rather than focusing on the specific facility. The intensity of this congestion gap is also expressed, using the total vehicle-miles of demand which cause these deficiencies. The specific results of this approach are presented in Section 3.4.

3.2 ACCOUNTING FOR STATUTORY EXCLUSIONS

Statute specifies that certain factors be excluded from the determination of deficiencies. In recognition of the overall organization of the program, the following points describe the handling of exclusions in the baseline forecast of deficiencies. Pursuant to statute, therefore, these factors are not included in the definition of the congestion gap:

- Interregional travel - Defined as "through" trips with neither origins nor destinations within the county, interregional travel does not contribute to forecasts of deficiencies. Interregional trips are excluded from the travel demand model through traffic assignment of a restricted trip table (see "trips originating outside Los Angeles County," below).
- Highway Construction, Rehabilitation and Maintenance - Does not contribute to forecasts of deficiencies in the model, and is also excluded from the traffic counts and LOS analysis used to calibrate the model.
- Freeway Ramp Metering - Does not reduce forecasts of deficiencies in the model. Delays on arterials due to freeway ramp metering are also excluded from the CMP LOS analysis (by using the intersection capacity utilization (ICU) method).
- Traffic Signal Coordination - Does not reduce forecasts of deficiencies in the model. Delays on arterials due to traffic signal coordination are also excluded from the CMP LOS analysis (by using the ICU method). Traffic signal synchronization is also a credit strategy as described in Chapter 5.
- Trips Originating Outside Los Angeles County - Does not contribute to forecasts of deficiencies, and is excluded from the travel demand model through traffic assignment of a restricted trip table. Combined with interregional travel, discussed above, the total result of these exclusions on the travel demand modelling is that only trips which originate within Los Angeles County are assigned to the highway network when forecasting traffic volumes.

Other exclusions identified in statute are related to land uses, and are accounted for through tracking of actual development activity. The handling of these land use-related exclusions is discussed in Chapter 4.

3.3 2010 BASELINE FORECAST ASSUMPTIONS

This section summarizes the basic input assumptions which determine the magnitude of the congestion gap. These assumptions are also directly related to the mitigation credit system since, in general, factors which are included in the baseline forecast will not qualify for credit toward mitigation of the congestion gap. Assumptions which feed into the 2010 forecasts are continually evolving (see Section 1.5 for further discussion). As a result, baseline assumptions will continue to be reexamined and incorporated through biennial CMP updates.

3.3.1 Socioeconomic Data. Socioeconomic data input to the model is provided by the Southern California Association of Governments (SCAG) and reflect the year 2010 forecasts used in the 1989 Regional Mobility Plan, including jobs/housing balance policies. This data includes single and multi-family dwelling units, population, retail and non-retail employment, and median household income. Countywide between 1990 and 2010, these figures indicate a 15% increase in population (from 8.9 to 10.3 million residents) and a 15% increase in employment (from 4.7 to 5.4 million jobs).

3.3.2 Highway & Transit Network. Freeway and rail transit capital improvements included in the baseline forecast are taken from the adopted LACTC/MTA 30-Year Plan. Bus routes and operating assumptions are also consistent with the 30-Year Plan, roughly increasing the peak bus fleet from the current 2,500 buses to 3,600 buses by 2010.

3.3.3 Transportation Demand Management (TDM). The baseline forecast reflects an estimate of current trends in changing travel patterns due to TDM activities such as SCAQMD's Regulation 15 and other programs, in order to incorporate a conservative estimate of TDM effectiveness. This was input to the model as a 5% reduction in commute trips and a 1% increase in non-work related trips. Conservative estimates were also input for small changes in rideshare and transit costs relative to driving alone, for variables such as passenger pickup times, transit fares, and parking costs. No policy-based assumptions were made regarding increases in car/vanpooling or transit ridership.

3.4 2010 DEFICIENCY FORECAST RESULTS

This section provides technical documentation of travel demand modeling of countywide deficiencies through the year 2010. This "congestion gap" refers to the magnitude of deficiencies remaining on the CMP system after forecasting the impact of growth, and the benefits of expected transportation improvements by the year 2010.

3.4.1 Modeling Statistics. For the purpose of defining the magnitude of traffic congestion forecasts, three modeling scenarios were prepared:

- 1990 - Reflects current travel patterns and the operating transportation system, and is primarily used for comparison with year 2010 forecasts.

- **2010 No Build** - Illustrates the potential magnitude of increases in travel demand if year 2010 socioeconomic activity were to occur without any improvement to the existing (1990) transportation system.
- **2010 Baseline** - As described in Section 3.3, this represents the best estimate of traffic conditions and is based on regional growth forecasts, LACTC/MTA 30-Year Plan improvements, and a conservative estimate of TDM effectiveness.

Exhibit 1 summarizes the results. As shown, roughly 6 million additional trips each weekday (35,807 - 29,582) are expected by the year 2010. If no transportation system improvements were provided to accommodate this growth, peak period highway speeds would deteriorate substantially from 23 mph in 1990 to 14 mph in 2010. However, with expected regional transportation improvements, peak speeds will remain close to existing levels (22 mph).

EXHIBIT 1 - CONGESTION GAP FORECAST RESULTS

LA County Weekday Statistics (unless otherwise indicated)	1990	2010 No Build	2010 Baseline
A. Person Trips Generated (000's)	29,582	35,807	35,807
B. Vehicle Trips Generated (000's)	20,565	24,938	24,333
C. PM Peak Average Speed	23 mph	14 mph	22 mph
D. Vehicle Miles Travelled, VMT (000's)	167,063	218,389	202,912
E. 1990-2010 Total VMT Increase Due to Growth (000's)	n/a	51,326	35,849
F. VMT on CMP segments at Level of Service F - L.A. Origins only (000's)	17,562	33,744	23,093
G. Deficient VMT (F-E, 000's)	n/a	14,188	5,531
H. Deficient VMT as a % of Total VMT Increase Due to Growth (G÷E)	n/a	n/a	15.4%

These results indicate that ongoing transportation programs will be critical to maintaining mobility through the county over the next twenty years. However, despite these mobility improvements, portions of the regional highway system are likely to continue to degrade. These findings suggest that the magnitude of the "congestion gap" is manageable, and therefore allows flexibility in addressing this gap.

3.4.2 Interpretation of the Congestion Gap. Despite this maintenance of system-wide performance, levels of service on portions of the CMP system are expected to worsen. As shown in Exhibit 1 (Line F), in 1990 about 17.6 million vehicle-miles were travelled on portions

of the CMP system operating at LOS F. In 2010, this is expected to increase to 23.1 million vehicle-miles travelling on LOS F segments. Under the statutory definition of deficiency, the difference of roughly 5.5 million vehicle miles of demand contribute to deficiencies. Note that as discussed in Section 3.2, these figures result from traffic assignment of trips originating within Los Angeles County only; trips originating outside Los Angeles County were not assigned.

In general terms, these model runs indicate that roughly 15% of the trips generated by new development within Los Angeles County through 2010 will contribute to CMP deficiencies. This represents the size of the congestion gap to be addressed through the deficiency plan. To put this into some perspective, this fifteen percent of new trips is equivalent to 3% of all trips in 2010. The Air Quality Management Plan calls for trip reduction of 10% of all trips within the same time frame.

Based on an estimated average vehicle occupancy of 1.47 in the year 2010, this 5.5 million vehicle miles is equivalent to roughly 8.1 million daily person-miles of deficient travel demand. For simplicity, the countywide deficiency plan uses the term "point" when referring to one person-mile of travel demand. The countywide congestion gap is therefore equivalent to 8.1 million points. Chapter 5 provides a complete discussion of the reasons for measuring the congestion gap in terms of person-miles, and use of the point system for assigning values to mitigation strategies.

4. DETERMINATION OF LOCAL JURISDICTION MITIGATION GOALS

Having defined the magnitude of the congestion gap countywide, the deficiency plan uses new development activity as the mechanism for each local jurisdiction to determine its individual responsibility. The benefits of new development activity reporting and the linkage between this reporting and the countywide congestion gap are discussed below.

4.1 ANNUAL NEW DEVELOPMENT ACTIVITY REPORTS

4.1.1 Implementation of New Development Activity Reporting. New development activity reporting will provide an equitable and efficient method for determining each jurisdiction's share of congestion mitigation. Each local jurisdiction will be responsible for the following:

1. Track new development activity through building permits issued for residential dwelling units and square footage of other land uses.
2. Annually total new development activity within each category, subtracting permits issued for CMP-exempted land uses.
3. Use the annual totals to calculate the jurisdiction's congestion mitigation goal, using the worksheet provided by MTA. The jurisdiction may optionally adjust its mitigation goal based on building demolitions.
4. Document the congestion mitigation goal as part of the local implementation report.

4.1.2 Reasons for Using New Development Activity Reports. After thorough evaluation of available options, new development activity reporting was selected as the best mechanism for determining local deficiency plan responsibilities.

One key benefit of new development activity reporting is that it accounts for the cumulative impacts of development activity. By using annual totals, mitigation goals will be based on all sizes and types of development, and not restricted by a project size threshold. Another benefit of annual new development reporting is its responsiveness to economic cycles. Land development activity relates to overall economic cycles, and is thereby tied to both impacts due to development and the availability of resources to provide mitigation.

Development activity tracking will also assign mitigation responsibilities to those jurisdictions whose growth increases demand on the regional transportation system, thereby maintaining geographic linkage between impacts and mitigation. Mitigation goals based on new development activity correspond to increases in trip generation from the jurisdiction in which this growth occurs. Use of new development activity reports also controls for the variability of regional

growth forecasts, since mitigation goals are based on actual growth rather than assumed regional trends.

New development activity reporting also provides a direct mechanism for accounting for CMP statute's land use-related exclusions:

- Low and very low income housing
- High density residential near rail stations
- Mixed use development near rail stations
- Projects with development agreements prior to 7/10/89
- Buildings damaged in the April 1992 Los Angeles civil unrest

New development within these categories are excluded from the congestion mitigation goal calculation, and therefore do not increase the jurisdiction's deficiency plan responsibilities.

Finally, new development activity reporting allows the deficiency plan to proactively implement mitigation. Construction typically takes at least one year after issuance of a building permit, followed by the time needed to achieve full occupancy. With mitigation goals based on building permit issuance, the implementation of deficiency plan mitigation will coincide with the increased travel demands that accompany development occupancy.

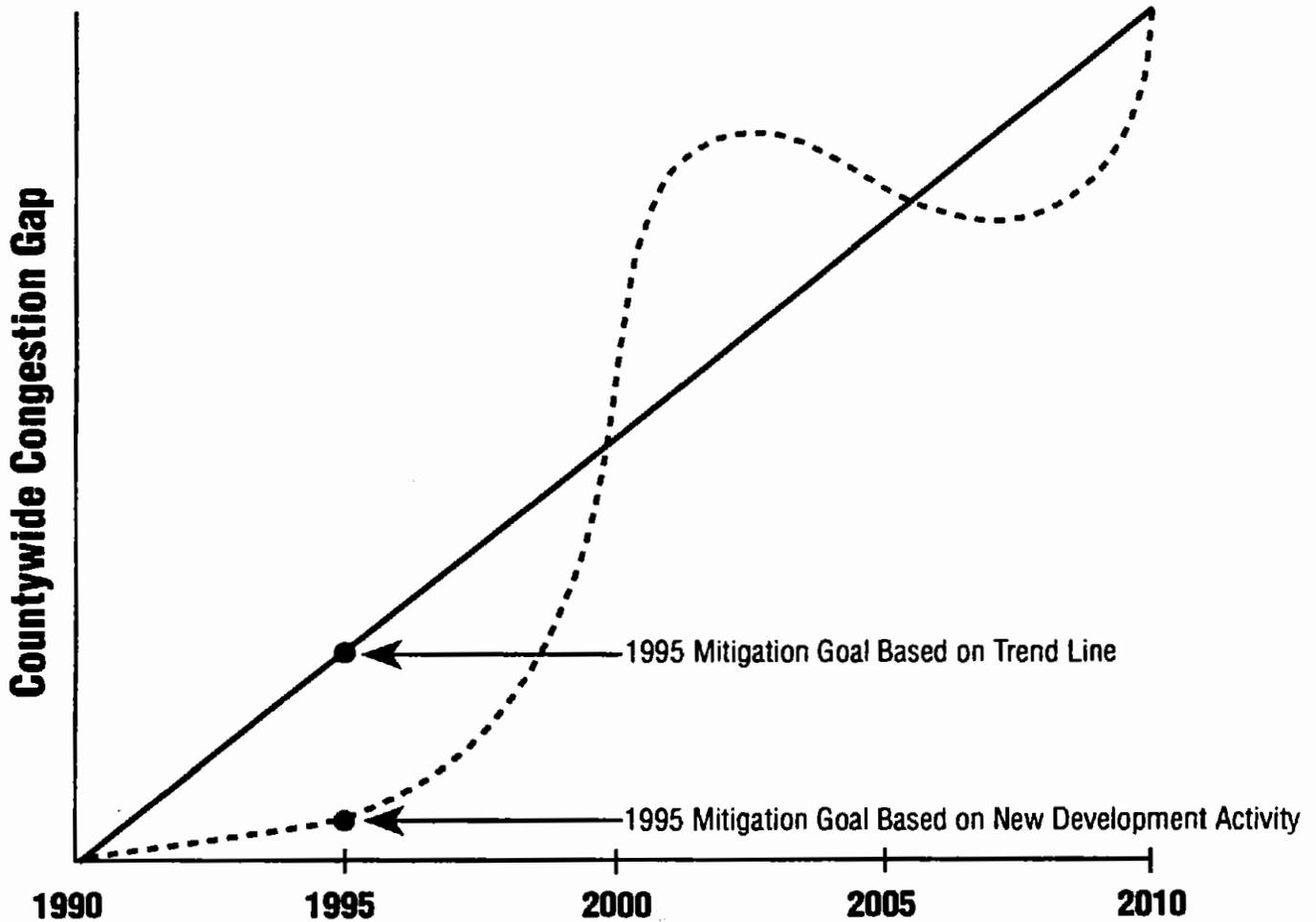
4.1.3 Background. In researching new development activity reports, staff reviewed existing jurisdiction-level reporting of land development activity. This review found a lack of uniformity in present monitoring, due to varying definitions for land use types and methods for determining square footage. As a result, MTA staff will work with jurisdictions to finalize standardized reporting procedures.

4.1.4 Other Methods Considered. Other methods were also considered for determining individual jurisdiction mitigation goals. These methods, discussed below, were rejected as inadequate for meeting the objectives of the countywide deficiency plan.

One method reviewed, trend-line analysis, would allocate mitigation goals to jurisdictions based on interpolation of congestion forecasts between 1990 and 2010. Using this method, each jurisdiction would be assigned trip reduction targets for specified years such as 1995, 2000, etc. This method however, would not be responsive to real growth cycles. Exhibit 2 illustrates the difference in responsiveness between trend-line analysis and new development activity. As shown, trend-line analysis could result in mitigation responsibilities which may be excessive or inadequate, depending on the level of growth actually occurring at the time.

Another method reviewed, socioeconomic data, would use changes in jurisdiction-level population and employment to establish mitigation goals. However, while jurisdiction-level population data is generally available, accurate employment data is more difficult to obtain. U.S. Census data is collected too infrequently for CMP purposes, and other data sources are not widely accepted as accurate. Finally, socioeconomic data would be reactive; by the time population and employment figures indicate growth, congestion impacts have already occurred which could make mitigation more difficult. This delay is also aggravated by the period of time

LEVEL OF MITIGATION RESPONSIBILITY: DEVELOPMENT VS. TREND-LINE BASED



Legend:

— Trend Line

- - - New Development Activity

required to collect, approve and disseminate socioeconomic data, which would further limit the ability to incorporate this information into the deficiency plan in a timely manner.

4.2 LINKAGE OF CONGESTION GAP TO DEVELOPMENT ACTIVITY

New development activity reports will track a number of land use classifications. This information will be used to establish each jurisdiction's mitigation goal, expressed in points reflecting the traffic impacts of different land uses. This section discusses the approach to linking the countywide congestion gap to the impacts of individual development types.

In summary, the approach converted employment forecasts (jobs) to development (square footage) by using employment-by-industry statistics and typical employee densities for various land uses. This conversion was then used to estimate the level of new development needed within various land use categories to support year 2010 employment forecasts. Each land use category was then assigned a proportion of the countywide congestion gap, based on the relative trip impacts of each land use category. The details of this approach are presented below.

4.2.1 Increase in Residential Development Units From 1990 to 2010. The increase in residential development from 1990 to 2010 is measured in terms of single family dwelling units, multiple family dwelling units, and group quarters. This data is provided by SCAG, and based on the 1990 Census and adopted 2010 Growth Management Plan forecast. The total increase over the 20 year period is estimated at roughly 827,000 dwelling units.

EXHIBIT 3 - RESIDENTIAL HOUSEHOLD ESTIMATES, 1990 AND 2010

Residential Category	1990	2010
Single Family	1,538,036	1,798,706
Multi-Family	1,625,307	2,160,392
Group Quarters	172,065	203,649

4.2.2 Estimating New Non-Residential Development From 1990 and 2010 Employment. Long-range growth forecasts for the region are based on socioeconomic variables (population and employment) rather than land development. As a result, the first step in assigning the congestion gap to new development activity requires an estimate of the amount of new development likely to occur in Los Angeles County through the year 2010. This estimate was developed through the following sequence of steps:

- A. Disaggregate total county employment by type for 1990 and 2010.
- B. Assign employment types to land use categories.

- C. Derive floor area per land use type from employment density ratios (square feet per employee for each land use category).
- D. Validate the Countywide employment/floor area relationships.

Each of these steps is described below.

A. Disaggregate Total County Employment by Type for 1990 and 2010. 1990 employment for Los Angeles County, by Standard Industrial Classification (SIC) code, was provided by SCAG (SIC codes are the uniform employment classification system developed by the federal government for statistical reporting). Total employment for the year 2010 was also provided by SCAG from the adopted regional growth forecast. Since 2010 employment is not forecast for individual industries, the percentage of employment within each SIC code in 1990 was used to estimate 2010 employment by SIC code. Exhibit 4 shows the results.

EXHIBIT 4 - 1990 AND 2010 EMPLOYMENT BY SIC CODE

SIC Code	1990		2010	Increase 1990-2010
	Employment	%	Employment	#
Agriculture	13,118	0.3	15,351	2,233
Mining	8,724	0.2	10,209	1,485
Construction	170,591	3.7	199,633	29,042
Manufacturing	880,397	19.1	1,030,280	149,883
Transportation/Utilities/ Communication	223,997	4.9	262,131	38,134
Wholesale	321,899	7.0	376,701	54,802
Retail	724,500	15.7	847,843	123,343
Finance, Insurance and Real Estate	315,303	6.8	368,982	53,679
Services	1,657,196	36.0	1,939,326	282,130
Government	291,002	6.3	340,544	49,542
Total	4,606,727	100.0	5,391,000	784,273

B. Assign Employment Types to Land Use Categories. The next step was to assign each SIC code to a land use category commonly used by local jurisdictions. The SIC data is broken down into many detailed categories corresponding to hundreds of employment types. The numerous categories can be aggregated, up to the most condensed format which includes 10 major industries.

Appropriate land use categories were then chosen. After balancing the need for simple and uniform local development tracking with the need to select uses which reflect varying traffic generating characteristics, the following land use categories were selected:

- Commercial (e.g., retail sales; service commercial uses), divided into two size classes (less than 300,000 square feet and more than 300,000 square feet)
- Free Standing Eating and Drinking Establishments (e.g., bars and restaurants)
- Lodging (e.g., hotels and motels)
- Industrial (e.g., manufacturing, wholesale activities, light and heavy industrial and warehousing uses)
- Office (except medical office), divided into three size classes (less than 50,000 square feet, 50,000 to 300,000 square feet and more than 300,000 square feet)
- Medical Facilities (e.g., hospitals, clinics, medical offices, skilled nursing facilities)
- Government Facilities (e.g., offices and other facilities)
- Institutions/Educational Facilities (e.g., public and private schools, churches)
- Other (e.g., recreational uses and all other uses not fitting into one of the above categories)

Detailed descriptions of each land use category are provided in Appendix H of the CMP. Where a land use category is divided into size classes, the selected division points correspond to break points in trip generation rates.

Each employment SIC code was then assigned to a land use category. Where employment within a major industry occurs in more than one land use category, SIC codes were further broken down into more detailed sub-categories. For example, the services SIC code includes employment which occurs in office, hotel, commercial and institutional (e.g., school) land uses. The results of this detailed SIC/land use correspondence are provided in Appendix BB.

C. Derive Non-Residential Floor Area Using Employment Density Ratios. Literature was then reviewed to obtain estimates of the square feet of building area provided per employee ("employment density") for each land use category. Density factors were assembled from studies prepared by a variety of sources, including the Institute of Transportation Engineers, the Federal Highway Administration, Caltrans, and the San Diego Association of Governments. Other specific references included the Building Owners and Managers Association (BOMA) International "1990 BOMA Experience Exchange Report" data for Los Angeles, and Gruen Gruen + Associates' "Employment Densities by Type of Workplace."

These sources produced a range of estimates from which typical values were selected, as shown in Exhibit 5 below.

EXHIBIT 5 - EMPLOYMENT DENSITY FACTORS

Land Use Category	Typical Value (sq.ft. per employee)
Commercial	
Typical commercial uses	530
Lower density commercial uses	850
Eating and Drinking	120
Lodging	890
Industrial	650
Office	240
Medical Facilities	290
Government Facilities	200
Institutions/Educational	500
Other	Varies

The floor area equivalent of employment was calculated by multiplying the number of employees in each SIC category by the appropriate employee density factor. In a few cases (e.g., agriculture, mining and construction, freight forwarding), only a small portion of employees regularly occupy buildings. In such cases, the percentage of employees in buildings was estimated. For example, it was estimated that only 5% of agriculture and mining employees work within buildings, and were assigned to the industrial land use category.

Appendix BB shows the floor area equivalent of each SIC code for 1990 and 2010 based on this estimation technique. The resulting countywide totals are summarized in Exhibit 6.

EXHIBIT 6 - SUMMARY OF EMPLOYMENT AND BUILDING AREA IN LOS ANGELES COUNTY BY LAND USE CATEGORY, 1990 AND 2010

Land Use	1990		2010		Change 1990-2010	
	Employment	1000 sq.ft.	Employment	1000 sq.ft.	Employment	1000 sq.ft.
Commercial	693,435	369,251	811,489	432,115	109,686	62,863
0 - 300 KSF		166,163		194,451		28,320
> 300 KSF		203,088		237,663		34,543
Eating & Drinking	188,741	22,648	220,873	26,504	32,132	3,856
Lodging	37,971	33,794	44,435	39,547	6,464	5,753
Industrial	1,617,016	881,146	1,892,305	1,031,157	275,289	150,011
Office	984,157	235,094	1,151,705	275,118	167,548	40,024
0 - 50 KSF		28,305		33,124		4,819
50 - 300 KSF		115,572		135,248		19,676
> 300 KSF		91,216		106,746		15,529
Medical Facilities	343,913	99,735	402,463	116,714	58,550	16,979
Government Facilities	325,121	63,610	380,471	74,440	55,350	10,829
Institutions/ Educational Facilities	311,968	155,984	365,079	182,540	53,111	26,556
Other (1)	66,831	6,001	78,209	7,022	11,378	1,022
Total (2)	4,569,153	1,867,264	5,347,029	2,185,157	777,876	285,961

(1) Floor area estimated for illustration purposes only; floor area for this category is not used in the congestion gap allocation.
 (2) Total does not include employment located within Group Quarters land use category.

The final task in this step was to estimate the retail commercial and office floor areas that fall into the building size classes noted above. For retail commercial buildings, this was done by reviewing data for all retail centers in Los Angeles County as listed in the National Research Bureau, "1993 Shopping Center Directory," Western Volume (see Appendix CC). This data indicates that 45% of retail space is provided in centers under 300,000 square feet and 55% in centers over 300,000 square feet. For offices, listings for Los Angeles County in "Black's Office Leasing Guide," Summer 1989, were reviewed (see Appendix DD). This indicated that 12% of office space is located in buildings under 50,000 square feet, 49% in buildings of 50,000 to 300,000 square feet, and 39% in buildings over 300,000 square feet.

D. Validate Countywide Employment/Floor Area Relationships. The relationship estimates shown in Exhibit 6 were tested against actual land uses in the city of Pasadena, which is one of the few cities in the county that has a complete 1990 inventory of non-residential floor area by land use category. To test the accuracy of the countywide estimation, Pasadena's inventory was

subtotaled into the nine CMP land use categories. These floor areas were then divided by the employment density factors in Exhibit 5. As shown in Exhibit 7, below, the resulting total was 107,239 employees, compared to 114,585 employees as estimated by SCAG. This constitutes a difference of about 6%.

Future updates to the deficiency plan will provide an exceptional opportunity to review and revise the employment density factors, by comparing the annual development activity tracking by local jurisdictions to changes in employment figures compiled by SCAG.

EXHIBIT 7 - FLOOR AREA VALIDATION TEST FOR THE CITY OF PASADENA

Land Use Category	Floor Area (sq. ft.)	Calculated Employment	Actual Employment
Commercial	8,075,936	16,159	
Eating & Drinking	442,601	3,688	
Lodging	1,503,038	1,689	
Industrial	4,085,541	7,497	
Office	11,830,478	47,313	
Medical	1,510,702	5,209	
Government	2,199,262	12,180	
Institutional/ Educational	4,354,570	7,249	
Other	863,287	6,256	
Total	34,865,415	107,239	114,585

4.2.3 Assigning the Congestion Gap to Units of New Development. This section describes the methodology used to disaggregate the countywide congestion gap to units of new development. The steps described below correspond to the rows shown in Exhibit 8.

In addition to the specific land use categories listed, Exhibit 8 includes an "Other" category for uses which do not fit within any of the categories. Application of this category is discussed at the end of this section.

- A. 1990-2010 Increase (Units). This row indicates the development equivalent of the SCAG socioeconomic forecast, resulting from the employment by Standard Industrial Code analysis. These figures are expressed in dwelling units or thousands of square feet, as appropriate for each land use category.

**EXHIBIT 8
ASSIGNMENT OF
CONGESTION GAP
TO LAND USE CATEGORIES**

Variable	Single Family Residential	Multiple Family Residential	Group Living	Retail Commercial 0 – 299 KSF	Retail Commercial 300+ ksf	Eating & Drinking	Lodging
Unit of Measure	Dwelling Unit	Dwelling Unit	Bed	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.
A 1990–2010 Increase (Units)	260,670	535,085	31,584	28,320	34,543	3,856	5,753
B Weekday Trip End Generation per Unit	10	7	3	70	45	100	10
C Average Trip Length	7.64	7.64	7.42	7.14	7.41	7.53	8.10
D Pass–By/Linked Trip Adjustment Factor	1.0	1.0	1.0	0.5	0.6	1.0	1.0
E Gross VMT Generated per Unit	76.40	53.48	22.26	249.90	200.07	753.00	81.00
F Gross 1990–2010 Total VMT Generated (000's)	19,915	28,616	703	7,077	6,911	2,903	466
G 1990–2010 Reconciled Total VMT (000's)	7,986	11,475	282	2,838	2,771	1,164	187
H 1990–2010 Contribution to CMP System VMT (000's)	4,232	6,082	149	1,504	1,469	617	99
I Deficient VMT (000's)	1,232	1,770	43	438	428	180	29
J Congestion Gap as Percent of New VMT							
K Points per unit	6.80	4.76	1.98	22.23	17.80	66.99	7.21

REFERENCE FACTORS:

1. Proportion of Total VMT on CMP System: 53%
2. Average Vehicle Ridership: 1.438

**EXHIBIT 8
ASSIGNMENT OF
CONGESTION GAP
TO LAND USE CATEGORIES**

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Variable	Industrial	Office 0 – 49 ksf	Office 50–299 ksf	Office 300+ ksf	Medical	Government	Institutional/ Educational	Total
Unit of Measure	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.	1000 sq.ft.	
A 1990–2010 Increase (Units)	150,011	4,819	19,676	15,529	16,979	10,829	26,556	
B Weekday Trip End Generation per Unit	7	20	13	9	25	30	11	
C Average Trip Length	9.77	9.08	9.08	9.18	7.60	7.85	7.85	
D Pass-By/Linked Trip Adjustment Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
E Gross VMT Generated per Unit	68.39	181.60	118.04	82.62	190.00	235.50	86.35	
F Gross 1990–2010 Total VMT Generated (000's)	10,259	875	2,323	1,283	3,226	2,550	2,293	89,402
G 1990–2010 Reconciled Total VMT (000's)	4,114	351	931	514	1,294	1,023	920	35,849
H 1990–2010 Contribution to CMP System VMT (000's)	2,180	186	494	273	686	542	487	19,000
I Deficient VMT (000's)	635	54	144	79	200	158	142	5,531
J Congestion Gap as Percent of New VMT								15%
K Points per unit	6.08	16.16	10.50	7.35	16.90	20.95	7.68	

REFERENCE FACTORS:

1. Proportion of Total VMT on CMP System: 53%
2. Average Vehicle Ridership: 1.438

**EXHIBIT 8
 ASSIGNMENT OF
 CONGESTION GAP
 TO LAND USE CATEGORIES**

Variable		Other	Notes
	Unit of Measure	Daily Trips	
A	1990-2010 Increase (Units)	n/a	
B	Weekday Trip End Generation per Unit	1	
C	Average Trip Length	7.93	
D	Pass-By/Linked Trip Adjustment Factor	1.0	
E	Gross VMT Generated per Unit	7.93	
F	Gross 1990-2010 Total VMT Generated (000's)	n/a	
G	1990-2010 Reconciled Total VMT (000's)	3.18	Reconciled with County Model to eliminate trip end double counting.
H	1990-2010 Contribution to CMP System VMT (000's)	1.69	Adjusted for % of total VMT on CMP system (reference factor 1).
I	Deficient VMT (000's)		
J	Congestion Gap as Percent of New VMT		
K	Points per unit	0.71	Adjusted for average vehicle ridership (reference factor 2)

REFERENCE FACTORS:

1. Proportion of Total VMT on CMP System: 53%
2. Average Vehicle Ridership: 1.438

B. Weekday Trip End Generation per Unit. This row lists trip generation rates used for each land use category. The rates were drawn from two resources, the Institute of Transportation Engineers (ITE) "Trip Generation" and San Diego Association of Governments (SANDAG) "Traffic Generators." The results of this evaluation, illustrated in Appendix EE, are as follow:

- The Single Family Residential rate is taken from consistent ITE/SANDAG references.
- The Multi-Family Residential rate averages SANDAG apartment and condominium rates, judged to be more characteristic of Los Angeles County travel characteristics than the ITE condominium rate.
- The Group Living rate averages ITE retirement community and congregate care rates.
- The Retail Commercial 0-299,999 sq. ft. rate is consistent with the SANDAG community shopping center rate. In addition, Appendix EE illustrates net ITE shopping center traffic generation rates after adjusting for pass-by and linked trips (discussed further in Step D). This illustration indicates a net trip generation rate of roughly 35 trips per 1000 sq. ft., which is consistent with the net result (70 x 0.5) shown in Exhibit 8.
- The Retail Commercial 300,000+ sq. ft. rate averages SANDAG regional and super regional shopping center rates. As above, review of comparable ITE rates after pass-by and linked trips indicates a net rate of roughly 27 trips per 1000 sq. ft., consistent with the (45 x 0.6) rate shown in Exhibit 8.
- The Eating and Drinking rate uses the ITE/SANDAG quality restaurant rate, with no pass-by/linked adjustment (Step D). This combination of factors was selected based on the premise that quality restaurant trips are likely to be destination rather than linked trips. Alternatively, higher trip generation rates could be used to reflect high-turnover or fast food uses, but such higher rates would be offset by higher proportions of pass-by/linked traffic.
- The Lodging rate averages ITE/SANDAG hotel and motel rates.
- The Industrial rate consolidates several documented ITE/SANDAG trip generation categories, such as light industrial, manufacturing and warehousing.
- The Office rates apply ITE General Office rates from the midpoint within each square footage range.
- The Medical rate averages ITE medical office and hospital rates. Compared to SANDAG rates, this average implies a weighting toward the hospital rate. This

is appropriate since this consolidated category does not distinguish shorter trip lengths for medical offices (relative to hospitals).

- The Government rate applies the SANDAG civic center rate (in light of the limited sample size in the corresponding ITE category).
 - The Institutional/Educational rate consolidates ITE educational (elementary through college) and church rates.
- C. Average Trip Length. Data provided by SANDAG was used to separate trip productions and attractions for each land use category into the following purposes: home-work, other-work, and non-work. These proportions were then multiplied by average trip lengths for each purpose, in order to calculate an aggregate average trip length for each land use category. Factors are shown in Appendix FF.
- D. Pass-By/Linked Trip Adjustment Factor. This factor adjusted trip generation/length estimates to account for trips which are already on the transportation system, and was applied to retail uses only. Pass-by trips are those stopping at retail uses "on the way" to another destination, and are more predominant at smaller retail centers. Linked, or diverted trips are those which are also already on the transportation system, but make a small detour to patronize the retail use. The basis for the specific factors shown in Exhibit 8 are discussed in Step B, above.
- E. Gross Vehicle Miles Travelled (VMT) Generated per Unit. (= B x C x D) This row calculated the net VMT per dwelling unit or 1000 square feet. The term "gross" is used to distinguish these figures from the "reconciled" figures in Step G.
- F. Gross 1990-2010 Total VMT Generated. (= A x E) This row calculated the total VMT contributed by projected growth within each land use category, by multiplying the 1990-2010 growth estimates by the per-unit VMT for each category.
- G. 1990-2010 Reconciled Total VMT. ($G_{\text{Category}} = F_{\text{Category}} / F_{\text{Total}} \times G_{\text{Total}}$) This row eliminated the potential for double counting trip ends by reconciling the individual land use-based VMT totals with the total VMT produced by the regional travel demand model (G_{Total}). The VMT contributed by growth in each land use category was adjusted downward to equal the countywide total produced by the model.
- H. 1990-2010 Contribution to CMP System VMT. (= G x Proportion of Total VMT on CMP System) The reconciled VMT contribution from each land use category was then adjusted down to reflect the proportion of these trips that are travelled on the CMP highway system. This adjustment was based on traffic assignment by facility type in the travel demand model, and compared against federal Highway Performance Monitoring System (HPMS) statistical data.

- I. Deficient VMT. ($I_{\text{Category}} = H_{\text{Category}} / H_{\text{Total}} \times I_{\text{Total}}$) This row proportioned the deficient travel demand countywide, output from the travel demand model (I_{Total}), to each land use category. Deficient travel demand countywide is defined as:

2010 Daily Congestion on CMP segments - 1990 Daily Congestion on CMP segments

Where "Congestion" is defined as VMT in excess of capacity on segments with V/C ratios greater than 1.00.

- J. Congestion Gap as Percent of New VMT. ($= I / G$) This figure is presented for information only, and indicates the proportion of new trips generated between 1990 and 2010 which contribute to deficiencies countywide.
- K. Points per Unit. ($= I / A \times \text{Average Vehicle Ridership}$) This "bottom line" provides the factors which will be used to determine local jurisdiction mitigation goals, indicating the "points" per dwelling unit or per 1000 sq. ft. of new development. This row results from dividing the total deficient VMT contributed by the land use category by the growth expected within that category. For comparability with the mitigation strategy values, points are expressed in daily person-miles rather than vehicle-miles. Average Vehicle Ridership is therefore factored into the Points per Unit.

The resulting factors indicate the portion of travel demand from each land use that causes deficiencies. The points resulting from new development activity are directly comparable to the mitigation value points, also based on person-miles, as discussed in Chapter 5.

4.2.4 "Other" Uses. In addition to the specific land use categories listed, Exhibit 8 includes an "Other" category for uses which do not fit within any of the categories. The sequence of factors listed in each row for this category have been structured to allow point calculation per daily trip for special uses, and is based on the following methodology:

- Calculation of points per daily trip generally follows the same sequence of calculations as the specified land use categories, with the following exceptions.
- Row C, the average trip length figure, uses the overall average for all purposes determined by the travel demand model.
- The Row G reconciliation adjustment ($= E_{\text{Other}} / F_{\text{Total}} \times G_{\text{Total}}$) accounts for the likelihood that a project-specific trip generation estimate for an "Other" use would overestimate net VMT contribution in the same magnitude as the individual land use categories evaluated above.
- Row I ($= H_{\text{Other}} / H_{\text{Total}} \times I_{\text{Total}}$) reduces the VMT contribution per trip to reflect the proportion of these trips that are travelled on the CMP highway system.

- Row K (= I x Average Vehicle Ridership) is the resulting "Points per Daily Trip" for Other uses. This factor must be multiplied by a project-specific estimate of weekday trip generation, consistent with the procedures set forth in ITE "Trip Generation" or SANDAG "Traffic Generators," whichever is deemed more accurate by the local jurisdiction.

5. MITIGATION STRATEGIES AND CREDIT SYSTEM

The preceding chapters have defined the magnitude of CMP deficiencies through the year 2010 (the "congestion gap") and how each jurisdiction determines its individual level of responsibility for addressing this gap. This chapter discusses the range of available mitigation strategies, and presents the system for crediting local implementation of these strategies.

5.1 IMPROVEMENTS NECESSARY TO MAINTAIN THE LEVEL OF SERVICE STANDARD

As previously discussed, the congestion gap has been determined to be 5.5 million daily vehicle miles in the year 2010. The following assessment estimates the magnitude of improvements that would be required in order to fully eliminate this countywide congestion gap and maintain the level of service standard.

One approach to making such improvements would be to construct additional highway lanes as needed to provide capacity in excess of demand. In such an approach, specific locations of deficiencies on CMP freeways or arterials would be identified through either traffic monitoring or forecasts. Capital improvements would then be designed and constructed, adding capacity on either the deficient facility or on parallel highways in order to eliminate the deficiency and maintain the level of service standard.

The cost to provide this mitigation can also be estimated. The recently opened I-105 freeway was constructed at a cost of roughly 21 million dollars per lane-mile. Since a freeway lane is typically designed to carry approximately 20,000 vehicles per day, mitigating the countywide congestion gap of 5.5 million vehicle miles exclusively through freeway construction would cost approximately 6 billion dollars. This is therefore an order-of-magnitude estimate of the cost to maintain the level of service standard through the year 2010.

In order for this cost estimate to be realized, mitigation would need to be constructed in the precise locations of deficiencies. Actual elimination of deficiencies throughout the county could therefore actually cost more, since highway design and construction standards would likely require that capital improvement projects extend beyond each precise location of deficiency.

However, a capital intensive approach to mitigating deficiencies such as described above is unlikely. Funding of a capital improvement program of this magnitude may be problematic, and could also conflict with environmental, economic, and other social policy goals. Given these issues, the countywide deficiency plan has developed a more flexible approach which pursues multimodal strategies for addressing the countywide congestion gap.

5.2 TOOLBOX OF MITIGATION STRATEGIES

The process of developing the deficiency plan has made clear that there is not a prescribed set of mitigation strategies that will be effective for every community in Los Angeles County. The range of strategies already being pursued, and the diversity of individual communities and priorities have dictated the need to maintain flexibility in dealing with regional congestion.

As a result, the countywide deficiency plan takes a "toolbox" approach to mitigation strategies. Each local jurisdiction may select the actions that it determines most appropriate, as long as the overall value of its mitigation program achieves its mitigation goal as determined by new development activity. Each jurisdiction may therefore select strategies that apply citywide, to districts or project-specific - directed toward either existing activities or future growth - whichever it deems most appropriate for that community. This will also allow the deficiency plan to be easily integrated with other local or regional improvement programs.

This system provides local jurisdictions with the flexibility for local choices, and also provides incentive for jurisdictions to participate in multi-agency corridor improvements by crediting local contributions to those improvements. In addition, consolidating mitigation options across land use strategies, demand management, transit and capital improvements will allow the program to broaden the range of mitigation options beyond "traditional" capital improvements and promote non-capital strategies such as focused land development and parking management.

However, providing this flexibility will require that each local jurisdiction make decisions regarding which strategies to pursue. MTA will therefore assist local jurisdictions with developing effective programs which are sensitive to local characteristics. MTA staff will also work with individual local jurisdictions to document credit for actions already underway as well as to select additional toolbox strategies which will achieve the jurisdiction's mitigation goal.

Descriptions of each of the available mitigation strategies for the countywide deficiency plan is included in Appendix G of the CMP. These strategies, and their benefit in addressing congestion on the regional transportation system are summarized below:

5.2.1 Land Use Strategies. Land use strategies focus on integrating complementary land uses (such as homes and shops), and on concentrating activity in areas that can be efficiently served by transit. Effectively locating land uses reduces the demand for travel on the CMP system, thereby addressing regional traffic congestion. The strategies are:

- Residential development around transit centers
- Commercial development around transit centers
- Residential development along bus transit corridors
- Commercial development along bus transit corridors
- Residential mixed use development around transit centers
- Commercial mixed use development around transit centers
- Residential mixed use development along bus transit corridors
- Commercial mixed use development along bus transit corridors
- Residential mixed use development

- Commercial mixed use development
- Child care facilities integrated with development.

5.2.2 Capital Improvements. Capital improvements provide the basic infrastructure for moving people. Highway improvements reduce delays on the CMP system by increasing the capacity for vehicle movement, either directly on the CMP system or by providing capacity on alternate routes. Transit and ridesharing capital improvements similarly benefit the CMP system, by providing the infrastructure for travel by modes other than driving alone. Providing this infrastructure allows people to travel throughout the region without a car, within competitive or even reduced travel time, and reduce demands on the regional highway system. The strategies are:

- High Occupancy Vehicle (HOV) lane construction on CMP routes and other major arterial streets
- General use highway lane
- Grade separation
- Freeway on/off ramp addition or modification
- Urban rail station
- Commuter rail station
- Goods movement facility

5.2.3 Transportation Systems Management. Transportation systems management (TSM) strategies improve operational efficiency of the existing highway system without significantly increasing right-of-way requirements, and at costs significantly lower than capital improvements. TSM strategies reduce regional traffic congestion by reducing delays and smoothing stop-and-go traffic flow, including preference and priority for transit, on regionally significant highway facilities. These strategies include:

- Traffic signal synchronization on CMP routes and other major arterials, including prioritization for transit
- Traffic signal surveillance and control
- Peak period parking restriction for through traffic lanes
- Bottleneck intersection turn lanes or signal improvements on CMP routes
- Bicycle path or lane
- Park & ride facility

5.2.4 Transit Service. Transit service strategies encourage more efficient use of the CMP highway system by providing high occupancy vehicle service, thereby moving more people in fewer vehicles. Transit strategies include local funding of bus transit services and bus capital purchases for the purposes of operating service. This category also includes flexible feeder services which maximize utilization of regional fixed-route bus and rail operations. These strategies include:

- New local or commuter bus service
- Feeder service to rail stations or multi-modal transit centers
- Shortening of headways due to additional buses on a route

- Service restructuring through route or schedule modifications
- Subscription bus or buspool service
- Local shuttle

5.2.5 Transportation Demand Management. Transportation Demand Management (TDM) strategies include programs and the provision of supporting facilities to promote travel by modes other than driving alone, including telecommunications programs. As with land use strategies and transit services, TDM actions address traffic congestion on the CMP system by reducing the demand for travel. In addition, TDM actions promote more efficient use of the CMP system by increasing the number of people travelling in the same or fewer vehicles. The strategies are:

- Ridesharing operations such as trip reduction programs, telecommuting programs, transportation management organization/associations (TMO/TMA), video conferencing, and rideshare marketing programs.
- Ridesharing support facilities such as passenger loading areas; vanpool, bicycle, and pedestrian access; carpool and vanpool preferential parking; and transportation information areas (adopted by jurisdictions as part of the 1992 CMP).
- Bicycle & pedestrian support such as bicycle parking facilities, showers and clothes lockers for bicyclists.
- Ridesharing incentives such as transit, vanpool, bicycle and carpool subsidies; alternative work schedules.
- Parking management & pricing programs such as parking surcharges and parking cash out programs.
- Telecommunications strategies such as employer-based telecommuting programs, telework centers, business/education videoconferencing centers, and remote access systems.

5.3 DETERMINING THE AMOUNT OF LOCAL JURISDICTION CREDIT

Once a jurisdiction has selected a set of mitigation strategies from the toolbox, the local jurisdiction calculates and documents the overall mitigation value of the specific projects being implemented. The following basic steps will be used by local jurisdictions to determine the amount of credit for each project:

- 1) Look up the per-unit credit factor of the mitigation strategy (Appendix G of the CMP).
- 2) Calculate the project value, by multiplying the strategy credit factor by the project scope.
- 3) If more than one agency is involved in project implementation, enter the percentage participation of the local jurisdiction.
- 4) Use the current milestone in project implementation to determine the increment of project credit which can be claimed.

Sections 5.4 through 5.6 discuss the issues which were addressed through development of each step.

5.4 APPROACH TO ASSIGNING MITIGATION VALUE FOR EACH STRATEGY

5.4.1 Definition of Mitigation Points. Developing a system of values for multi-modal mitigation strategies requires a specific and consistent definition of the basis for credit. For the countywide deficiency plan, this definition is:

Person-miles of travel demand accommodated, or reduced, by the project on a typical weekday.

To simplify discussion of the values assigned to various mitigation measures, the term "point" is used. One point is equivalent to one person-mile, consistent with the definition used to express impacts related to development activity discussed in Chapter 4. Note that this definition is stated in terms of person travel rather than vehicle travel. This distinction is subtle but significant, and therefore merits some background discussion.

One measure for assigning credit to mitigation could be the ability to eliminate deficiencies and restore the level of service standard. However, in practical terms there are many locations on the regional transportation system where deficiencies cannot feasibly be eliminated, frequently due to cost, restricted rights-of-way, environmental, or other considerations. In addition, strictly measuring the effectiveness of mitigation from the perspective of level of service could result in highway-oriented improvements when transit or other strategies are also desirable. As a result, statute acknowledges that deficiency plan strategies may not directly eliminate all deficiencies, but instead "measurably improve the level of service of the *system*," (emphasis added). This allows the deficiency plan the flexibility to incorporate multi-modal mitigation measures which, while not necessarily eliminating traffic congestion at every point on CMP highway routes, will provide measurable improvement to mobility on the regional transportation system.

To summarize the use of performance measures in the countywide deficiency plan: level of service (LOS) is the *performance standard*, and as such, triggers the need for the deficiency plan when this performance standard is not maintained. LOS also defines the magnitude of "deficient travel demand," by quantifying the number of trips that cause CMP segments to become deficient and the mileage over which this travel occurs. This deficient travel demand is expressed in person-miles of travel (known as the countywide "congestion gap"). Person-miles of travel is then also used as the *performance measure for mitigation*, and measures the level of multi-modal mobility provided by each mitigation strategy.

Defining the value of mitigation measures in terms of mobility rather than traffic congestion is a significant step. While working toward the same goal, this requires a change in perspective from "vehicles delayed" to "persons served." Use of weekday person-miles as a performance measure allows the credit system to consistently measure the effectiveness of multi-modal

transportation alternatives in providing mobility. Specifically, the use of person-miles provides the following advantages:

- Applicable to Multi-Modal Strategies. It allows non-automobile strategies to stand on the merits of their own person-carrying effectiveness, rather than simply in terms of their effect on highways.
- Directly Measurable. It allows simple, direct monitoring of strategy effectiveness, using statistics which are readily available for multi-modal projects, such as:
 - passenger miles for transit services
 - traffic volumes and vehicle miles travelled for highway improvements
 - reduced traffic generation for land use strategies (combined with typical trip lengths)
 - ridesharing levels for demand management programs

This minimizes the assumptions, modelling and subjective estimates needed to forecast the number of vehicle trips that would have occurred without the mitigation strategy, such as would be needed to convert transit passenger mile increases to vehicle trip reductions.

- Reflects Trip Length. It accounts for the fact that longer trips have greater impacts on the transportation system by incorporating the length of trip affected. For example, it results in a differential level of credit for a downtown shuttle passenger boarding compared to a commuter express boarding, while allowing credit for both. In contrast, simply using "trips" would not account for the different impacts of these boardings on the regional transportation system.
- Quantifiable at Both Project and System Level. It can be applied at both a project level, to evaluate a broad range of strategies (as discussed above), as well as a system level for measuring the performance of the transportation network as a whole (e.g., the countywide congestion gap).
- Allows Allocation of Credit. It allows assignment or division of credit along a single trip, among the agencies that implement improvements. For example: A commuter travels 20 miles (daily round trip) between home and downtown via express bus, then uses a downtown shuttle to travel 1 mile between the express stop and her office. As reflected in standard passenger-mile statistics, credit is assigned as 20 points to the agency funding the express service and 1 point to the shuttle operator.

5.4.2 Objectives of the Credit System. Using the credit definition provided in Section 5.3.1, the countywide deficiency plan could avoid assigning values to each mitigation strategy. Instead, mitigation projects could be evaluated individually to determine the benefit provided by each project. However, there are several reasons for assigning values to the toolbox of strategies at this time, including to:

- provide certainty and consistency in the amount of deficiency plan credits awarded to local jurisdictions;
- simplify assessment of local CMP conformance, by minimizing the need for case-by-case assessment of mitigation efforts;
- assist local jurisdictions in the initial screening of mitigation actions, by providing a consolidated multi-modal toolbox of options and values;
- base values on readily reported measures of project scope (such as lane-miles), to take advantage of existing reporting mechanisms; and,
- establish a basic system that can be refined and expanded over time.

In order to further the certainty provided by the credit system, the program will not retroactively revise credits assigned to local jurisdictions based on the analysis of future CMP updates. Since credits are based on the best current information, this will allow cities to move forward with implementation of strategies without concern that future studies might penalize jurisdictions that are willing to pursue innovative programs. Furthermore, since credit will be claimed incrementally (see Section 5.6), credits will nonetheless be distributed methodically over time.

5.4.3 Methodology for Assigning Value to Mitigation Strategies. The basic approach used by MTA to assign a value to each of the mitigation strategies is as follows:

1. Describe the strategy in detail, including minimum standards and thresholds if necessary.
2. Select a unit of measure for project scope which is a simple yet critical characteristic of the project (such as dwelling units provided in a land use strategy, employees served by a ridesharing program, or lane-miles added by a highway project).
3. Estimate the direct travel effect of the action based on available studies (such as ridership on transit projects, trips eliminated by demand management programs, delay reduced by traffic flow improvements, or capacity added by highway projects).
4. Express this travel effect in "points" per unit (per dwelling unit, per employee, etc.). This is referred to as the strategy's credit factor.

The results of this value assignment are provided in Appendix G of the CMP, including detailed methodologies for each individual strategy. The following discussion describes the general approach to assigning credit factors to the various types of strategies:

- Land use strategy credits were based on the reduced traffic generation resulting from the strategy, when compared to typical development of a similar nature (for example, how much less traffic is generated by a residential development near a transit center compared to the same development located elsewhere). This traffic reduction was multiplied by average trip lengths and vehicle ridership to determine credit factors.

Anticipated strategy benefits were derived by incorporating similar work completed by the Natural Resources Defense Council, South Coast Air Quality Management District, California Air Resources Board and the federal Environmental Protection Agency and Department of Transportation. In addition, case studies representing both national and local findings were reviewed. These studies consistently documented traffic reduction related to the land use characteristics reflected in the toolbox of strategies.

- Highway capital improvement credits were based on the typical traffic volume carried and the length of the improvement (for example, credit for construction of traffic lanes was organized "per lane-mile"). In the case of "spot" improvements, such as grade separations, an area of influence (such as the distance to the next major intersection) was estimated. The additional traffic flow accommodated was multiplied by average vehicle ridership to determine credit factors.

Quantification of the "persons accommodated" by these improvements was drawn from a number of sources, such as the Highway Capacity Manual, and travel statistics from throughout Los Angeles County regarding observed maximum traffic flows and traffic peaking characteristics.

- Rail transit capital improvement credits are directly measured by the passenger miles carried by the service, simplified to station-specific boardings.
- Transportation systems management credits were based on the typical traffic flow improvement due to the project, in terms of the additional persons accommodated over the length of the improvement. As with highway capital improvement strategies, quantification for these improvements were drawn from several sources which identified typical travel characteristics. Local case studies were also drawn upon for factors such as traffic flow improvement due to traffic signal synchronization and park-and-ride lot utilization.
- Transportation demand management credits were based on reduction in vehicle miles travelled (VMT) due to the program. These strategies include a variety of programs, such as carpooling and parking management, that reduce single-occupant travel by increasing usage of several alternative travel modes. Detailed mode split analysis was therefore conducted to estimate VMT reduction from each strategy, based on extensive research and case studies. These VMT reduction estimates were then multiplied by appropriate average vehicle riderships to determine credit factors.
- Transit service improvement credits are directly measured by the passenger-miles carried by the services. Passenger-mile data submitted annually through the federally required Section 15 reporting is a primary resource for this information.

5.4.4 Calculating Value Based on Project Scope. The credit factors provided in Appendix G of the CMP are expressed in "points per unit" for each strategy. In order to apply these to actual projects, the credit factor is multiplied by the project scope.

This approach to credit calculation reflects the greater value of larger projects. For example, linking credit to the number of persons served allows a jurisdiction to claim more credit for a city-wide ridesharing program than for the same type of program applied to a single development only.

5.5 CRITERIA FOR LOCAL JURISDICTION CREDIT

The following definitions clarify the amount of credit and circumstances under which credit can be claimed by local jurisdictions.

5.5.1 Implementation Start Date for Receiving Credit. Local jurisdictions may claim credit for actions implemented after January 1, 1990. This date was chosen for several reasons. First, 1990 is the modeling base year which was used to forecast the congestion gap in the year 2010. Also, 1990 was a census year and therefore provides the most recent comprehensive socioeconomic data available. Finally, growth has been low between 1990 and 1992, when CMP highway counts were taken. Level of service deterioration during this period was therefore relatively insignificant.

5.5.2 Funding Sources. Credit may be claimed by the jurisdiction which funds implementation of the improvement. This provides a simple means of allocating credit for multi-jurisdictional projects that involve several local jurisdictions. Linking credits to the funding agency also avoids double-counting of improvements that are implemented through regional programs assumed in the baseline modelling.

Linking credit claims to the funding agency facilitates inter-jurisdictional mitigation, by allowing a local jurisdiction to claim credit for improvements located outside its geographic boundaries. Traditionally, the inability of agencies to construct improvements outside their jurisdiction has reduced the likelihood of inter-jurisdictional mitigation measures. By linking deficiency plan credits to the funding agency, jurisdictions that contribute funds to a neighboring jurisdiction to construct an improvement are entitled to credit for their contribution.

This criteria also relates to regional funding sources. Local jurisdictions may claim credit for actions implemented through local jurisdiction funds, but not for actions funded through regional discretionary sources (such as those administered by MTA). Examples of non-creditable regional discretionary sources include state Flexible Congestion Relief and Traffic Systems Management, Proposition C discretionary, and federal discretionary ISTEA funds.

Where a jurisdiction contributes local match to a regional discretionary project, the local credit is based on the mitigation value of the project and the proportion contributed by the jurisdiction. For example, a jurisdiction contributes 25% local match to a project which is 75% funded through regional discretionary sources. The jurisdiction is entitled to 25% of the mitigation value associated with the project.

The key basis for this funding eligibility criteria is the financial assumptions which feed into the 2010 baseline modeling, provided by the LACTC/MTA 30-Year Integrated Transportation Plan

(30-Year Plan). This criteria avoids double counting of actions that mitigate the countywide congestion gap. Two key connections to the funding assumptions in the April 1992 30-Year Plan are:

- Although the 30-Year Plan presumes local contributions to rail projects, such local contributions will be given deficiency plan credit as an incentive for participating in and accelerating those projects.
- Strategies funded through special federal grants or other sources not considered in the 30-Year Plan are eligible for deficiency plan credit.

The one exception to the local funding source criteria is the Phase II TDM Program. If a jurisdiction participates in the MTA Phase II TDM program, all actions are creditable regardless of funding source. This exception is due to the fact that while the 30-Year Plan devotes substantial regional resources to TDM program activities, the congestion gap forecast did not reflect the benefits of the Phase II TDM program.

5.5.3 Transfers of Credit Between Local Jurisdictions. There will be situations in which local jurisdictions may desire to transfer deficiency plan credits to or from another local jurisdiction. Beginning in 1995, the countywide deficiency plan will not restrict such transfers.

A hypothetical example in which transfer may occur would be where one jurisdiction is willing to fund a multi-jurisdictional improvement that passes through several other jurisdictions, but is unable to obtain approval from one of the affected jurisdictions. The funding jurisdiction may wish to transfer the credit as an incentive for the other jurisdiction to approve the project. Such an example of multi-jurisdictional transportation improvement would further the goals of the deficiency plan.

Another hypothetical example would be a jurisdiction which is unable to implement mitigation within its surrounding area to offset its development. The jurisdiction would then desire to "purchase" credits from another jurisdiction, possibly located outside its immediate area. This scenario is unlikely in the first years of the deficiency plan for the following reasons. Given the wide range of strategies included in the deficiency plan toolbox, it is highly unlikely that any jurisdiction will be unable to implement cost effective strategies within its control. MTA staff will also be assisting local jurisdictions in developing such strategies. Furthermore, jurisdictions will probably desire to retain their credit in the initial program years, in order to establish a buffer to accommodate future growth. Given this, local jurisdictions are unlikely to transfer funds to another jurisdiction without a clear benefit to the jurisdiction's constituents.

Credit transfers cannot be allowed during 1994 due to the technical and administrative review that will be required of all credit claims, prior to approving each jurisdiction's base year credit total. As with other elements of the countywide deficiency plan, this issue will be reexamined through program updates.

5.6 IMPLEMENTATION MILESTONES

The final factor affecting credit amount is the stage of project implementation. Credit is claimed incrementally along project development timelines. This provides a means to credit progress toward projects that take several years to complete, but require substantial development effort and resources up front. This approach promotes long term strategies by apportioning credit over time, rather than encouraging only short term strategies by awarding credit in one lump sum at the time of completion.

Conversely, it provides an excellent means for monitoring implementation of strategies. An alternative would be to award the entire credit at the planning stage of an improvement. However, such an approach would require a monitoring program in order to ensure that the project is actually completed, which would increase administrative burdens. By apportioning credit over the stages of project development, the program is self-monitoring and provides incentive for follow-through on each project.

Credit milestones are linked to existing project reporting processes, such as Proposition A and C Local Return Three-Year Plans, and Regional Transportation Improvement Program (RTIP) project reports. Incremental credits apply to all strategies, based on standard milestones such as policy adoption, initiation of project development, and complete implementation. Each milestone is worth a percentage of the total project value. Beyond these standard milestones, however, different strategies (such as land use, TDM, and capital) vary in existing reporting mechanisms, level of project certainty, and level of effort required at each point in project development. The specific milestones used, as well as the percentage of total project value that can be claimed at each milestone, therefore vary among the strategies as shown in Appendix G of the CMP.

The use of credit milestones also creates an incentive for jurisdictions to track and report on improvement projects that have not typically been reported in a comprehensive manner. Local jurisdictions and MTA, at the request of SCAG and SCAQMD, currently expend considerable effort and resources annually compiling reports that demonstrate the implementation of Transportation Control Measures. The availability of deficiency plan reports which uniformly document and quantify strategy implementation will assist in streamlining this process.

5.7 ADDITIONAL POLICY ISSUES REGARDING THE CREDIT SYSTEM

A number of other issues were addressed during development of the countywide deficiency plan, including the following:

5.7.1 Balance Between Debits and Credits. One issue discussed during program development was whether the mitigation responsibilities assigned to each individual local jurisdiction was justified, given the variability of forecasts and the system-level perspective of the technical analysis. This discussion was also prompted by the need to define "measurable improvement" as referenced in CMP statute.

This issue was addressed by examining the overall deficiency plan debit/credit system. The resulting conclusion is that as a whole, implementation of credit points equal to debit points may not fully eliminate the Congestion Gap. This is largely due to the flexibility to make improvements not directly located on the CMP highway system.

Development-related debits are based on the portion of travel that occurs on the CMP highway system, approximately 50% of all travel, and only the travel that contributes to deficiencies. On the other hand, credits are based on the full travel benefit of each strategy (such as trip-miles reduced) without reducing the amount of credit for the portion of this travel that would have otherwise occurred on the CMP system.

The one exception to credit based on full travel benefit is in the area of highway capital improvements located off the CMP system. The deficiency plan case studies, presented in Chapter 6, indicated that highway capital improvements located off the CMP system could make up a significant portion of local deficiency plan credits. In addition, this type of improvement could include a wide variety of projects from construction of a new arterial immediately adjacent and parallel to a CMP route, to widening of a non-CMP arterial that provides the only access to an isolated development. As a result of this potential diversity, combined with the significance of the issue as shown in the case study results, credit factors for these improvements were based on benefit to (traffic removed from) the CMP system.

Overall, the resulting debit/credit system and balance was deemed appropriate for the countywide deficiency plan based on its effects in the following areas:

- Quantifying the full benefit of relatively new credit strategies such as land use and demand management incorporated the most complete case study and methodological resources available, and will continue to require review and revision as further information becomes available. Based on review of the available literature, it was determined that attempting to further isolate these benefits on and off the CMP system would require an additional dimension of technical sophistication which may not be achievable within a countywide credit system. Limiting the analyses to the full benefit of strategies allowed technical discussions to focus on the central issue of overall strategy benefit.
- In light of the potentially significant effect of off-system highway improvements, restricting the credit allowed for this category will ensure the regional benefit of such projects and make appropriate use of available travel demand modeling tools as the basis for determining this benefit.
- While monitoring measurable improvements, the resulting overall debit/credit balance creates a buffer, or margin of error, between the levels of responsibility mandated under the program from local jurisdictions and the levels that could be reasonably assigned on a technical basis.

5.7.2 Policy Weighting of Credit for Certain Strategies. The credit assigned to each strategy reflects objective technical evaluation of the mobility improvement provided. A point

of discussion during development of the countywide deficiency plan was whether particular strategies (such as demand management and land use) should receive credit greater than their technical value in order to promote the implementation of such strategies.

This issue was discussed with both the Policy Advisory Committee and technical staff on several occasions. Weighting was not pursued, largely based on the recognition that creating incentives for any strategy by increasing its value would reduce the overall program effectiveness in addressing the countywide congestion gap, by reducing the total level of effort required of local jurisdictions.

5.7.3 Exclusion of Exempted Land Uses from Credit Strategies. By statute, certain land use projects are exempt from the requirements of the CMP program. Because of the project specific nature of these exemptions, it was not feasible to forecast their effects in the determination of the "congestion gap". Instead, the "exemption" called for in statute will occur at the time a building permit is actually issued, since the project will not be assessed a "debit" for deficiency plan mitigation purposes.

This special treatment under statute raised the issue as to whether statutorily exempt projects should also be eligible for mitigation credit, and staff evaluated the feasibility of distinguishing exempt from non-exempt land uses within the land use strategies. The Policy Advisory Committee and technical staff discussed the issue extensively and determined that allowing credit for exempted land uses will provide opportunities for a local jurisdiction to continue to pursue all available land use strategies while maintaining simple administration of credits for the jurisdiction. Allowing credit for all land use strategies irrespective of statutory exemptions will also promote consistency with the regional jobs/housing balance goals adopted by SCAG and included in the Trip Reduction Handbook from SCAQMD.

6. LOCAL IMPLEMENTATION CASE STUDIES

In order to evaluate the level of effort required from local jurisdictions, two case studies were prepared. The first case study, developed with the City of Culver City, compiled an estimate of the City's 1990-94 credit claims. These credits were then compared to actual development activity during several previous years, in order to provide examples of the short-term or year-to-year balance between development debits and improvement credits. The second case study, developed with the City of Burbank, estimated long-term debit and credit balances through 2010. Both case studies also provided an opportunity to review strategy qualifying criteria and reporting procedures.

This chapter documents the case study findings which were prepared during development of the countywide deficiency plan. As such, in some cases the credit factors and definitions used have been subsequently revised. These revisions did not alter the conclusions presented below.

6.1 SUMMARY

The short term case study indicated that the credit claims entitled to Culver City for the 1990-94 period exceed annual development activity goals by factors of 3.1 to 4.8 or higher. In other words, these four years of ongoing transportation improvements would keep pace with CMP obligations, satisfying at least 3 to 5 years of mitigation needs.

The long term case study indicated that based on current estimates, transportation improvements by the City of Burbank will exceed deficiency plan goals by nearly 30%. Credits for alternative transportation improvement scenarios would also approximate CMP goals, while involving significantly different mixes of improvements.

The credit claims for each city are approximate, and would actually require additional review by MTA staff to verify project schedules, funding commitments, etc. However, these case studies do indicate that ongoing and planned transportation improvements could meet CMP deficiency plan obligations.

Caution should be used in generalizing these results to the county as a whole. Until the deficiency plan is implemented, there will be no way to determine whether these two cities are typical, more aggressive or less aggressive than other jurisdictions in implementing regional transportation improvements. However, the case studies do provide an indication of the level of effort required to make improvements that offset prototypical goals.

6.2 CONCLUSIONS AND POLICY IMPLICATIONS

The case studies demonstrate that the flexibility provided by the deficiency plan provides local jurisdictions with a variety of methods to meet mitigation goals. In addition, the Burbank case study illustrates how the deficiency plan framework could provide a basis for the City to examine tradeoffs in pursuing one category of improvement versus others. As a result, the following conclusions were reflected in the 1993 CMP:

1. The proposed local jurisdiction deficiency plan goals are appropriate, since the effort required in the case studies are reasonably within the abilities of the local jurisdictions.
2. Flexibility in the selection among capital, demand management and land use strategies, and relative credit values, are consistent with the objectives of the deficiency plan.
3. With the base of credits provided since January 1990, it is reasonable to require a positive credit balance with each annual local implementation report.
4. Adjustments to new development activity reports should be allowed for all building demolitions after June 1, 1994.

As with other elements of the program, the effect of these recommendations will be monitored through implementation of the CMP and reviewed through future program updates.

6.3 CASE STUDY #1 - CULVER CITY

6.3.1 Purpose and Approach. The Culver City case study provides an example of short-term debit/credit balance. Culver City staff reviewed building permit activity during fiscal years 1987-88, 1988-89, and 1992-93. These years were expected to represent years of high development activity (87-88 and 88-89) and low development activity (92-93). The CMP mitigation goals that would be incurred by these levels of development were calculated and compared to the estimated 1990-94 credits attributable to the City.

It should be reiterated that the CMP deficiency plan will not require tabulation of building permit data before June 1994. This case study simply used building permit data from previous years in order to provide "real world" examples of the level of development that could occur within a jurisdiction from year to year. This case study also assisted in refining strategy definitions and data requirements, and in streamlining reporting procedures. The case study also allowed staff to examine inter-departmental coordination requirements at both the City and MTA.

6.3.2 Assumptions. The following assumptions were made for the purpose of this case study:

- Since documentation was not available, no distinctions were made regarding building demolitions which were occupied within 12 months prior to demolition (for debit adjustment). In order to illustrate the sensitivity of mitigation goals to demolition, alternative mitigation goals were prepared for one scenario in which adjustments were

allowed for all demolition and another scenario in which no demolition adjustments were allowed.

- The 1990-94 credit claims did not include many of the strategies reported by the City in its 1993 transportation control measures expeditious implementation report. These strategies were deemed insignificant to the City's overall credit total.

6.3.3 Findings. The following figures summarize the results of the Culver City case study:

	With Adjustment for All Demolition	With No Adjustment for Demolition
1987-88 Congestion Mitigation Goal:	3,897	6,120
1988-89 Congestion Mitigation Goal:	2,156	3,827
1992-93 Congestion Mitigation Goal:	(27)	127
1990-94 Credit Claims:	18,812	18,812

These figures show that Culver City's 1990-94 credit claims, annualized, exceed the mitigation goals associated with historical development activity by at least 20% if debit adjustments are allowed for all demolition. If no debit adjustments are allowed for demolition, annualized credits would achieve 76% or more of CMP goals.

A schematic CMP local implementation report, including both development activity debit scenarios and transportation improvement credits, is provided in Appendix GG (pages GG-2 through GG-9). Regarding the credit claims, the following observations should be noted:

- Credit for the CMP TDM Ordinance is calculated from the new construction square footage reported in the development activity report (page GG-9). For this illustrative 1990-94 claim, the square footage shown in the "Project Scope" column is based on the conservative 1992-93 building data.
- Transit service credit is based on the increase in average weekday passenger miles on Culver City Municipal Bus Lines between 1990 and 1993 as reported in its annual federal Section 15 report. The reported system-wide increase of 2,219 weekday passenger miles (page GG-9) represents a 6% increase over 1990 levels. This increase departs from the countywide trend in transit ridership, which has decreased in recent years.
- Overall, credit for Culver City's improvement program consists of 58% transportation systems management, 30% highway capital improvements, 12% transit services, and less than 1% demand management.

An issue raised by both case studies relates to adjustments for building demolitions. An early draft of the 1993 CMP stated that building demolitions could only be used to adjust annual mitigation goals if the building being demolished contained an active use within 12 months prior to issuance of the demolition permit. The case studies allowed staff to review the related

administrative requirements and consistency of this criteria with the use of new building construction as the basis for debit calculation. This review found that documenting the prior occupancy of demolished buildings citywide would be a significant burden to local jurisdictions, outweighing the value of such tracking for the deficiency plan.

Based on this review, the criteria were revised to allow adjustments for any demolition during the new development reporting period. Adjustments may therefore be claimed for any demolition after June 1, 1994.

6.4 CASE STUDY #2 - CITY OF BURBANK

6.4.1 Purpose and Approach. The City of Burbank case study provided a long-term comparison of debit and credit balance. Development activity debits were estimated from year 2010 land use projections provided by the City, from a market-based analysis of likely development activity. Transportation improvement credits were based on an estimated program of fundable improvements provided by City staff.

MTA staff requested that Burbank participate in this case study, since the City's ongoing comprehensive transportation planning efforts made much of the needed information readily available. Estimates of growth for this case study were provided by Burbank's citywide transportation planning database, which includes existing and future land use forecasts by category (i.e., commercial, industrial, etc.) and total square footage. Transportation improvement estimates were also readily available due to the City's ongoing circulation element revision and recently adopted Capital Improvement Program which provided funding-constrained estimates of future improvements.

Subsequent to adoption of its Capital Improvement Program, however, the Burbank City Council directed staff not to pursue one of the arterial street widenings identified in the Capital Improvement Program. In order to illustrate the possible implications of additional decisions away from major arterial widenings, this case study evaluated three alternative transportation improvement scenarios:

Alternative A	Multi-Modal Improvements Including Major Arterial Widenings
Alternative B	Improvements in Alternative A (Except Arterial Widenings) Plus Citywide Parking Management
Alternative C	Improvements in Alternative A (Except Arterial Widenings) Plus Burbank-Glendale-Los Angeles Light Rail

6.4.2 Assumptions. The following assumptions were made for the purpose of this case study:

- The development activity totals shown indicate net change in building square footage between 1993 and 2010. This use of net change (new construction minus demolition) implicitly assumed that debit adjustment will be allowed for all demolitions.

- The credit claims in Alternative A assumed approval and completion of major arterial widenings, except Hollywood Way, as listed in the City’s Capital Improvement Program.
- The credit claims in Alternative B assumed an aggressive citywide parking pricing program and peak period parking restrictions on major arterials.
- The credit claims in Alternative C assumed completion of the Burbank-Glendale-Los Angeles Light Rail with three stations within Burbank, local contribution of 20% of project construction costs, and supportive land use strategies. The credit value for the light rail project was based on generalized urban rail station boarding figures; project values would actually be based on project-specific ridership forecasts.

6.4.3 Findings. The following figures summarize the results of the Burbank case study:

1993-2010 Congestion Mitigation Goal:		307,178
1990-2010 Credit Claims -	Alternative A:	396,472
	Alternative B:	385,577
	Alternative C:	295,541
Net Deficiency Plan Credit Balance -	Alternative A:	89,294
	Alternative B:	78,399
	Alternative C:	(11,637)

These figures indicate that if both development activity and transportation improvements proceed as planned (Alternative A), Burbank will exceed its CMP mitigation goal by nearly 30%.

Alternatively, if arterial widenings are not pursued, the City will need to more aggressively pursue other mitigation measures in order to ensure the achievement of CMP goals. Alternative B indicates that the City will have the flexibility to pursue other options, such as aggressive parking management, and could still exceed CMP goals by 26%. The light rail option (Alternative C) would need to include additional strategies, generate higher ridership, and/or increase local participation in order to achieve CMP goals.

A schematic CMP local implementation report, including both development activity debits and transportation improvement credits, is provided in Appendix GG (pages GG-10 through GG-16). Regarding the credit claims, the following should be noted:

- The transit center and transit corridor land use strategies are based on the City’s working definition of transit centers and corridors. This definition requires that the location be served by both local and express bus services, with maximum peak period headways of 15 minutes.
- Burbank is aggressively pursuing the development of child care facilities at transit centers as a trip reduction strategy. Based on input from City staff, the CMP child care center strategy was revised to provide a credit factor per 1000 square feet devoted to child care.

- Overall, credits for each alternative were gained through the following combination of modal strategies:

Improvement Category	Alt. A	Alt. B	Alt. C
Land Use Strategies	12%	12%	24%
Highway Capital Improvements	38%	2%	4%
Rail Capital Improvements	4%	4%	10%
Transportation Systems Management	14%	35%	18%
Bus/Shuttle Services	28%	29%	38%
Transportation Demand Management	4%	18%	6%
Total	100%	100%	100%
Percent of CMP Deficiency Plan Goal Achieved	129%	126%	96%

These figures indicate that local decisions to emphasize particular improvement strategies (such as highway capital, parking management, or rail transit) could significantly affect the overall proportion of credits provided by each category. These results also indicate that CMP mitigation goals could be achieved through a variety of improvement approaches.

APPENDIX AA - CALIFORNIA GOVERNMENT CODE SECTION 65089.3 (b)

(1) A city or county may designate individual deficient segments or intersections which do not meet the established level of service standards if, prior to the designation, at a noticed public hearing, the city or county has adopted a deficiency plan which shall include all of the following:

(A) An analysis of the cause of deficiency.

(B) A list of improvements necessary for the deficient segment or intersection to maintain the minimum level of service otherwise required and the estimated costs of the improvements.

(C) A list of improvements, programs, or actions, and estimates of costs, that will (i) measurably improve the level of service of the system, as defined in subdivision (b) of Section 65089, and (ii) contribute to significant improvements in air quality, such as improved public transit service and facilities, improved nonmotorized transportation facilities, high occupancy vehicle facilities, parking cash-out programs, and transportation control measures. The air quality management district or the air pollution control district shall establish and periodically revise a list of approved improvements, programs, and actions which meet the scope of this paragraph. If an improvement, program, or action is on the approved list and has not yet been fully implemented, it shall be deemed to contribute to significant improvements in air quality. If an improvement, program, or action is not on the approved list, it shall not be implemented unless approved by the local air quality management district or air pollution control district.

(D) An action plan, consistent with the provisions of Chapter 5 (commencing with Section 66000) of Division 1 of Title 7, that shall be implemented, consisting of improvements identified in paragraph (B), or improvements, programs, or actions identified in paragraph (C), that are found by the agency to be in the interest of the public's health, safety and welfare. The action plan shall include a specific implementation schedule.

(2) A city or county shall forward its adopted deficiency plan to the agency. The agency shall hold a noticed public hearing within 60 days of receiving the deficiency plan. Following the hearing, the agency shall either accept or reject the deficiency plan in its entirety, but the agency may not modify the deficiency plan. If the agency rejects the plan, it shall notify the city or county of the reasons for that rejection.

(c) The agency, after consultation with the regional agency, the department, and the local air quality management district or air pollution control district, shall exclude from the determination of conformance with level of service standards, the impacts of any of the following:

- (1) Interregional travel.
- (2) Construction, rehabilitation, or maintenance of facilities that impact the system.
- (3) Freeway ramp metering.

- (4) Traffic signal coordination by the state or multi-jurisdictional agencies.
- (5) Traffic generated by the provision of low and very low income housing.
- (6)(A) Traffic generated by high density residential development located within one-fourth mile of a fixed rail passenger station.
- (B) Traffic generated by any mixed use development located within one-fourth mile of a fixed rail passenger station, if more than half of the land area, or floor area, of the mixed use development is used for high density residential housing, as determined by the agency.
- (C) For the purposes of this section, the following terms have the following meanings:
 - (I) "High Density" means residential density which is equal to or greater than 120 percent of the maximum residential density allowed under the local general plan and zoning ordinance.
 - (II) "Mixed Use Development" means development which integrates compatible commercial or retail uses, or both, with residential uses, and which, due to the proximity of job locations, shopping opportunities, and residences, will discourage new trip generation.
- (d) For the purpose of this chapter, the impacts of a trip which originates in one county and which terminates in another county shall be included in the determination of conformance with level of service standards with respect to the originating county only. A roundtrip shall be considered to consist of two individual trips.
- (e) It is the intent of the legislature that a deficiency plan be prepared and adopted by the city or county, and approved by the agency, prior to the occurrence of a deficiency.

APPENDIX BB

**ESTIMATE OF LA COUNTY BUILDING FLOOR AREA DERIVED FROM
EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010**

ESTIMATE OF L.A. COUNTY BUILDING FLOOR AREA DERIVED FROM EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010

SIC Division	SIC	Title	1990 Emp.	% of Total	Land Use Code ¹	Percent of Empls In Bldg	Sq.Ft. per Employee	Square Feet	% of Total	2010 Emplmnt	Square Feet
div	sic	title	90emp	90pct	code	bldgpct	stemp	90sft		10emp	10sft
Agriculture	1	Agriculture	13,118	0.3%	9	5%	200	131,180	0.0%	15,351	153,513
Mining	10	Mining	8,724	0.2%	9	5%	200	87,240	0.0%	10,209	102,092
Construction	15	Construction Contractors	170,591	3.7%	4	5%	650	5,544,208	0.3%	199,633	6,488,082
Manufacturing	201	Meat products	5,733	0.1%	4	100%	650	3,726,450	0.2%	6,709	4,360,860
	202	Dairy products	4,538	0.1%	4	100%	650	2,949,700	0.2%	5,311	3,451,872
	203	Preserved fruit and vegetables	5,770	0.1%	4	100%	650	3,750,500	0.2%	6,752	4,389,004
	204	Grain mill products	1,193	0.0%	4	100%	650	775,450	0.0%	1,396	907,467
	205	Bakery products	8,551	0.2%	4	100%	650	5,558,150	0.3%	10,007	6,504,398
	206	Sugar and confectionary products	1,478	0.0%	4	100%	650	960,700	0.1%	1,730	1,124,255
	207	Fats and oils	1,115	0.0%	4	100%	650	724,750	0.0%	1,305	848,135
	208	Beverages	7,414	0.2%	4	100%	650	4,819,100	0.3%	8,676	5,639,528
	209	Misc. Foods and Kindred Products	11,161	0.2%	4	100%	650	7,254,650	0.4%	13,061	8,489,719
	212	Cigars	149	0.0%	4	100%	650	96,850	0.0%	174	113,338
	221	Weaving mills, cotton	1,007	0.0%	4	100%	650	654,550	0.0%	1,178	765,984
	222	Weaving mills, synthetic	337	0.0%	4	100%	650	219,050	0.0%	394	256,342
	223	Weaving and finishing mills, wool	217	0.0%	4	100%	650	141,050	0.0%	254	165,063
	224	Narrow fabric mills	673	0.0%	4	100%	650	437,450	0.0%	788	511,924
	225	Knitting mills	2,911	0.1%	4	100%	650	1,892,150	0.1%	3,407	2,214,279
	226	Textile finishing, except wool	4,045	0.1%	4	100%	650	2,629,250	0.1%	4,734	3,076,867
	227	Floor covering mills	1,597	0.0%	4	100%	650	1,038,050	0.1%	1,869	1,214,773
	228	Yarn and thread mills	188	0.0%	4	100%	650	122,200	0.0%	220	143,004
	229	Miscellaneous Textile Goods	1,157	0.0%	4	100%	650	752,050	0.0%	1,354	880,083
	231	Mens and boys suits and coats	1,270	0.0%	4	100%	650	825,500	0.0%	1,486	968,037
	232	Mens and boys furnishings	12,767	0.3%	4	100%	650	8,298,550	0.4%	14,941	9,711,338
	233	Women and misses outerwear	37,567	0.8%	4	100%	650	24,418,550	1.3%	43,983	28,575,690
	234	Undergarments	3,200	0.1%	4	100%	650	2,080,000	0.1%	3,745	2,434,110
	235	Hats, Caps and Millenary	806	0.0%	4	100%	650	523,900	0.0%	943	613,091
	236	Children's outerwear	2,319	0.1%	4	100%	650	1,507,350	0.1%	2,714	1,763,999
	237	Fur Goods	148	0.0%	4	100%	650	96,200	0.0%	173	112,578
	238	Misc. apparel accessories	3,858	0.1%	4	100%	650	2,507,700	0.1%	4,515	2,934,624
	239	Misc. Fabricated Textile Products	24,186	0.5%	4	100%	650	15,707,900	0.8%	28,280	18,382,084
	241	Logging contractors	9	0.0%	4	100%	650	5,850	0.0%	11	6,846
	242	Sawmills	1,181	0.0%	4	100%	650	767,650	0.0%	1,382	898,339
	243	Milwork, Plywood, & Struct	5,982	0.1%	4	100%	650	3,888,300	0.2%	7,000	4,550,264
	244	Wood containers	1,342	0.0%	4	100%	650	872,300	0.0%	1,570	1,020,805
	245	Wood Buildings and Mobile Homes	404	0.0%	4	100%	650	262,600	0.0%	473	307,306
	249	Misc. Wood Products	2,700	0.1%	4	100%	650	1,755,000	0.1%	3,180	2,053,780
	251	Household furniture	19,974	0.4%	4	100%	650	12,983,100	0.7%	23,374	15,193,410
	252	Office furniture	7,213	0.2%	4	100%	650	4,688,450	0.2%	8,441	5,486,636
	253	Public Building and Related Furniture	1,414	0.0%	4	100%	650	919,100	0.0%	1,655	1,075,572
	254	Partions and fixtures	4,616	0.1%	4	100%	650	3,000,400	0.2%	5,402	3,511,204
	259	Misc. Furniture and Fixtures	5,432	0.1%	4	100%	650	3,530,800	0.2%	6,357	4,131,902
	261	Paper and pulp mills	45	0.0%	4	100%	650	29,250	0.0%	53	34,230
	262	Paper Mills except Building Paper	3,238	0.1%	4	100%	650	2,104,700	0.1%	3,789	2,463,015
	263	Paperboard mills	1,269	0.0%	4	100%	650	824,650	0.0%	1,485	965,277
	265	Paperboard containers and boxes	9,583	0.2%	4	100%	650	6,228,950	0.3%	11,214	7,289,399
	267		8,380	0.2%	4	100%	650	5,447,000	0.3%	9,807	6,374,325
	271	Newspapers	22,581	0.5%	4	100%	650	14,677,650	0.8%	28,425	17,176,449
	272	Periodicals	6,671	0.1%	4	100%	650	4,336,150	0.2%	7,807	5,074,359
	273	Books	2,597	0.1%	4	100%	650	1,688,050	0.1%	3,039	1,975,432
	274	Misc. Publishing	3,827	0.1%	4	100%	650	2,487,550	0.1%	4,479	2,911,043
	275	Commercial printing	31,940	0.7%	4	100%	650	20,761,000	1.1%	37,378	24,295,460
	276	Manifold Business Forms	1,660	0.0%	4	100%	650	1,079,000	0.1%	1,943	1,262,695
	277	Greeting Card Publishing	289	0.0%	4	100%	650	187,850	0.0%	338	219,831
	278	Blankbooks and bookbinding	5,201	0.1%	4	100%	650	-3,380,650	0.2%	6,086	3,956,189
	279	Printing Trade Services	3,601	0.1%	4	100%	650	2,340,650	0.1%	4,214	2,739,134
	281	Industrial inorganic chemicals	1,877	0.0%	4	100%	650	1,220,050	0.1%	2,197	1,427,758
	282	Plastics materials synthetics	4,201	0.1%	4	100%	650	2,730,650	0.1%	4,916	3,195,530
	283	Drugs	7,696	0.2%	4	100%	650	5,002,400	0.3%	9,006	5,854,034
	284	Soap, cleaners, and toilet goods	6,845	0.1%	4	100%	650	4,449,250	0.2%	8,010	5,206,713
	285	Paints and allied products	4,176	0.1%	4	100%	650	2,714,400	0.1%	4,887	3,176,513
	286	Industrial Organic Chemicals	686	0.0%	4	100%	650	445,900	0.0%	803	521,812
	287	Agricultural chemicals	617	0.0%	4	100%	650	401,050	0.0%	722	469,327
	289	Misc. Chemical Products	3,834	0.1%	4	100%	650	2,492,100	0.1%	4,487	2,916,368
	291	Petroleum refining	8,603	0.2%	4	100%	650	5,721,950	0.3%	10,302	6,666,084
	295	Paving and roofing materials	760	0.0%	4	100%	650	494,000	0.0%	889	578,101
	299	Misc. Petroleum and Coal Products	1,599	0.0%	4	100%	650	1,039,350	0.1%	1,871	1,216,294
	301	Tires and Inner Tubes	209	0.0%	4	100%	650	135,850	0.0%	245	158,978
	302	Rubber and Plastics Footwear	101	0.0%	4	100%	650	65,650	0.0%	118	76,827
	305		1,077	0.0%	4	100%	650	700,050	0.0%	1,290	819,230
	306	Fabricated Rubber Products	4,432	0.1%	4	100%	650	2,880,800	0.2%	5,167	3,371,242
	308		24,346	0.5%	4	100%	650	15,824,900	0.8%	28,491	18,519,013
	310		9	0.0%	4	100%	650	5,850	0.0%	11	6,846
	311	Leather tanning and finishing	401	0.0%	4	100%	650	260,650	0.0%	469	305,024
	313	Boot and Shoe Cut Stock and Findings	34	0.0%	4	100%	650	22,100	0.0%	40	25,862
	314	Footwear except rubber	1,209	0.0%	4	100%	650	785,850	0.0%	1,415	919,637
	316	Luggage	1,463	0.0%	4	100%	650	950,950	0.1%	1,712	1,112,845
	317	Handbags, personal leather goods	1,275	0.0%	4	100%	650	828,750	0.0%	1,462	969,841
	319	Leather Goods	410	0.0%	4	100%	650	266,500	0.0%	480	311,870
	321	Flat glass	186	0.0%	4	100%	650	120,900	0.0%	218	141,483
	322	Glass and Glassware pressed	2,659	0.1%	4	100%	650	1,728,350	0.1%	3,112	2,022,593

ESTIMATE OF L.A. COUNTY BUILDING FLOOR AREA DERIVED FROM EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010

SIC Division	SIC	Title	1990 Emp.	% of Total	Land Use Code ¹	Percent of Empls In Bldg.	Sq.Ft. per Employee	Square Feet	% of Total	2010 Emplmnt	Square Feet
div	sic	title	90emp	90pct	code	bidgpc	sftemp	90sft	100ft	10emp	10sft
	323	Products of Purchased Glass	3,066	0.1%	4	100%	650	1,992,900	0.1%	3,588	2,332,117
	324	Cement hydraulic	144	0.0%	4	100%	650	93,600	0.0%	189	109,500
	325	Structural clay products	533	0.0%	4	100%	650	346,450	0.0%	824	405,431
	326	Pottery and related products	2,931	0.1%	4	100%	650	1,905,150	0.1%	3,430	2,229,493
	327	Concrete, gypsum, and plaster	3,108	0.1%	4	100%	650	2,020,200	0.1%	3,637	2,364,129
	328	Cut Stone and Stone Products	985	0.0%	4	100%	650	640,250	0.0%	1,153	749,249
	329	Misc. Nonmetallic Mineral Products	3,113	0.1%	4	100%	650	2,023,450	0.1%	3,643	2,367,933
	331	Blast furnaces and basic steel	3,694	0.1%	4	100%	650	2,401,100	0.1%	4,323	2,809,876
	332	Iron and steel foundries	3,598	0.1%	4	100%	650	2,338,700	0.1%	4,211	2,736,852
	333	Primary nonferrous metals	106	0.0%	4	100%	650	68,900	0.0%	124	80,830
	334	Secondary Nonferrous Metals	704	0.0%	4	100%	650	457,600	0.0%	824	535,504
	335	Nonferrous Rolling and Drawing	3,552	0.1%	4	100%	650	2,308,800	0.1%	4,157	2,701,862
	336	Nonferrous foundries	13,410	0.3%	4	100%	650	8,716,500	0.5%	15,693	10,200,442
	339	Misc. Primary Metal Products	3,096	0.1%	4	100%	650	2,012,400	0.1%	3,623	2,355,001
	341	Metal cans and shipping containers	2,527	0.1%	4	100%	650	1,642,550	0.1%	2,957	1,922,186
	342	Cutlery, hand tools & hardware	5,846	0.1%	4	100%	650	3,799,900	0.2%	6,841	4,446,815
	343	Plumbing and heating, exc. electric	5,213	0.1%	4	100%	650	3,388,450	0.2%	6,100	3,965,317
	344	Fabricated structural metal	22,892	0.5%	4	100%	650	14,879,800	0.8%	26,789	17,413,014
	345	Screw machine products, bolts	4,978	0.1%	4	100%	650	3,234,400	0.2%	5,823	3,785,041
	346	Metal forgings and stampings	6,395	0.1%	4	100%	650	4,156,750	0.2%	7,484	4,864,417
	347	Metal Services	13,035	0.3%	4	100%	650	8,472,750	0.4%	15,254	9,915,195
	348	Ordnance and Accessories	5,285	0.1%	4	100%	650	3,422,250	0.2%	6,161	4,004,872
	349	Misc. Fabricated Metal Products	7,945	0.2%	4	100%	650	5,164,250	0.3%	9,298	6,043,439
	351	Engines and turbines	920	0.0%	4	100%	650	598,000	0.0%	1,077	699,807
	352	Farm and garden machinery	482	0.0%	4	100%	650	313,300	0.0%	564	368,638
	353	Construction and related machinery	3,518	0.1%	4	100%	650	2,286,700	0.1%	4,117	2,676,000
	354	Metaworking machinery	10,751	0.2%	4	100%	650	6,988,150	0.4%	12,581	8,177,849
	355	Special industry machinery	4,576	0.1%	4	100%	650	2,974,400	0.2%	5,355	3,480,777
	356	General industrial machinery	8,645	0.2%	4	100%	650	5,619,250	0.3%	10,117	6,575,900
	357	Office and computing machines	13,676	0.3%	4	100%	650	8,889,400	0.5%	16,004	10,402,727
	358	Refrigeration and Service	5,108	0.1%	4	100%	650	3,318,900	0.2%	5,975	3,883,927
	359	Misc. Machinery, except Electrical	27,420	0.6%	4	100%	650	17,823,000	0.9%	32,088	20,857,280
	361	Electric Distributing Equip	2,490	0.1%	4	100%	650	1,618,500	0.1%	2,914	1,894,042
	362	Electric industrial apparatus	8,135	0.2%	4	100%	650	5,287,750	0.3%	9,520	6,187,964
	363	Household appliances	1,964	0.0%	4	100%	650	1,276,600	0.1%	2,296	1,493,935
	364	Electric lighting and wiring	14,947	0.3%	4	100%	650	9,715,550	0.5%	17,492	11,369,575
	365	Radio and TV receiving equip	5,342	0.1%	4	100%	650	3,472,300	0.2%	6,251	4,063,442
	366	Communication equipment	37,381	0.8%	4	100%	650	24,297,650	1.3%	43,745	28,434,207
	367	Electrical components and access	24,121	0.5%	4	100%	650	15,678,650	0.8%	28,227	18,347,864
	369	Misc. Electrical Equipment & Supplies	4,751	0.1%	4	100%	650	3,088,150	0.2%	5,560	3,613,890
	371	Motor vehicles and equipment	18,930	0.4%	4	100%	650	12,304,500	0.7%	22,153	14,399,282
	372	Aircraft and parts	105,299	2.3%	4	100%	650	68,444,350	3.6%	123,226	80,096,670
	373	Ship and boat building, repairs	10,883	0.2%	4	100%	650	7,073,950	0.4%	12,736	8,278,256
	374	Railroad equipment	178	0.0%	4	100%	650	115,700	0.0%	208	135,397
	375	Motorcycles, Bicycles and Parts	630	0.0%	4	100%	650	409,500	0.0%	737	479,215
	376	Guided Missiles, Space Vehicles, Parts	9,011	0.2%	4	100%	650	5,857,150	0.3%	10,545	6,854,301
	379	Misc. Transportation Equipment	879	0.0%	4	100%	650	571,350	0.0%	1,029	668,620
	381	Engineering and scientific instru	11,309	0.2%	4	100%	650	7,350,850	0.4%	13,234	8,602,297
	382	Measuring and controlling devices	14,049	0.3%	4	100%	650	9,131,850	0.5%	16,441	10,688,503
	384	Medical instruments and supplies	7,629	0.2%	4	100%	650	4,958,850	0.3%	8,928	5,803,070
	385	Ophthalmic goods	2,390	0.1%	4	100%	650	1,553,500	0.1%	2,797	1,817,976
	386	Photographic equipment and supplies	3,481	0.1%	4	100%	650	2,262,650	0.1%	4,074	2,647,856
	387	Watches, clocks and watchcases	525	0.0%	4	100%	650	341,250	0.0%	614	399,348
	381	Jewelry, silverware, plated ware	4,675	0.1%	4	100%	650	3,038,750	0.2%	5,471	3,556,082
	393	Musical Instruments	344	0.0%	4	100%	650	223,600	0.0%	403	261,667
	394	Toys and sporting goods	5,629	0.1%	4	100%	650	3,658,850	0.2%	6,587	4,281,752
	395	Pens, pencils, office and art supplies	2,375	0.1%	4	100%	650	1,543,750	0.1%	2,779	1,806,568
	396	Costume jewelry and notions	3,245	0.1%	4	100%	650	2,109,250	0.1%	3,797	2,468,340
	399	Misc. Manufactures	13,188	0.3%	4	100%	650	8,572,200	0.5%	15,433	10,031,576
Transportation	401	Railroads	1,657	0.0%	4	10%	650	107,705	0.0%	1,939	126,041
Utilities	411	Local and Suburban Transportation	9,208	0.2%	4	10%	650	598,390	0.0%	10,773	700,263
Communication	412	Taxis	1,920	0.0%	4	5%	650	62,400	0.0%	2,247	73,023
	413	Intercity Highway Transportation	1,231	0.0%	4	10%	650	80,015	0.0%	1,441	93,637
	414	Transportation Charter Service	931	0.0%	4	10%	650	60,515	0.0%	1,089	70,817
	415	School Buses	2,363	0.1%	4	10%	650	153,595	0.0%	2,765	179,744
	417	Bus Terminals and Service Facilities	1,281	0.0%	4	15%	650	124,898	0.0%	1,499	148,161
	421	Trucking, Local and Long Distance	37,454	0.8%	4	10%	650	2,434,510	0.1%	43,830	2,848,974
	422	Public Warehousing	18,692	0.4%	4	100%	650	12,149,800	0.6%	21,874	14,218,245
	423	Trucking Terminal Facilities	1,681	0.0%	4	10%	650	109,265	0.0%	1,967	127,887
	431	U.S. Postal Service	28,275	0.6%	7	75%	200	4,241,250	0.2%	33,089	4,963,302
	441	Deep Sea Foreign Transportation	1,901	0.0%	4	10%	650	123,565	0.0%	2,225	144,601
	442	Deep Sea Domestic Transportation	827	0.0%	4	10%	650	53,755	0.0%	968	62,907
	444	Transportation on Rivers and Canals	377	0.0%	4	10%	650	24,505	0.0%	441	28,677
	448		1,502	0.0%	4	10%	650	97,630	0.0%	1,758	114,251
	449		2,638	0.1%	4	10%	650	171,340	0.0%	3,085	200,510
(Airport/Port)	451	Certificated Air Transportation	7,911	0.2%	9	10%	200	158,220	0.0%	9,258	185,156
(Other)	452	Noncertificated Air Transportation	1,441	0.0%	9	10%	200	28,820	0.0%	1,686	33,726
	458	Air Transportation Services	8,513	0.2%	9	10%	200	170,260	0.0%	9,962	199,248
	461	Pipe Lines, except Natural Gas	835	0.0%	4	10%	650	54,275	0.0%	977	63,515
	472	Arrangement of Transportation	20,782	0.5%	5	100%	250	4,987,680	0.3%	24,320	5,836,808
	473		14,192	0.3%	4	10%	650	922,480	0.0%	16,608	1,079,528

ESTIMATE OF L.A. COUNTY BUILDING FLOOR AREA DERIVED FROM EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010

SIC Division	SIC	Title	1990 Emp	% of Total	Land Use Code ¹	Percent of Empls In Bldg	Sq.Ft. per Employee	Square Feet	% of Total	2010 Emplmnt	Square Feet
div	sic	title	90emp	90pct	code	blgpcct	sftemp	90sft		10emp	10sft
	474	Rental of Railroad Cars	23	0.0%	4	10%	650	1,495	0.0%	27	1,750
	478	Misc. Transportation Services	1,377	0.0%	4	100%	650	895,050	0.0%	1,611	1,047,428
	481	Telephone communication	9,044	0.2%	4	100%	650	5,878,600	0.3%	10,584	6,879,403
	482	Telegraph Communication	725	0.0%	4	100%	650	471,250	0.0%	848	551,478
	483	Radio and television broadcasting	9,413	0.2%	4	100%	650	6,118,450	0.3%	11,016	7,160,087
	484		4,564	0.1%	4	100%	650	2,966,600	0.2%	5,341	3,471,649
	489	Communication Services	2,002	0.0%	4	100%	650	1,301,300	0.1%	2,343	1,522,840
	491	Electric services	4,442	0.1%	4	100%	650	2,887,300	0.2%	5,198	3,378,849
	492	Gas production and distribution	4,796	0.1%	4	100%	650	3,117,400	0.2%	5,612	3,648,122
	493	Combination utility services	728	0.0%	4	100%	650	473,200	0.0%	852	553,760
	494	Water Supply	14,215	0.3%	4	100%	650	9,239,750	0.5%	18,635	10,812,773
	495	Sanitary services	6,499	0.1%	4	100%	650	4,224,350	0.2%	7,605	4,943,525
	496	Steam Supply	530	0.0%	4	100%	650	344,500	0.0%	620	403,149
	497	Irrigation Systems	31	0.0%	4	100%	650	20,150	0.0%	36	23,580
Wholesale Trade	501	Motor Vehicles and Automotive Equipment	21,825	0.5%	4	100%	650	14,186,250	0.8%	25,541	16,601,390
	502	Furniture and Home Furnishings	13,823	0.3%	4	100%	650	8,984,950	0.5%	18,178	10,514,594
	503	Lumber and Construction Materials	9,738	0.2%	4	100%	650	6,329,700	0.3%	11,396	7,407,301
	504	Sporting Goods, Toys, and Hobby Goods	32,070	0.7%	4	100%	650	20,845,500	1.1%	37,530	24,394,346
	505	Metals and Minerals, except Petroleum	8,239	0.2%	4	100%	650	5,355,350	0.3%	9,642	6,267,072
	506	Electrical Goods	36,968	0.8%	4	100%	650	24,029,200	1.3%	43,282	28,120,055
	507	Hardware, Plumbing, and Heating Equipment	14,101	0.3%	4	100%	650	9,165,650	0.5%	16,502	10,728,058
	508	Machinery, Equipment, and Supplies	36,065	0.8%	4	100%	650	23,442,250	1.2%	42,205	27,433,180
	509	Misc. Durable Goods	33,982	0.7%	4	100%	650	22,088,300	1.2%	39,767	25,848,726
	510		32	0.0%	4	100%	650	20,800	0.0%	37	24,341
	511	Paper and Paper Products	11,935	0.3%	4	100%	650	7,757,750	0.4%	13,967	9,078,469
	512	Drugs, Proprietarys, and Sundries	6,659	0.1%	4	100%	650	4,328,350	0.2%	7,793	5,065,231
	513	Apparel, Piece Goods, and Notions	25,352	0.6%	4	100%	650	16,478,800	0.9%	29,668	19,284,236
	514	Groceries and Related Products	35,720	0.8%	4	100%	650	23,218,000	1.2%	41,801	27,170,752
	515	Farm-Product Raw Materials	304	0.0%	4	100%	650	197,600	0.0%	356	231,240
	516	Chemical and Allied Products	8,399	0.1%	4	100%	650	4,159,350	0.2%	7,488	4,867,459
	517	Petroleum and Petroleum Products	3,465	0.1%	4	100%	650	2,252,250	0.1%	4,055	2,635,685
	518	Beer, Wine, and Distilled Beverages	4,561	0.1%	4	50%	650	1,482,325	0.1%	5,337	1,734,684
	519	Misc. Nondurable Goods	20,661	0.4%	4	100%	650	13,429,650	0.7%	24,178	15,715,963
Retail Trade	521	Lumber and Other Building Materials	11,241	0.2%	1.1	100%	650	9,554,850	0.5%	13,155	11,181,517
	523	Paint, Glass and Wallpaper Stores	4,068	0.1%	1.1	100%	650	3,457,800	0.2%	4,761	4,046,474
	525	Hardware Stores	4,528	0.1%	1.1	100%	650	3,848,800	0.2%	5,299	4,504,040
	526	Retail Nurseries and Garden Stores	2,831	0.1%	1.1	100%	650	2,406,350	0.1%	3,313	2,816,019
	527	Mobile Home Dealers	509	0.0%	1	100%	530	269,770	0.0%	596	315,697
	531	Department Stores	62,044	1.3%	1	100%	530	32,883,320	1.7%	72,607	38,481,546
	533	Variety Stores	5,250	0.1%	1	100%	530	2,782,500	0.1%	6,144	3,256,207
	539	Misc. General Merchandise Stores	2,349	0.1%	1	100%	530	1,244,970	0.1%	2,749	1,456,920
	541	Grocery Stores	56,017	1.2%	1	100%	530	29,689,010	1.6%	65,554	34,743,420
	542	Meat Markets and Freezer Provisioners	2,912	0.1%	1	100%	530	1,543,360	0.1%	3,406	1,806,110
	543	Fruit Stores and Vegetable Markets	522	0.0%	1	100%	530	276,660	0.0%	611	323,760
	544	Candy, Nut and Confectionary Stores	1,495	0.0%	1	100%	530	792,350	0.0%	1,750	927,244
	545	Dairy Products Stores	1,254	0.0%	1	100%	530	664,620	0.0%	1,467	777,768
	546	Retail Bakeries	10,978	0.2%	1	100%	530	5,817,280	0.3%	12,845	6,807,644
	549	Misc Food Stores	6,228	0.1%	1	100%	530	3,300,840	0.2%	7,288	3,862,792
	551	New and Used Car Dealers	56,801	1.2%	1	100%	530	30,104,530	1.6%	66,471	35,229,691
	552	Used Car Dealers	4,436	0.1%	1	100%	530	2,351,080	0.1%	5,191	2,751,340
	553	Auto and Home Supply Stores	17,766	0.4%	1	100%	530	9,415,980	0.5%	20,791	11,019,005
	554	Gasoline Service Stations	15,892	0.3%	1	100%	530	8,422,780	0.4%	18,598	9,856,694
	555	Boat Dealers	944	0.0%	1	100%	530	500,320	0.0%	1,105	585,497
	556	Recreation and Utility Trailer Dealers	1,246	0.0%	1	100%	530	660,380	0.0%	1,458	772,807
	557	Motorcycle Dealers	1,609	0.0%	1	100%	530	852,770	0.0%	1,883	997,950
	559	Automotive Dealers	780	0.0%	1	100%	530	413,400	0.0%	913	483,779
	561	Mens and Boys Clothing & Furnishings	7,190	0.2%	1	100%	530	3,810,700	0.2%	8,414	4,459,453
	562	Women's Ready-to-Wear Stores	19,413	0.4%	1	100%	530	10,288,890	0.5%	22,718	12,040,524
	563	Women's Accessory and Specialty Stores	8,391	0.2%	1	100%	530	4,447,230	0.2%	9,820	5,204,349
	564	Children's and Infant's Wear Stores	3,070	0.1%	1	100%	530	1,627,100	0.1%	3,593	1,904,106
	565	Family Clothing Stores	4,309	0.1%	1	100%	530	2,283,770	0.1%	5,043	2,672,571
	566	Shoe Stores	8,665	0.2%	1	100%	530	4,592,450	0.2%	10,140	5,374,262
	569	Misc. Apparel & Accessories	6,413	0.1%	1	100%	530	3,398,890	0.2%	7,505	3,977,535
	571	Furniture and Home Furnishing Stores	26,487	0.6%	1.1	100%	650	22,513,950	1.2%	30,996	26,346,841
	572	Household Appliance Stores	5,485	0.1%	1	100%	530	2,907,050	0.2%	6,419	3,401,961
	573	Radio, Television, and Music Stores	26,671	0.6%	1	100%	530	14,135,630	0.7%	31,212	16,542,153
	581	Eating and Drinking Places	188,741	4.1%	2	100%	120	22,648,920	1.2%	220,873	26,504,789
	591	Drug Stores and Proprietary Stores	13,407	0.3%	1	100%	530	7,105,710	0.4%	15,689	8,315,423
	592	Liquor Stores	9,911	0.2%	1	100%	530	5,252,830	0.3%	11,598	6,147,099
	593	Used Merchandise Stores	8,228	0.2%	1	100%	530	4,360,840	0.2%	9,629	5,103,252
	594	Misc. Shopping Good Stores	56,562	1.2%	1	100%	530	29,977,860	1.6%	66,191	35,081,446
	596	Nonstore Retailers	25,845	0.6%	1	0%	530	0	0.0%	30,245	0
	598	Fuel and Ice Dealers	568	0.0%	1	0%	530	0	0.0%	665	0
	599	Retail Stores	33,446	0.7%	1	100%	530	17,726,380	0.9%	39,140	20,744,210
FIRE	601	Federal Reserve Banks	722	0.0%	5	100%	240	173,280	0.0%	845	202,780
	602	Commercial and Stock Savings Banks	46,153	1.0%	5	100%	240	11,556,720	0.6%	56,351	13,524,196
	603	Mutual Savings Banks	19,509	0.4%	5	100%	240	4,682,160	0.2%	22,630	5,479,275
	606		4,329	0.1%	5	100%	240	1,038,960	0.1%	5,066	1,215,838
	608		1,594	0.0%	5	100%	240	382,560	0.0%	1,865	447,689
	609		3,330	0.1%	5	100%	240	799,200	0.0%	3,897	935,260
	611	Rediscount and Financing Institutions	1,020	0.0%	5	100%	240	244,800	0.0%	1,194	286,476

ESTIMATE OF L.A. COUNTY BUILDING FLOOR AREA DERIVED FROM EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010

SIC Division	SIC	Title	1990 Emp.	% of Total	Land Use Code ¹	Percent of Empls In Bldg	Sq.Ft. per Employee	Square Feet	% of Total	2010 Emplmnt	Square Feet
div	sic title		90emp	90pct	code	bidgpct	sftemp	90sft		10emp	10sft
	614	Personal Credit Institutions	6,356	0.1%	5	100%	240	1,525,440	0.1%	7,438	1,785,1
	615	Business Credit Institutions	3,333	0.1%	5	100%	240	799,920	0.0%	3,900	936,1L
	616	Mortgage Bankers and Brokers	14,772	0.3%	5	100%	240	3,545,280	0.2%	17,287	4,148,847
	621	Security Brokers and Dealers	11,543	0.3%	5	100%	240	2,770,320	0.1%	13,508	3,241,954
	622	Commodity Contracts Brokers, Dealers	410	0.0%	5	100%	240	98,400	0.0%	480	115,152
	623	Security and Commodity Exchanges	541	0.0%	5	100%	240	129,840	0.0%	633	151,945
	628	Security and Commodity Services	6,375	0.1%	5	100%	240	1,530,000	0.1%	7,460	1,790,475
	631	Life Insurance	4,781	0.1%	5	100%	240	1,142,640	0.1%	5,572	1,337,189
	632	Medical Service and Health Insurance	5,405	0.1%	5	100%	240	1,297,200	0.1%	6,325	1,518,042
	633	Fire, Marine, and Casualty Insurance	11,178	0.2%	5	100%	240	2,682,240	0.1%	13,079	3,138,878
	635	Surety Insurance	2,926	0.1%	5	100%	240	702,240	0.0%	3,424	821,793
	636	Title Insurance	3,921	0.1%	5	100%	240	941,040	0.0%	4,589	1,101,248
	637	Pension, Health, and Welfare Funds	1,369	0.0%	5	100%	240	328,560	0.0%	1,602	384,496
	639	Insurance Carriers, nec	141	0.0%	5	100%	240	33,840	0.0%	165	39,601
	641	Insurance Agents, Brokers and Service	52,450	1.1%	5	100%	240	12,588,000	0.7%	61,379	14,731,046
	651	Real Estate Operators and Lessors	29,545	0.6%	5	100%	240	7,090,800	0.4%	34,575	8,297,974
	653	Real Estate Agents and Managers	58,675	1.2%	5	100%	240	13,602,000	0.7%	66,324	15,917,675
	654	Title Abstract Offices	884	0.0%	5	100%	240	212,160	0.0%	1,034	248,279
	655	Subdividers and Developers	15,283	0.3%	5	100%	240	3,667,920	0.2%	17,885	4,292,366
	671	Holding Offices	1,154	0.0%	5	100%	240	276,960	0.0%	1,350	324,111
	672	Investment Offices	632	0.0%	5	100%	240	151,680	0.0%	740	177,503
	673	Trusts	1,388	0.0%	5	100%	240	333,120	0.0%	1,624	389,832
	679	Misc. Investing	5,606	0.1%	5	100%	240	1,345,440	0.1%	6,560	1,574,495
Services	7011	Hotels, Motels, Tourist Courts	37,124	0.8%	3	100%	890	33,040,360	1.8%	43,444	38,665,322
	7021	Rooming and Boarding Houses	230	0.0%	10	100%	500	115,000	0.0%	269	134,578
	7032	Sporting and Recreational Camps	534	0.0%	9	100%	200	106,800	0.0%	625	124,982
	7033	Trailer Parks for Transients	263	0.0%	3	100%	890	234,070	0.0%	308	273,919
	7041	Membership—Basis Organization Hotels	584	0.0%	3	100%	890	519,760	0.0%	683	608,247
	7211	Power laundries, family & commercial	1,515	0.0%	4	100%	650	984,750	0.1%	1,773	1,152,399
	7212	Garment Pressing and Cleaners Agents	4,436	0.1%	1	100%	530	2,351,080	0.1%	5,191	2,751,340
	7213	Linens Supply	3,450	0.1%	1	100%	530	1,828,500	0.1%	4,037	2,139,793
	7215	Coin-operated laundries and cleaning	3,125	0.1%	1	100%	530	1,656,250	0.1%	3,657	1,938,219
	7216	Dry cleaning plants, except rug	5,476	0.1%	1	100%	530	2,902,280	0.2%	6,408	3,396,379
	7217	Carpet and Upholstery Cleaning	3,648	0.1%	1	100%	530	1,933,440	0.1%	4,269	2,262,599
	7218	Industrial Launderers	1,704	0.0%	4	100%	650	1,107,800	0.1%	1,994	1,296,164
	7219	Laundry and Garment Services	1,135	0.0%	1	100%	530	601,550	0.0%	1,328	703,961
	7221	Photographic Studios, Portrait	6,423	0.1%	1	100%	530	3,404,160	0.2%	7,516	3,983,737
	7231	Beauty Shops	33,845	0.7%	1	100%	530	17,937,850	1.0%	39,607	20,991,682
	7241	Barber Shops	3,989	0.1%	1	100%	530	2,114,170	0.1%	4,668	2,474,097
	7251	Shoe Repair and Hat Cleaning Shops	1,729	0.0%	1	100%	530	918,370	0.0%	2,023	1,072,37
	7261	Funeral Service and Crematories	1,784	0.0%	1	100%	530	945,520	0.1%	2,088	1,108,490
	7291		4,916	0.1%	1	100%	530	2,605,480	0.1%	5,753	3,049,050
	7299	Misc. Personal Services	16,830	0.4%	1	100%	530	8,919,900	0.5%	19,695	10,438,470
	7311	Advertising Agencies	15,934	0.3%	5	100%	240	3,824,160	0.2%	18,847	4,475,205
	7312	Outdoor Advertising Services	691	0.0%	5	10%	240	16,584	0.0%	809	19,407
	7313	Radio, TV, publisher representatives	1,324	0.0%	5	100%	240	317,760	0.0%	1,549	371,857
	7319	Advertising, nec	1,653	0.0%	5	100%	240	396,720	0.0%	1,934	464,260
	7322		4,350	0.1%	5	100%	240	1,044,000	0.1%	5,091	1,221,736
	7323		1,059	0.0%	5	100%	240	254,160	0.0%	1,239	297,430
	7331	Direct Mail Advertising Services	5,836	0.1%	5	100%	240	1,400,640	0.1%	6,830	1,636,982
	7334		2,899	0.1%	5	100%	240	695,760	0.0%	3,393	814,210
	7335		3,214	0.1%	5	100%	240	771,360	0.0%	3,761	902,680
	7336		9,541	0.2%	5	100%	240	2,289,840	0.1%	11,185	2,679,674
	7338		3,549	0.1%	5	100%	240	851,760	0.0%	4,153	996,768
	7342	Disinfecting and Exterminating	4,418	0.1%	5	10%	240	106,032	0.0%	5,170	124,083
	7349	Building Maintenance Services	34,000	0.7%	5	100%	240	8,160,000	0.4%	39,788	9,549,201
	7352		716	0.0%	5	100%	240	171,840	0.0%	838	201,095
	7353		2,269	0.0%	5	100%	240	544,560	0.0%	2,655	637,269
	7359		8,775	0.2%	5	100%	240	2,106,000	0.1%	10,269	2,464,536
	7361	Employment Agencies	21,938	0.5%	5	100%	240	5,265,120	0.3%	25,673	6,161,481
	7363		13,451	0.3%	5	100%	240	3,228,240	0.2%	15,741	3,777,832
	7371		9,073	0.2%	5	100%	240	2,177,520	0.1%	10,618	2,548,232
	7372	Computer Programming and Software	4,967	0.1%	5	100%	240	1,192,080	0.1%	5,813	1,395,026
	7373		3,262	0.1%	5	100%	240	782,880	0.0%	3,817	918,162
	7374	Data Processing Services	11,696	0.3%	5	100%	240	2,807,040	0.1%	13,687	3,284,925
	7375		323	0.0%	5	100%	240	77,520	0.0%	378	90,717
	7376		133	0.0%	5	100%	240	31,920	0.0%	156	37,354
	7377		430	0.0%	5	100%	240	103,200	0.0%	503	120,769
	7378		2,327	0.1%	5	100%	240	558,480	0.0%	2,723	653,559
	7379	Computer Related Services	4,182	0.1%	5	100%	240	1,003,680	0.1%	4,894	1,174,532
	7381		24,652	0.5%	5	100%	240	5,916,480	0.3%	28,849	6,923,732
	7382		3,261	0.1%	5	100%	240	782,640	0.0%	3,816	915,881
	7383		431	0.0%	5	100%	240	103,440	0.0%	504	121,050
	7384		7,432	0.2%	5	100%	240	1,783,680	0.1%	8,897	2,087,343
	7389		66,334	1.4%	5	100%	240	15,920,160	0.8%	77,627	18,630,490
	7390		2,437	0.1%	5	100%	240	584,880	0.0%	2,852	684,453
	7513	Truck and Rental Leasing	3,387	0.1%	4	15%	650	330,233	0.0%	3,964	386,453
	7514		5,899	0.1%	4	15%	650	575,153	0.0%	6,903	673,069
	7515		682	0.0%	4	15%	650	66,495	0.0%	798	77,811
	7519	Utility Trailer Rental	773	0.0%	4	15%	650	75,368	0.0%	905	88,198
	7521		2,663	0.1%	4	15%	650	259,643	0.0%	3,116	303,845

ESTIMATE OF L.A. COUNTY BUILDING FLOOR AREA DERIVED FROM EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010

SIC Division	SIC	Title	1990 Emp.	% of Total	Land Use Code ¹	Percent of Empls In Bldg.	Sq.Ft per Employee	Square Feet	% of Total	2010 Employment	Square Feet
div	sic title		90emp	90pct	code	bldgpct	sftemp	90sft		10emp	10sft
	7532		12,560	0.3%	4	15%	650	1,224,600	0.1%	14,698	1,433,082
	7533		835	0.0%	4	15%	650	81,413	0.0%	977	95,273
	7534	Tire retreading and repair shops	552	0.0%	4	15%	650	53,820	0.0%	646	62,983
	7536		709	0.0%	4	15%	650	69,128	0.0%	830	80,896
	7537		1,372	0.0%	4	15%	650	133,770	0.0%	1,606	156,544
	7538	General Repair and Automotive Shops	28,677	0.8%	1	100%	530	15,198,810	0.8%	33,559	17,786,334
	7539	Automotive Repair Shops	6,435	0.1%	1	100%	530	3,410,550	0.2%	7,531	3,991,180
	7542	Car Washes	6,591	0.1%	1	100%	530	3,493,230	0.2%	7,713	4,087,936
	7549	Automotive Services, nec	5,742	0.1%	1	100%	530	3,043,260	0.2%	6,720	3,561,360
	7822	Radio and Television Repairs	3,204	0.1%	1	100%	530	1,698,120	0.1%	3,749	1,987,217
	7823	Refrigeration Service and Repair	1,758	0.0%	1	100%	530	931,740	0.0%	2,057	1,090,364
	7829	Electrical Repair Shops	4,847	0.1%	1	100%	530	2,568,910	0.1%	5,672	3,006,255
	7831	Watch, Clock and Jewelry Repair	1,240	0.0%	1	100%	530	657,200	0.0%	1,451	769,085
	7841	Reupholstery and Furniture Repair	3,533	0.1%	4	100%	650	2,296,450	0.1%	4,134	2,687,410
	7892	Welding Repair	1,924	0.0%	4	100%	650	1,250,600	0.1%	2,252	1,443,509
	7894	Armature Rewinding Shops	642	0.0%	4	100%	650	417,300	0.0%	751	488,343
	7899	Repair Services, nec	18,906	0.4%	4	100%	650	12,288,900	0.7%	22,125	14,381,026
	7812	Motion Picture Production & Services	29,398	0.8%	4	100%	650	19,108,700	1.0%	34,403	22,361,864
	7819	Services Allied to Motion Pictures	10,207	0.2%	5	100%	240	2,449,880	0.1%	11,945	2,868,728
	7822		3,885	0.1%	5	100%	240	932,400	0.0%	4,548	1,091,137
	7829	Motion Picture Distribution Services	367	0.0%	5	100%	240	88,080	0.0%	429	103,075
	7832	Motion Picture Theaters, ex Drive In	2,961	0.1%	1	100%	530	1,569,330	0.1%	3,465	1,836,501
	7833	Drive In Motion Picture Theaters	88	0.0%	9	100%	200	17,600	0.0%	103	20,596
	7841		2,223	0.0%	9	100%	200	444,600	0.0%	2,601	520,291
	7911	Dance Halls, Studios, and Schools	1,439	0.0%	9	100%	200	287,800	0.0%	1,684	336,797
	7922	Theatrical Producers and Services	8,477	0.2%	5	100%	240	2,034,480	0.1%	9,920	2,380,840
	7929	Entertainers and Entertainment Groups	2,804	0.1%	5	100%	240	672,960	0.0%	3,281	787,528
	7933	Bowling Alleys	1,929	0.0%	9	100%	200	385,800	0.0%	2,257	451,481
	7941	Sports Clubs and Promoters	633	0.0%	9	100%	200	126,600	0.0%	741	148,153
	7948	Racing, including Track Operation	688	0.0%	9	100%	200	137,200	0.0%	803	160,558
	7991		4,208	0.1%	9	100%	200	841,600	0.0%	4,924	984,878
	7992	Public Golf Courses	917	0.0%	9	100%	200	183,400	0.0%	1,073	214,823
	7993	Coin-Operated Amusement Parks	476	0.0%	9	100%	200	95,200	0.0%	557	111,407
	7996	Amusement Parks	536	0.0%	9	100%	200	107,200	0.0%	627	125,450
	7997	Membership Sports & Recreation Clubs	5,435	0.1%	1	100%	530	2,880,550	0.2%	6,360	3,370,950
	7999	Amusement and Recreation, nec	13,455	0.3%	9	100%	200	2,691,000	0.1%	15,746	3,149,130
	8011	Offices of Physicians	71,437	1.6%	6	100%	290	20,716,730	1.1%	83,599	24,243,653
	8021	Offices of Dentists	23,550	0.5%	6	100%	290	6,829,500	0.4%	27,559	7,992,189
	8031	Offices of Osteopathic Physicians	342	0.0%	6	100%	290	99,180	0.0%	400	116,065
	8041	Offices of Chiropractors	5,614	0.1%	6	100%	290	1,628,060	0.1%	6,570	1,905,229
	8042	Offices of Optometrists	3,161	0.1%	6	100%	290	916,680	0.0%	3,699	1,072,732
	8043		1,055	0.0%	6	100%	290	305,950	0.0%	1,235	358,037
	8049	Offices of Health Practitioners, nec	9,539	0.2%	6	100%	290	2,766,310	0.1%	11,163	3,237,261
	8051	Skilled Nursing Care Facilities	23,533	0.5%	10	100%	500	11,766,500	0.6%	27,539	13,769,690
	8052		578	0.0%	6	100%	290	167,620	0.0%	676	196,156
	8059	Nursing and Personal Care, nec	32,197	0.7%	6	100%	290	9,337,130	0.5%	37,678	10,926,731
	8062	General Medical & Surgical Hospitals	134,378	2.9%	6	100%	290	38,969,620	2.1%	157,255	45,804,009
	8063	Psychiatric Hospitals	27,545	0.6%	6	100%	290	7,988,050	0.4%	32,234	9,347,977
	8069	Specialty Hospitals, exc. Psychiatric	9,383	0.2%	6	100%	290	2,721,070	0.1%	10,980	3,184,319
	8071	Medical Laboratories	9,907	0.2%	6	100%	290	2,873,030	0.2%	11,594	3,362,149
	8072	Dental Laboratories	3,009	0.1%	6	100%	290	872,610	0.0%	3,521	1,021,168
	8082		2,948	0.1%	6	100%	290	854,920	0.0%	3,450	1,000,466
	8092		701	0.0%	6	100%	290	203,290	0.0%	620	237,899
	8093		6,010	0.1%	6	100%	290	1,742,900	0.1%	7,033	2,039,620
	8099		2,559	0.1%	6	100%	290	742,110	0.0%	2,995	868,451
	8111	Legal Services	73,454	1.6%	5	100%	240	17,628,960	0.9%	85,959	20,630,205
	8211	Elementary and Secondary Schools	180,117	3.9%	8	100%	500	90,058,500	4.8%	210,781	105,390,524
	8221	Colleges and Universities	63,239	1.4%	8	100%	500	31,619,500	1.7%	74,005	37,002,567
	8222	Junior Colleges	9,613	0.2%	8	100%	500	4,806,500	0.3%	11,250	5,624,783
	8231	Libraries and Information Centers	8,226	0.2%	7	100%	200	1,645,200	0.1%	9,626	1,925,287
	8243	Data Processing Schools	969	0.0%	8	100%	500	484,500	0.0%	1,134	566,984
	8244	Business and Secretarial Schools	2,310	0.1%	8	100%	500	1,155,000	0.1%	2,703	1,351,633
	8249	Vocational Schools	5,049	0.1%	8	100%	500	2,524,500	0.1%	5,909	2,954,284
	8299	Schools and Educational Services	9,778	0.2%	8	100%	500	4,889,000	0.3%	11,443	5,721,329
	8322		19,607	0.4%	8	100%	500	9,803,500	0.5%	22,945	11,472,468
	8331	Job Training and Related Services	5,277	0.1%	8	100%	500	2,638,500	0.1%	6,175	3,087,682
	8351	Child Day Care Services	16,009	0.3%	8	100%	500	8,004,500	0.4%	18,734	9,367,227
	8361	Residential Care	11,429	0.2%	10	100%	500	5,714,500	0.3%	13,375	6,667,366
	8399	Social Services, nec	7,436	0.2%	5	100%	240	1,784,640	0.1%	8,702	2,088,466
	8412		2,275	0.0%	5	100%	240	546,000	0.0%	2,662	638,954
	8422		342	0.0%	5	100%	240	82,080	0.0%	400	96,054
	8611	Business Associations	5,078	0.1%	5	100%	240	1,218,720	0.1%	5,943	1,426,201
	8621	Professional Organizations	4,335	0.1%	5	100%	240	1,040,400	0.1%	5,073	1,217,523
	8631	Labor Organizations	5,791	0.1%	5	100%	240	1,389,840	0.1%	6,777	1,626,454
	8641	Civic and Social Associations	10,324	0.2%	5	100%	240	2,477,760	0.1%	12,082	2,899,587
	8651	Political Organizations	433	0.0%	5	100%	240	103,920	0.0%	507	121,612
	8661	Religious Organizations	45,118	1.0%	5	100%	240	10,828,320	0.6%	52,799	12,671,789
	8699	Membership Organizations	5,820	0.1%	5	100%	240	1,396,800	0.1%	6,811	1,634,598
	8711		23,863	0.5%	5	100%	240	5,727,120	0.3%	27,826	6,702,134
	8712		12,552	0.3%	5	100%	240	3,012,480	0.2%	14,689	3,525,340
	8713		904	0.0%	5	100%	240	216,960	0.0%	1,058	253,896

ESTIMATE OF L.A. COUNTY BUILDING FLOOR AREA DERIVED FROM EMPLOYMENT ESTIMATE BY SIC CATEGORY, 1990 AND 2010

SIC Division	SIC	Title	1990 Emp.	% of Total	Land Use Code ¹	Percent of Empls In Bldg.	Sq.Ft. per Employee	Square Feet	% of Total	2010 Emplmnt	Square Feet
div	sic title		90emp	90pct	code	bldgpct	sftemp	90sft		10emp	10
	8721		36,618	0.8%	5	100%	240	8,788,320	0.5%	42,852	10,284,4
	8731		18,397	0.4%	5	100%	240	3,935,280	0.2%	19,189	4,605,2
	8732		7,514	0.2%	5	100%	240	1,803,360	0.1%	8,793	2,110,373
	8733		12,587	0.3%	5	100%	240	3,020,880	0.2%	14,730	3,535,170
	8734		3,525	0.1%	5	100%	240	846,000	0.0%	4,125	990,027
	8741		25,839	0.6%	5	100%	240	6,201,360	0.3%	30,238	7,257,112
	8742		23,965	0.5%	5	100%	240	5,751,600	0.3%	28,045	6,730,782
	8743		7,483	0.2%	5	100%	240	1,795,920	0.1%	8,757	2,101,667
	8744		562	0.0%	5	100%	240	134,880	0.0%	658	157,843
	8748		10,537	0.2%	5	100%	240	2,528,880	0.1%	12,331	2,959,410
	8811	Private Households	72	0.0%	5	100%	240	17,280	0.0%	84	20,222
	8999	Services, nec	2,951	0.1%	5	100%	240	708,240	0.0%	3,453	828,814
Government	9111	Executive Offices	17,850	0.4%	7	100%	200	3,570,000	0.2%	20,889	4,177,775
	9121	Legislative Bodies	191,823	4.2%	7	100%	200	38,324,600	2.0%	224,246	44,849,178
	9131	Executive and Legislative Combined	1,480	0.0%	7	100%	200	296,000	0.0%	1,732	346,393
	9199	General Government	4,331	0.1%	7	100%	200	866,200	0.0%	5,068	1,013,666
	9211	Courts	1,507	0.0%	7	100%	200	301,400	0.0%	1,764	352,712
	9221	Police Protection	2,574	0.1%	7	100%	200	514,800	0.0%	3,012	602,442
	9222	Legal Counsel and Protection	399	0.0%	7	100%	200	79,800	0.0%	467	93,386
	9223	Correctional Institutions	2,382	0.1%	10	100%	500	1,191,000	0.1%	2,788	1,393,762
	9224	Fire Protection	224	0.0%	7	100%	200	44,800	0.0%	262	52,427
	9229	Public Order and Safety	283	0.0%	7	100%	200	52,600	0.0%	308	61,555
	9311	Finance, Taxation & Monetary Policy	2,872	0.1%	7	100%	200	574,400	0.0%	3,361	672,189
	9411	Admin. of Educational Programs	1,595	0.0%	7	100%	200	319,000	0.0%	1,887	373,308
	9431	Admin. of Public Health Programs	25,857	0.6%	7	100%	200	5,171,400	0.3%	30,259	6,051,806
	9441	Admin of Social & Manpower Prgms	764	0.0%	7	100%	200	152,800	0.0%	894	178,813
	9451	Administration of Veteran's affairs	17	0.0%	7	100%	200	3,400	0.0%	20	3,979
	9511	Air, Water, & Solid Waste Mgt	9,615	0.2%	7	100%	200	1,923,000	0.1%	11,252	2,250,381
	9512	Land, Mineral & Wildlife Conservation	2,648	0.1%	7	100%	200	529,600	0.0%	3,099	619,762
	9531	Housing Programs	846	0.0%	7	100%	200	169,200	0.0%	990	198,005
	9532	Urban and Community Development	475	0.0%	7	100%	200	95,000	0.0%	556	111,173
	9611	Admin of Gen'l Economic Programs	442	0.0%	7	100%	200	88,400	0.0%	517	103,450
	9621	Regulation, Admin. of Transportation	8,809	0.2%	7	100%	200	1,761,800	0.1%	10,309	2,061,738
	9631	Regulation, Admin. of Utilities	303	0.0%	7	100%	200	60,600	0.0%	355	70,917
	9641	Regulation of Agricultural Marketing	1,103	0.0%	7	100%	200	220,600	0.0%	1,291	258,156
	9651	Regulation of Misc. Comm Sectors	914	0.0%	7	100%	200	182,800	0.0%	1,070	213,921
	9661	Space Research and Technology	24	0.0%	7	100%	200	4,800	0.0%	28	5,617
	9711	National Security	10,879	0.2%	7	100%	200	2,175,800	0.1%	12,731	2,546,219
	9721	International Affairs	1,206	0.0%	7	100%	200	241,200	0.0%	1,411	282,21
	Total		4,606,727	100.0%	NA	NA	NA	1886051486	100.0%	5,391,000	N/

¹ Land Use Codes:

1=Commercial; 2=Eating & Drinking; 3=Lodging; 4=Industrial; 5=Office; 6=Medical; 7=Government; 8=Institutional/Education; 9=Other

Code	Land Use Classification	Empl Density
1	Retail Commercial - Typical Density	530
1.1	Retail Commercial - Low Density	850
2	Eating & Drinking	120
3	Lodging	890
4	Industrial	650
5	Office	240
6	Medical	290
7	Government	200
8	Institutional/Educational	500
9	Other	200
10	Group Quarters	500 1.55 Beds/empl per ITE Nursing Home data

APPENDIX CC

**DISTRIBUTION OF RETAIL COMMERCIAL BUILDING FLOOR AREA BY SIZE
OF BUILDING**

DISTRIBUTION OF RETAIL SPACE IN RETAIL CENTERS
IN LOS ANGELES COUNTY, 1993

City	Centers less than 300,000 SF	Centers of 300,000SF and over
Acton	50,000	0
Agoura Hills	326,250	0
Alhambra	939,121	0
Antelope	280,827	0
Antelope	0	0
Arcadia	537,356	1,337,433
Arlota	10,187	0
Artesia	261,020	0
Azusa	1,124,629	0
Baldwin Park	356,840	0
Bell	220,000	0
Bell Gardens	161,000	0
Bellflower	299,300	0
Beverly Hills	44,162	0
Burbank	383,202	2,500,000
Calabasas	366,616	0
Canoga Park	861,850	1,048,659
Carson	37,000	915,000
Castaic	123,000	0
Cerritos	613,150	1,800,000
Chatsworth	170,544	0
Claremont	370,444	0
Commerce	204,980	0
Compton	580,798	0
Covina	887,962	415,000
City of Industry	339,000	3,815,551
Culver City	196,590	823,000
Diamond Bar	105,298	0
Downey	64,000	989,000
Duarte	546,080	0
El Monte	479,100	0
El Segundo	78,925	0
Encino	457,000	0
Gardena	279,840	0
Glendale	456,449	1,390,000
Glendora	295,561	0
Granada Hills	251,150	0
Hawaiian Gardens	157,910	0
Hawthorne	201,897	834,772
Hollywood	148,000	0
Huntington Park	284,368	0
Inglewood	523,831	0
Irwindale	17,000	0
La Crescenta	244,982	0
La Mirada	532,215	320,000
La Puente	758,686	0
La Verne	180,584	0
Lakewood	659,500	2,390,000
Lancaster	1,641,804	1,946,592
Lawndale	10,207	0
Little Rock	100,000	0
Lake Los Angeles	150,000	0
Lomita	20,900	0
Long Beach	879,940	1,541,945
Los Angeles	3,982,481	7,293,333
Lynwood	116,240	0
Malibu	156,000	0
Manhattan Beach	113,000	483,624
Marina Del Ray	281,771	450,000
Maywood	49,000	0
Mission Valley	150,000	0
Monrovia	96,391	0
Monterey Park	614,200	0
North Hollywood	275,970	1,341,649
North Palm Beach	180,887	0
Northridge	1,252,822	1,816,601
Norwalk	556,218	0
Pacific Palisades	25,000	0
Pacoima	50,000	0

DISTRIBUTION OF RETAIL SPACE IN RETAIL CENTERS
IN LOS ANGELES COUNTY, 1993

City	Centers less than 300,000 SF	Centers of 300,000SF and over	
Palmdale	1,625,264	2,144,000	
Panorama City	0	345,076	
Paramount	341,934	0	
Pasadena	940,267	934,509	
Pico Rivera	335,000	0	
Palos Verdes Pen	208,383	300,000	
Pomona	1,176,552	495,951	
Puente Hills	90,000	0	
Rancho	272,736	0	
Rancho PVerdes	185,000	0	
Redondo Beach	223,511	1,000,000	
Reseda	151,349	0	
Rolling Hills Estates	0	381,975	
Rosemead	87,140	430,000	
Rowland Heights	365,931	0	
South Pasadena	63,000	0	
San Dimas	841,445	0	
San Fernando	872,012	0	
San Gabriel	66,724	0	
San Pedro	444,232	0	
Santa Clarita	233,900	646,000	
Santa Fe Springs	442,656	540,000	
Santa Monica	51,589	564,000	
Saugus	425,000	0	
Sherman Oaks	0	1,360,000	
Signal Hill	435,080	300,000	
Studio City	112,851	0	
Sun Valley	285,000	0	
Sunland	153,214	0	
Sylmar	165,000	0	
Tarzana	200,000	0	
Temple City	155,000	0	
Torrance	1,036,141	3,742,000	
Tujunga	66,800	0	
Valencia	771,019	750,000	
Van Nuys	594,381	0	
Venice	285,668	405,000	
Walnut	348,000	0	
Walnut Park	14,286	0	
West Covina	1,135,097	1,838,042	
West Hills	0	1,250,000	
West Los Angeles	45,753	0	
Whittier	239,494	1,407,989	
Willowbrook	180,081	0	
Wilmington	85,000	0	
Woodland Hills	373,635	603,444	
Total Square Feet	43,296,160	52,890,145	96,186,305
	45.0%	55.0%	100%
Total Number of Centers	510	70	580
	87.9%	12.1%	100%

Source: National Research Bureau, "1993 Shopping Center Directory," Western Volume.

APPENDIX DD

DISTRIBUTION OF OFFICE BUILDING FLOOR AREA BY SIZE OF BUILDING

OFFICE BUILDINGS BY SIZE LOS ANGELES COUNTY 1989				
Location/Size Category	Number of Buildings	Percent of of Total	Total Square Feet	Percent of Total
Downtown				
0 - 49,000 SF	33	1.86	967,798	0.52
50,000 - 299,000 SF	97	5.47	11,882,402	6.37
300,000 SF or more	43	2.43	30,669,921	16.45
Total	173	9.76	43,520,121	23.34
West Central				
0 - 49,000 SF	79	4.46	2,247,965	1.21
50,000 - 299,000 SF	79	4.46	8,653,974	4.64
300,000 SF or more	18	1.02	8,251,604	4.43
Total	176	9.93	19,153,543	10.27
West Side				
0 - 49,000 SF	109	6.15	3,047,544	1.63
50,000 - 299,000 SF	147	8.29	15,935,491	8.55
300,000 SF or more	25	1.41	10,210,043	5.48
Total	281	15.85	29,193,078	15.66
Pasadena/Glendale				
0 - 49,000 SF	92	5.19	2,225,307	1.19
50,000 - 299,000 SF	62	3.50	7,471,664	4.01
300,000 SF or more	5	0.28	1,921,500	1.03
Total	159	8.97	11,618,471	6.23
San Fernando Valley				
0 - 49,000 SF	251	14.16	6,845,782	3.67
50,000 - 299,000 SF	190	10.72	19,789,442	10.61
300,000 SF or more	14	0.79	6,393,787	3.43
Total	455	25.66	33,029,011	17.72
San Gabriel				
0 - 49,000 SF	50	2.82	1,375,449	0.74
50,000 - 299,000 SF	39	2.20	3,875,681	2.08
300,000 SF or more	3	0.17	2,207,000	1.18
Total	92	5.19	7,458,130	4.00
Long Beach				
0 - 49,000 SF	43	2.43	1,073,169	0.58
50,000 - 299,000 SF	56	3.16	6,045,026	3.24
300,000 SF or more	8	0.45	7,362,748	3.95
Total	107	6.03	14,480,943	7.77
Mid-Cities				
0 - 49,000 SF	60	3.38	1,660,493	0.89
50,000 - 299,000 SF	45	2.54	4,301,046	2.31
300,000 SF or more	2	0.11	1,650,000	0.89
Total	107	6.03	7,611,539	4.08
South Bay				
0 - 49,000 SF	107	6.03	3,010,647	1.61
50,000 - 299,000 SF	106	5.98	13,689,236	7.34
300,000 SF or more	10	0.56	3,670,456	1.97
Total	223	12.58	20,370,339	10.93
County Total				
0 - 49,000 SF	824	46.47	22,454,154	12.04
50,000 - 299,000 SF	821	46.31	91,643,962	49.16
300,000 SF or more	128	7.22	72,337,059	38.80
Total	1773	100.00	186,435,175	100.00

Source: Black's Office Leasing Guide, HR&A

APPENDIX EE
TRIP GENERATION RATE COMPARISON

TRIP GENERATION COMPARISON

13-May-93

TRIP GENERATION RATES BY PROJECT SIZE

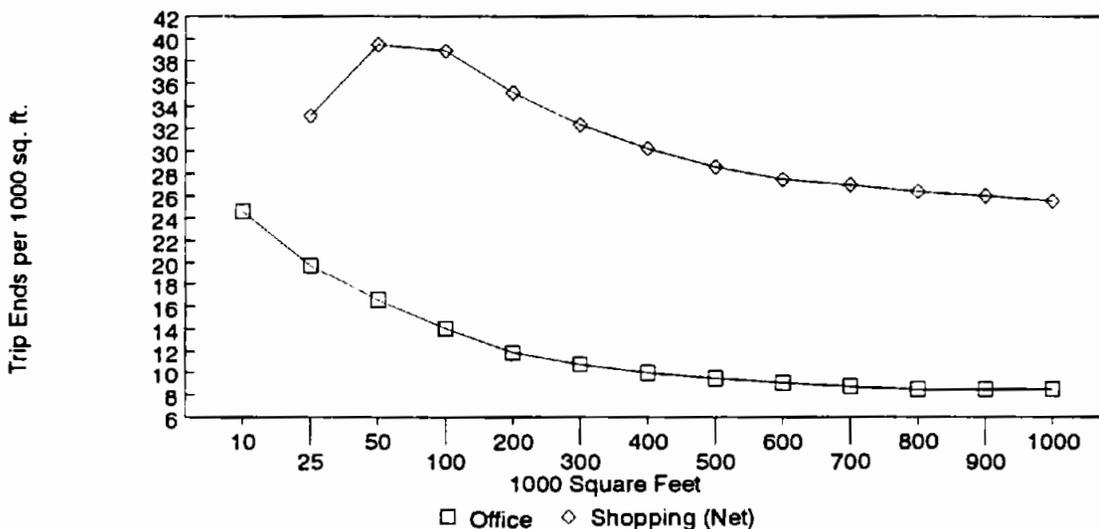
Office & Shopping Center Rates per 1000 sq.ft., per ITE Trip Generation 5th Edition

Building Size (ksf)	Office	Shopping (Gross)	Pass by/Linked	
			%	Net *
10	24.60	167.59	n/a**	
25	19.72	118.86	72	33.13
50	16.58	91.65	57	39.46
100	14.03	70.67	45	38.90
200	11.85	54.50	35	35.16
300	10.77	46.81	31	32.34
400	9.96	42.02	28	30.25
500	9.45	38.65	26	28.61
600	9.05	36.35	24	27.48
700	8.75	35.12	23	26.99
800	8.46	33.88	22	26.39
900	8.46	32.99	21	25.98
1000	8.46	32.09	21	25.51

* Net trip generation after deducting pass-by and linked (diverted) trips.

** Low end of ITE survey sample is roughly 25 ksf, showing 55-60% pass-by.

WEEKDAY TRIP GENERATION RATES
Office & Shopping Center Uses



TRIP GENERATION COMPARISON

13-May-93

TRIP GENERATION – WEEKDAY RATE COMPARISON

Land Use	Rate per	ITE	SANDAG	CMP Rate	CMP Category/Notes
SF Residential	DU	9.55	10	10	Single Family
Apartment		6.47	6	7	Multi-Family
Condominium		5.86	8		
Mobile Home Park		4.81	5		
Retirement Community		–	4	3	Group Living
Congregate Care		2.15	2		
Quality Restaurant		96.51	100	100	Eating & Drinking
High-Turnover Restaurant		205.36	250		
Fast Food Restaurant		786.22	700		
Hotel		8.70	10	10	Lodging
Motel		10.19	9		
Industrial	1000 sf	–	10	7	Industrial
Light		6.97	–		
Heavy		1.50	–		(Hvy Indus 3 surveys only)
Industrial Park		6.97	8		
Manufacturing		3.85	4		
Warehousing		4.88	5		
Mini-Warehouse		2.61	–		
Medical Office	1000 sf	34.17	50	25	Medical
Hospital		16.78	20		MOB Rel. short distance
Civic Center	1000 sf	68.93	30	30	Government
Dept of Motor Vehicles		166.02	180		Rel. short distance trips
Post Office		87.12	150		(ITE Civ Ctr 1 survey only)
Junior College	1000 sf	12.87	–	11	Institutional/Educational
High School		10.90	11		
Elementary School		10.72	14		
Church		9.32	12		

APPENDIX FF
TRIP LENGTHS FOR VARIOUS LAND USE CATEGORIES

LAND USE	% of Total Trip Gen		% of Prod & Attr by Purpose						Subtotal		% Total Trip Gen			Relative Trip Length by Purpose (Miles)			
			Total	H-W	H-S	H-O	O-W	O-O			Work	NWk	H-W	O-W	N-WK	H-W	O-W
Record Format:	Prod. % P		%HW	%HS	%HO	%OW	%OO	%Wk	%NW	%HW	%OW	%NW	%HW	%OW	%NW	Total Miles	
	Attract. % A		%HW	%HS	%HO	%OW	%OO	%Wk	%NW	%HW	%OW	%NW	HW miles	OW miles	NW miles		
Overall Averages for All Uses:													11.41	8.92	6.88		
Housing	P	84	100	18	21	53	2	6	20	80	15.1	1.68	67.2	15.76	2.16	82.08	7.64
	A	16	100	4	0	59	3	34	7	93	0.64	0.48	14.8	1.80	0.19	5.65	
Other Residential	P	64	100	11	14	25	10	40	21	79	7.04	6.4	50.5	8.48	7.84	83.68	7.42
	A	36	100	4	0	40	4	52	8	92	1.44	1.44	33.1	0.97	0.70	5.76	
Hotel or Motel	P	32	100	0	0	0	47	53	47	53	0	15.0	16.9	19.04	19.80	60.48	8.10
	A	68	99	28	6	35	7	23	35	64	19.0	4.76	43.5	2.17	1.77	4.16	
Regional Shopping Center	P	28	100	0	0	0	31	69	31	69	0	8.68	19.3	6.48	11.56	81.96	7.41
	A	72	100	9	43	12	4	32	13	87	6.48	2.88	62.6	0.74	1.03	5.64	
Community Shopping Center	P	23	100	0	0	0	19	81	19	81	0	4.37	18.6	2.31	5.14	93.32	7.14
	A	77	101	3	46	17	1	34	4	97	2.31	0.77	74.6	0.26	0.46	6.42	
Other Retail	P	26	100	0	0	0	24	76	24	76	0	6.24	19.7	4.44	9.20	87.10	7.32
	A	74	101	6	46	10	4	35	10	91	4.44	2.96	67.3	0.51	0.82	5.99	
Heavy Industry	P	9	100	0	0	0	78	22	78	22	0	7.02	1.98	60.97	28.86	11.08	10.29
	A	91	101	67	0	5	24	5	91	10	60.9	21.8	9.1	6.96	2.57	0.76	
Light Industry	P	15	100	0	0	0	37	63	37	63	0	5.55	9.45	34.00	40.40	25.60	9.24
	A	85	100	40	0	10	41	9	81	19	34	34.8	16.1	3.88	3.60	1.76	
Highrise Office	P	16	100	0	0	0	48	52	48	52	0	7.68	8.32	31.08	43.80	25.12	9.18
	A	84	100	37	1	12	43	7	80	20	31.0	36.1	16.8	3.55	3.91	1.73	
Government Office	P	29	100	0	0	0	31	69	31	69	0	8.99	20.0	12.07	23.19	64.03	7.85
	A	71	99	17	0	34	20	28	37	62	12.0	14.2	44.0	1.38	2.07	4.40	
Other Office	P	19	100	0	0	0	40	60	40	60	0	7.6	11.4	30.78	36.76	33.27	9.08
	A	81	101	38	0	17	36	10	74	27	30.7	29.1	21.8	3.51	3.28	2.29	
Medical Office	P	29	100	0	0	0	21	79	21	79	0	6.09	22.9	9.23	14.61	76.16	7.60
	A	71	100	13	0	53	12	22	25	75	9.23	8.52	53.2	1.05	1.30	5.24	
Nursery School or Day Care	P	27	100	0	0	0	38	62	38	62	0	10.2	16.7	2.92	12.45	84.63	7.26
	A	73	100	4	0	74	3	19	7	93	2.92	2.19	67.8	0.33	1.11	5.82	
Elementary School	P	16	100	0	0	0	18	82	18	82	0	2.88	13.1	3.36	5.40	91.24	7.14
	A	84	100	4	0	81	3	12	7	93	3.36	2.52	78.1	0.38	0.48	6.28	
Junior High School	P	17	100	0	0	0	12	88	12	88	0	2.04	14.9	3.32	4.53	92.15	7.12
	A	83	100	4	0	79	3	14	7	93	3.32	2.49	77.1	0.38	0.40	6.34	
Senior High School	P	19	100	0	0	0	22	78	22	78	0	4.18	14.8	5.67	7.42	86.91	7.29
	A	81	100	7	0	78	4	11	11	89	5.67	3.24	72.0	0.65	0.66	5.98	
Junior College	P	24	100	0	0	0	24	76	24	76	0	5.76	18.2	6.84	8.04	85.12	7.35
	A	76	100	9	0	76	3	12	12	88	6.84	2.28	66.8	0.78	0.72	5.86	

TRIP PURPOSE BREAKDOWNS BY LAND USE TYPE

5/13/93

LAND USE	% of Total Trip Gen	% of Prod & Attr by Purpose						Subtotal		% Total Trip Gen			Relative Trip Length by Purpose (Miles)				
		Total	H-W	H-S	H-O	O-W	O-O	Work	NWk	H-W	O-W	N-WK	H-W	O-W	N-WK	OVERALL	
University or College	P	23	100	0	0	0	37	83	37	63	0	8.51	14.4	10.78	17.75	71.47	7.73
	A	77	100	14	0	62	12	12	26	74	10.7	9.24	56.9	1.23	1.58	4.92	
Restaurant or Bar	P	35	100	0	0	0	46	54	46	54	0	16.1	18.9	5.20	18.05	77.40	7.53
	A	65	101	8	50	5	3	35	11	90	5.2	1.95	58.5	0.59	1.61	5.32	
Hospital or Nursing Home	P	20	100	0	0	0	27	73	27	73	0	5.4	14.6	23.20	14.20	62.60	8.22
	A	80	100	29	0	47	11	13	40	60	23.2	8.8	48	2.65	1.27	4.31	
Church	P	18	100	0	0	0	16	84	16	84	0	2.88	15.1	5.74	8.62	85.64	7.31
	A	82	100	7	0	71	7	15	14	86	5.74	5.74	70.5	0.66	0.77	5.89	
Cultural Center	P	26	100	0	0	0	9	91	9	91	0	2.34	23.6	4.44	6.04	89.52	7.20
	A	74	100	6	0	55	5	34	11	89	4.44	3.7	65.8	0.51	0.54	6.16	
Military Base	P	18	100	3	5	8	30	54	33	67	0.54	5.4	12.0	36.62	21.80	41.58	8.98
	A	82	100	44	7	17	20	12	64	36	36.0	16.4	29.5	4.18	1.94	2.86	
Transportation Terminal	P	23	100	0	0	0	32	68	32	68	0	7.36	15.6	16.94	18.14	65.69	8.07
	A	77	101	22	0	56	14	9	36	65	16.9	10.7	50.0	1.93	1.62	4.52	
Other Institution	P	29	100	0	0	0	16	84	16	84	0	4.64	24.3	15.62	16.00	67.67	7.86
	A	71	99	22	5	28	16	28	38	61	15.6	11.3	43.3	1.78	1.43	4.66	
Beach or Bay	P	29	100	0	0	0	24	76	24	76	0	6.96	22.0	0.71	6.96	92.33	7.05
	A	71	100	1	0	71	0	28	1	99	0.71	0	70.2	0.08	0.62	6.35	
Park	P	25	100	0	0	0	21	79	21	79	0	5.25	19.7	0.00	6.75	92.50	6.96
	A	75	99	0	0	77	2	20	2	97	0	1.5	72.7	0.00	0.60	6.36	
Tourist Attraction	P	30	100	0	0	0	34	66	34	66	0	10.2	19.8	6.30	17.90	75.10	7.48
	A	70	99	9	0	54	11	25	20	79	6.3	7.7	55.3	0.72	1.60	5.17	
Outdore Recreation	P	19	101	0	0	5	21	75	21	80	0	3.99	15.2	8.91	8.85	83.24	7.53
	A	81	101	11	2	66	6	16	17	84	8.91	4.86	68.0	1.02	0.79	5.73	
Theater or Movie	P	27	100	0	0	0	15	85	15	85	0	4.05	22.9	0.00	4.05	95.95	6.96
	A	73	100	0	0	72	0	28	0	100	0	0	73	0.00	0.36	6.60	
Indoor Recreation	P	27	100	0	0	0	29	71	29	71	0	7.83	19.1	1.46	8.56	89.98	7.12
	A	73	100	2	1	74	1	22	3	97	1.46	0.73	70.8	0.17	0.76	6.19	
Open Space	P	18	100	0	0	0	10	90	10	90	0	1.8	16.2	30.34	8.36	61.30	8.42
	A	82	100	37	0	27	8	28	45	55	30.3	6.56	45.1	3.46	0.75	4.22	
Other	P	21	100	0	0	0	44	56	44	56	0	9.24	11.7	11.85	12.40	75.75	7.67
	A	79	100	15	3	57	4	21	19	81	11.8	3.16	63.9	1.35	1.11	5.21	

Source: SANDAG 1986 O & D survey provided trip purpose proportions by land use type.
 LA CMP Model provided average trip lengths by purpose.

APPENDIX GG
LOCAL IMPLEMENTATION CASE STUDY CALCULATIONS

DEFICIENCY PLAN STATUS SUMMARY

(The standard report format has been modified slightly to present the results of this case study)

1. Total Current Congestion Mitigation Goal [from Section I]	7/87 thru 6/88:	(3,897)
	7/88 thru 6/89:	(2,156)
	7/92 thru 6/93:	27
2. Transportation Improvements Credit Claims [from Section II]		18,812
Subtotal Current Credit (Goal)	Based on 7/87 thru 6/88:	14,915
	Based on 7/87 thru 6/88:	16,656
	Based on 7/87 thru 6/88:	18,839
3. Carryover Credit (Goal) from Last Year's Local Implementation Report		0
NET DEFICIENCY PLAN CREDIT (GOAL) BALANCE	Based on 7/87 thru 6/88:	14,915
	Based on 7/87 thru 6/88:	16,656
	Based on 7/87 thru 6/88:	18,839

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT

PART 1: NEW DEVELOPMENT ACTIVITY

RESIDENTIAL DEVELOPMENT ACTIVITY				
Category	Number of Dwelling Units	Impact Value		Subtotal
Single Family Residential	3	x 6.80	=	(20)
Multi–Family Residential	25	x 4.76	=	(119)
Group Quarters	0	x 1.98	=	0
COMMERCIAL DEVELOPMENT ACTIVITY				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Commercial (less than 300,000 sq.ft.)	58.546	x 22.23	=	(1,301)
Commercial (300,000 sq.ft. or more)	0	x 17.80	=	0
Freestanding Eating & Drinking	0	x 66.99	=	0
NON–RETAIL DEVELOPMENT ACTIVITY				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Lodging	0	x 7.21	=	0
Industrial	168.136	x 6.08	=	(1,022)
Office (less than 50,000 sq.ft.)	42.632	x 16.16	=	(689)
Office (50,000–299,999 sq.ft.)	282.74	x 10.50	=	(2,969)
Office (300,000 sq.ft. or more)	0.	x 7.35	=	0
Medical	0	x 16.90	=	0
Government	0	x 20.95	=	0
Institutional/Educational	0	x 7.68	=	0
OTHER DEVELOPMENT ACTIVITY				
Description	Daily Trips	Impact Value		Subtotal
	0	x 0.71	=	0
	0	x 0.71	=	0
ADJUSTMENTS (OPTIONAL) – Complete Part 2				= 2,223
TOTAL CURRENT CONGESTION MITIGATION GOAL (POINTS)				= (3,897)

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT (Continued)

PART 2: NEW DEVELOPMENT ADJUSTMENTS

RESIDENTIAL DEVELOPMENT ADJUSTMENTS				
Category	Number of Dwelling Units	Impact Value		Subtotal
Single Family Residential	6	x 6.80	=	41
Multi-Family Residential	2	x 4.76	=	10
Group Quarters	0	x 1.98	=	0
COMMERCIAL DEVELOPMENT ADJUSTMENTS				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Commercial (less than 300,000 sq.ft.)	69.537	x 22.23	=	1,546
Commercial (300,000 sq.ft. or more)	0	x 17.80	=	0
Freestanding Eating & Drinking	0	x 66.99	=	0
NON-RETAIL DEVELOPMENT ADJUSTMENTS				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Lodging	20	x 7.21	=	144
Industrial	67.863	x 6.08	=	413
Office (less than 50,000 sq.ft.)	0	x 16.16	=	0
Office (50,000 – 299,999 sq.ft.)	0	x 10.50	=	0
Office (300,000 sq.ft. or more)	0	x 7.35	=	0
Medical	0	x 16.90	=	0
Government	0	x 20.95	=	0
Institutional/Educational	9	x 7.68	=	69
OTHER DEVELOPMENT ADJUSTMENTS				
Description	Daily Trips	Impact Value		Subtotal
	0	x 0.71	=	0
	0	x 0.71	=	0
TOTAL ADJUSTMENTS (POINTS)				= 2,223

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT

PART 1: NEW DEVELOPMENT ACTIVITY

RESIDENTIAL DEVELOPMENT ACTIVITY				
Category	Number of Dwelling Units	Impact Value		Subtotal
Single Family Residential	1	x 6.80	=	(7)
Multi–Family Residential	27	x 4.76	=	(129)
Group Quarters	0	x 1.98	=	0
COMMERCIAL DEVELOPMENT ACTIVITY				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Commercial (less than 300,000 sq.ft.)	126.104	x 22.23	=	(2,803)
Commercial (300,000 sq.ft. or more)	0	x 17.80	=	0
Freestanding Eating & Drinking	5.024	x 66.99	=	(337)
NON–RETAIL DEVELOPMENT ACTIVITY				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Lodging	0	x 7.21	=	0
Industrial	0	x 6.08	=	0
Office (less than 50,000 sq.ft.)	33.85	x 16.16	=	(547)
Office (50,000–299,999 sq.ft.)	0	x 10.50	=	0
Office (300,000 sq.ft. or more)	0	x 7.35	=	0
Medical	0	x 16.90	=	0
Government	0.203	x 20.95	=	(4)
Institutional/Educational	0	x 7.68	=	0
OTHER DEVELOPMENT ACTIVITY				
Description	Daily Trips	Impact Value		Subtotal
	0	x 0.71	=	0
	0	x 0.71	=	0
ADJUSTMENTS (OPTIONAL) – Complete Part 2				= 1,671
TOTAL CURRENT CONGESTION MITIGATION GOAL (POINTS)				= (2,156)

SECTION I -- NEW DEVELOPMENT ACTIVITY REPORT (Continued)

PART 2: NEW DEVELOPMENT ADJUSTMENTS

RESIDENTIAL DEVELOPMENT ADJUSTMENTS			
Category	Number of Dwelling Units	Impact Value	Subtotal
Single Family Residential	10	x 6.80 =	68
Multi-Family Residential	6	x 4.76 =	29
Group Quarters	0	x 1.98 =	0
COMMERCIAL DEVELOPMENT ADJUSTMENTS			
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.	Subtotal
Commercial (less than 300,000 sq.ft.)	38.53	x 22.23 =	857
Commercial (300,000 sq.ft. or more)	0	x 17.80 =	0
Freestanding Eating & Drinking	10	x 66.99 =	670
NON-RETAIL DEVELOPMENT ADJUSTMENTS			
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.	Subtotal
Lodging	0	x 7.21 =	0
Industrial	7.8	x 6.08 =	47
Office (less than 50,000 sq.ft.)	0	x 16.16 =	0
Office (50,000-299,999 sq.ft.)	0	x 10.50 =	0
Office (300,000 sq.ft. or more)	0	x 7.35 =	0
Medical	0	x 16.90 =	0
Government	0	x 20.95 =	0
Institutional/Educational	0	x 7.68 =	0
OTHER DEVELOPMENT ADJUSTMENTS			
Description	Daily Trips	Impact Value	Subtotal
	0	x 0.71 =	0
	0	x 0.71 =	0
TOTAL ADJUSTMENTS (POINTS)			= 1,671

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT

PART 1: NEW DEVELOPMENT ACTIVITY

RESIDENTIAL DEVELOPMENT ACTIVITY			
Category	Number of Dwelling Units	Impact Value	Subtotal
Single Family Residential	3	x 6.80 =	(20)
Multi–Family Residential	1	x 4.76 =	(5)
Group Quarters	0	x 1.98 =	0
COMMERCIAL DEVELOPMENT ACTIVITY			
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.	Subtotal
Commercial (less than 300,000 sq.ft.)	0	x 22.23 =	0
Commercial (300,000 sq.ft. or more)	0	x 17.80 =	0
Freestanding Eating & Drinking	0	x 66.99 =	0
NON–RETAIL DEVELOPMENT ACTIVITY			
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.	Subtotal
Lodging	0	x 7.21 =	0
Industrial	6.749	x 6.08 =	(41)
Office (less than 50,000 sq.ft.)	0.32	x 16.16 =	(5)
Office (50,000–299,999 sq.ft.)	0	x 10.50 =	0
Office (300,000 sq.ft. or more)	0	x 7.35 =	0
Medical	0	x 16.90 =	0
Government	0	x 20.95 =	0
Institutional/Educational	7.25	x 7.68 =	(56)
OTHER DEVELOPMENT ACTIVITY			
Description	Daily Trips	Impact Value	Subtotal
	0	x 0.71 =	0
	0	x 0.71 =	0
ADJUSTMENTS (OPTIONAL) – Complete Part 2			= 154
TOTAL CURRENT CONGESTION MITIGATION GOAL (POINTS)			= 27

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT (Continued)

PART 2: NEW DEVELOPMENT ADJUSTMENTS

RESIDENTIAL DEVELOPMENT ADJUSTMENTS			
Category	Number of Dwelling Units	Impact Value	Subtotal
Single Family Residential	2	x 6.80 =	14
Multi–Family Residential	0	x 4.76 =	0
Group Quarters	0	x 1.98 =	0
COMMERCIAL DEVELOPMENT ADJUSTMENTS			
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.	Subtotal
Commercial (less than 300,000 sq.ft.)	0.3	x 22.23 =	7
Commercial (300,000 sq.ft. or more)	0	x 17.80 =	0
Freestanding Eating & Drinking	1.2	x 66.99 =	80
NON–RETAIL DEVELOPMENT ADJUSTMENTS			
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.	Subtotal
Lodging	0	x 7.21 =	0
Industrial	8.763	x 6.08 =	53
Office (less than 50,000 sq.ft.)	0	x 16.16 =	0
Office (50,000–299,999 sq.ft.)	0	x 10.50 =	0
Office (300,000 sq.ft. or more)	0	x 7.35 =	0
Medical	0	x 16.90 =	0
Government	0	x 20.95 =	0
Institutional/Educational	0	x 7.68 =	0
OTHER DEVELOPMENT ADJUSTMENTS			
Description	Daily Trips	Impact Value	Subtotal
	0	x 0.71 =	0
	0	x 0.71 =	0
TOTAL ADJUSTMENTS (POINTS)			= 154

SECTION II – TRANSPORTATION IMPROVEMENTS CREDIT CLAIMS

1 Proj. No.	2 CMP Strategy	3 Description	4 Project Scope	5 Credit Factor	6 Project Value	7 Expect. Compl. Date	8 Project Cost (\$mil)	9 Local Partici- pation	10 Current Mile- stone	11 Mile- stone Factor	12 Net Current Value
TOTAL CREDIT CLAIMED FOR ALL PROJECTS LISTED BELOW											18,812
1	306	Phase I TDM Ordinance – Non-Residential Dev't Activity, Carried over from Section I	14 1000 sf	0.3	4	n/a	n/a	100%	3	100%	4
2	202.2	General use lane on Other Major Arterial – Overland Avenue, Washington to Palms (per 1993-99 RTIP)	1.4 lane-mile	9203	12,884	1999	10	20%	1	20%	515
3	326	New Local or Commuter Bus Service – CCMBL systemwide increase FY 90-93	2219 pass-mile	1	2,219	1993	n/a	100%	3	100%	2,219
4	212	Bicycle lane or path – Ballona Creek/Downtown Culver City connector	0.65 route-mile	700	455	1997	0.495	26%	1	20%	23
5	209.4	Signal synch, surv & control on 4-lane Oth Maj – 30 signals Washington, Sepulveda, Sawtelle	5.3 mile	2577	13,658	1994	2.2	20%	2	70%	1,912
6	208.4	Signal synchronization on 4-lane Oth Major Artl – 35 Centinela, Sawtelle, Sepulveda, Jefferson, Green Vly Circle	6.1 mile	1473	8,985	1993	n/a	100%	3	100%	8,985
7	202.2	General use lane on Other Major Arterial – Sepulveda/Jefferson bottleneck elimination	0.8 lane-mile	9203	7,362	1994	n/a	100%	2	70%	5,153

Notes: 1 Column 6 (Project Credit Value) is calculated by multiplying Column 4 by Column 5.
 2 Column 12 (Net Current Value) is calculated by multiplying Column 6 by Column 9 by Column 11.

DEFICIENCY PLAN STATUS SUMMARY

1. Total Current Congestion Mitigation Goal [from Section I]		(307,178)
2. Transportation Improvements Credit Claims [from Section II]	Alternative A:	396,472
	Alternative B:	385,577
	Alternative C:	295,541
Subtotal Current Credit (Goal)	Alternative A:	89,294
	Alternative B:	78,399
	Alternative C:	(11,637)
3. Carryover Credit (Goal) from Last Year's Local Implementation Report		0
NET DEFICIENCY PLAN CREDIT (GOAL) BALANCE	Alternative A:	89,294
	Alternative B:	78,399
	Alternative C:	(11,637)

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT

PART 1: NEW DEVELOPMENT ACTIVITY

RESIDENTIAL DEVELOPMENT ACTIVITY				
Category	Number of Dwelling Units	Impact Value		Subtotal
Single Family Residential	181	x 6.80	=	(1,231)
Multi-Family Residential	6,549	x 4.76	=	(31,173)
Group Quarters	0	x 1.98	=	0
COMMERCIAL DEVELOPMENT ACTIVITY				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Commercial (less than 300,000 sq.ft.)	2,766	x 22.23	=	(61,488)
Commercial (300,000 sq.ft. or more)	2,467	x 17.80	=	(43,913)
Freestanding Eating & Drinking	396	x 66.99	=	(26,528)
NON-RETAIL DEVELOPMENT ACTIVITY				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Lodging	0	x 7.21	=	0
Industrial	127	x 6.08	=	(772)
Office (less than 50,000 sq.ft.)	1,877	x 16.16	=	(30,332)
Office (50,000 – 299,999 sq.ft.)	7,676	x 10.50	=	(80,598)
Office (300,000 sq.ft. or more)	6,560	x 7.35	=	(48,216)
Medical	0	x 16.90	=	0
Government	0	x 20.95	=	0
Institutional/Educational	0	x 7.68	=	0
OTHER DEVELOPMENT ACTIVITY				
Description	Daily Trips	Impact Value		Subtotal
	0	x 0.71	=	0
	0	x 0.71	=	0
TOTAL NEW DEVELOPMENT ACTIVITY				(324,251)
ADJUSTMENTS (OPTIONAL) – Complete Part 2				= 17,073
TOTAL CURRENT CONGESTION MITIGATION GOAL (POINTS)				= (307,178)

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT (Continued)

PART 2: NEW DEVELOPMENT ADJUSTMENTS (Revoked/Expired/Withdrawn Permits and Demolition)

RESIDENTIAL DEVELOPMENT ADJUSTMENTS				
Category	Number of Dwelling Units	Impact Value		Subtotal
Single Family Residential	0	x 6.80	=	0
Multi-Family Residential	0	x 4.76	=	0
Group Quarters	0	x 1.98	=	0
COMMERCIAL DEVELOPMENT ADJUSTMENTS				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Commercial (less than 300,000 sq.ft.)	0	x 22.23	=	0
Commercial (300,000 sq.ft. or more)	0	x 17.80	=	0
Freestanding Eating & Drinking	0	x 66.99	=	0
NON-RETAIL DEVELOPMENT ADJUSTMENTS				
Category	Thousands of Gross Square Feet	Value per 1000 sq.ft.		Subtotal
Lodging	0	x 7.21	=	0
Industrial	2,779	x 6.08	=	16,896
Office (less than 50,000 sq.ft.)	0	x 16.16	=	0
Office (50,000 – 299,999 sq.ft.)	0	x 10.50	=	0
Office (300,000 sq.ft. or more)	0	x 7.35	=	0
Medical	0	x 16.90	=	0
Government	0	x 20.95	=	0
Institutional/Educational	23	x 7.68	=	177
OTHER DEVELOPMENT ADJUSTMENTS				
Description	Daily Trips	Impact Value		Subtotal
	0	x 0.71	=	0
	0	x 0.71	=	0
TOTAL ADJUSTMENTS (POINTS)				= 17,073

SECTION I – NEW DEVELOPMENT ACTIVITY REPORT (Continued)

PART 3: EXEMPTED DEVELOPMENT ACTIVITY
(NOT INCLUDED IN NEW DEVELOPMENT ACTIVITY TOTALS)

Low/Very Low Income Housing	2,860	Dwelling Units
High Density Residential near Rail Stations	0	Dwelling Units
Mixed Use Developments near Rail Stations	0	Dwelling Units
	0	1000 Gross Square Feet
Development Agreements Prior to July 10, 1989	0	Dwelling Units
	0	1000 Gross Square Feet
Reconstruction of Buildings Damaged in April 1992 Civil Unrest	0	Dwelling Units
	0	1000 Gross Square Feet

SECTION II – TRANSPORTATION IMPROVEMENTS CREDIT CLAIMS

1 Proj. No.	2 CMP Strategy	3 Description	4 Project Scope	5 Credit Factor	6 Project Value	7 Expect. Compl. Date	8 Project Cost (\$mil)	9 Local Partici- pation	10 Current Mile- stone	11 Mile- stone Factor	12 Net Current Value
TOTAL CREDIT CLAIMED FOR ALL PROJECTS LISTED BELOW AS ALTERNATIVE A											396,472
1	306	Phase I TDM Ordinance – Non-Residential Development Activity Reported in Section I	21,869 1000 sf	0.3	6,561	n/a	n/a	100%	3	100%	6,561
2	103	Focus residential dev't @ transit corridors	1766 DU	0.8	1,413	2010	n/a	100%	3	100%	1,413
3	104.1	Commercial dev't @ transit corridors, retail	292 1000 gsf	8.7	2,540	2010	n/a	100%	3	100%	2,540
4	104.2	Commercial dev't @ transit corridors, non-retail	3783 1000 gsf	4.1	15,510	2010	n/a	100%	3	100%	15,510
5	105	Focus residential mixed uses @ transit centers	900 DU	4.9	4,410	2010	n/a	100%	3	100%	4,410
6	106.1	Commercial mixed uses @ transit centers, retail	190 1000 gsf	23	4,370	2010	n/a	100%	3	100%	4,370
7	106.2	Comm'l mixed uses @ transit centers, non-retail	400 1000 gsf	11	4,400	2010	n/a	100%	3	100%	4,400
8	107	Focus residential mixed uses @ transit corridors	2827 DU	1.9	5,371	2010	n/a	100%	3	100%	5,371
9	108.1	Commercial mixed uses @ transit corridors, retail	250 1000 gsf	8.7	2,175	2010	n/a	100%	3	100%	2,175
10	108.2	Comm'l mixed uses @ transit corridors, non-retail	1559 1000 gsf	4.1	6,392	2010	n/a	100%	3	100%	6,392
11	111.2	Child care in conjunct. w/comm'l non-retail dev't – Studio properties	2 Center	375	750	2010	n/a	100%	3	100%	750
12	202.2	General use lane on Other Major Arterial – Widening: Olive/Buena Vista/Verdugo/Alameda/Glenoaks/Burbank	18 lane-mile	9203	165,654	2010	31.3	85%	3	100%	140,806
13	203	Arterial Grade Separation – Buena Vista St/San Fernando Rd	11500 Individual	1	11,500	1997	18	50%	3	100%	5,750
14	204	Freeway ramp addition or modification	6 ramp	1150	6,900	2010	49.3	50%	3	100%	3,450

CITY OF BURBANK
CMP LOCAL IMPLEMENTATION REPORT

Report Period: **1990 through 2010**

Date Prepared: 14-Sep-93

15	206	Commuter rail station – Metrolink station, now operational	800 boarding	20	16,000	1992	7.2	100%	3	100%	16,000
16	209.4	Signal synch, surv & control on 4-lane Oth Maj – Alameda, Victory, Hollywood Way & throughout City	24 mile	2577	61,848	2010	1	85%	3	100%	52,571
17	212	Bicycle lane or path – Chandler Bikeway	4 route-mile	700	2,800	1996	5	67%	3	100%	1,876
18	303	Transportation Management Assoc/Orgs	120 100 empl	46	5,520	2010	n/a	100%	3	100%	5,520
19	305	Informal Carpool & Vanpool Program	120 100 empl	28	3,360	2010	enter	100%	3	100%	3,360
20	308	Childcare Centers at Transit Facilities – Downtown Intermodal Transit Center	1 Center	375	375	2010	n/a	100%	3	100%	375
21	331	Internal Circulator Shuttle – Home-Work, Home-Transit, and Employment-based shuttles	112872 pass-mile	1	112,872	2010	enter	100%	3	100%	112,872

CITY OF BURBANK
CMP LOCAL IMPLEMENTATION REPORT

Report Period: 1990 through 2010
 Date Prepared: 14-Sep-93

ALTERNATIVE B – PARKING MANAGEMENT											
Includes all projects in Alt. A except arterial widening (proj. 12) plus:											
22	210.6	Peak pd parking restriction – Oth Maj Art (4+ hr)	21.8 lane-mile	3681	80,246	2010	enter	100%	3	100%	80,246
– Glenoaks, Hollywood Way, Alameda, Buena Vista											
23	319	Incr Parking Cost for SOV's by \$3.00/day	577.5 100 empl	86	49,665	2010	enter	100%	3	100%	49,665
– Citywide implementation											
TOTAL CREDIT CLAIM – ALTERNATIVE B											385,577
ALTERNATIVE C – LIGHT RAIL LINE											
Includes all projects in Alt. A except arterial widening (proj. 12) plus:											
24	105	Focus residential mixed uses @ transit centers	2100 DU	4.9	10,290	2010	enter	100%	3	100%	10,290
– Total around two light rail stations											
25	106.1	Commercial mixed uses @ transit centers, retail	380 1000 gsf	23	8,740	2010	enter	100%	3	100%	8,740
– Total around two light rail stations											
26	106.2	Comm'l mixed uses @ transit centers, non-retail	500 1000 gsf	11	5,500	2010	enter	100%	3	100%	5,500
– Total around two light rail stations											
27	205	Urban rail station	9000 boarding	7.9	71,100	2010	enter	20%	3	100%	14,220
– Three stations, assume 3000 boardings each											
28	308	Childcare Centers at Transit Facilities	3 Center	375	1,125	2010	enter	100%	3	100%	1,125
– One facility at each light rail station											
TOTAL CREDIT CLAIM – ALTERNATIVE C											295,541

- Notes:
- 1 Column 6 (Project Credit Value) is calculated by multiplying Column 4 by Column 5.
 - 2 Column 12 (Net Current Value) is calculated by multiplying Column 6 by Column 9 by Column 11.

APPENDIX HH - SELECTED REFERENCES

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2. America's Suburban Centers: A Study of the Land Use - Transportation Link, Robert Cervero. 1989.
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25. Transit-Oriented Development Design Guidelines, City of San Diego, September 1990.
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27. Transportation Control Measure Information Documents, EPA 1992.
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2. Immediate Action Project Evaluation Progress Report for the Antelope Valley Telebusiness Center: Second Quarter Report, Los Angeles County Metropolitan Transportation Authority (MTA), June 1993.
3. Puget Sound Telecommuting Demonstration Project: Executive Summary, Washington State Energy Office, November 1992.
4. Transportation Control Measure Information Documents, Cambridge Systematics, Inc. for U.S. Environmental Protection Agency Office of Mobile Sources, March 1992.

