MARIN CONGESTION MANAGEMENT PROGRAM

2007 Report Update

PRESENTED TO THE

Transportation Authority of Marin

SUBMITTED BY

DKS Associates
TRANSPORTATION SOLUTIONS

Transportation Authority of Marin

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MARIN CONGESTION MANAGEMENT PROGRAM

EXECUTIVE SUMMARY

Purpose

Congestion Management Programs (CMPs) are designed to address existing and future transportation congestion within urban areas of the State of California. The Congestion Management Program (CMP) requirements were enacted with voter approval of Proposition 111 and Proposition 116 in June 1990. These measures increased transportation revenues and changed state transportation planning and programming processes. Each urban county in California is required to develop and biennially update a CMP. A Congestion Management Agency (CMA) has been designated in each urban county. The CMA has the responsibility of developing, updating, and monitoring the CMP.

Marin County and its cities and towns have designated the Transportation Authority of Marin (TAM) Board of Commissioners as the Congestion Management Agency. TAM has a 16 member board comprised of the Marin County Board of Supervisors and City or Town Council members of each local government in Marin County.

The main components of Congestion Management Programs are the following:

- Identification of a network of transportation facilities and designation of level of service standards for highways and roadways. Facilities are monitored for congestion levels periodically. (Chapter 1 and Chapter 2)
- Performance measures to evaluate current and future multimodal system performance for the movement of people and goods. (Chapter 3)
- Through the use of Travel Demand Management (TDM) techniques, alternatives to the single occupant private automobile are identified and encouraged. (Chapter 4)
- Development of a process to determine the impacts of local development decisions on the regional transportation network. This facilitates integration of decisions about land development, transportation investment, and air quality. (Chapter 5)
- A computer travel model and database to be used for estimating future transportation needs and impacts has been developed. (Chapter 6)
- A 7-year investment strategy (Capital Improvement Program [CIP]) is developed and updated every two years, in order to promote the goals of the CMP. The investment strategy links project eligibility for regional/state funding to the CIP. (Chapter 7)

It is important to note that a CMP is not a long-range policy document. The main thrust of CMP recommendations is short-term (within a seven year timeframe). The CMP is not an exhaustive list of all desired improvements in the county. Therefore, exclusion from the CMP does not mean

that a project is not being considered for action, nor does inclusion signify a notice to proceed with a project. At a regional level, the CMP is guided by the Metropolitan Transportation Commission's (MTC) *Regional Transportation Plan* and the Bay Area Air Quality Management District's (BAAQMD) *Bay Area Clean Air Plan*.

> The CMP legislation is aimed at bringing local governments into the decision-making process for capital investment in transportation. This serves to make local governments more aware of the real cost of transportation services. In addition, local governments are involved in the development of funding mechanisms for transportation (i.e., impact fees and user fees). Local agencies need to be prudent in their decisions regarding transportation infrastructure in order to make the most of existing facilities, services, and available improvement and program funds.

In 2004, Marin County adopted a Transportation Sales Tax Expenditure Plan. The County of Marin released an updated Marin Countywide Plan on August 19, 2005. These actions have improved the ability of Marin County jurisdictions to respond to congestion issues.

Chapter Descriptions

The CMP document is organized into chapters that provide details for each element of the CMP. The chapters include the following:

DESIGNATED ROADWAY SYSTEM | CHAPTER 1.0

The CMP network of transportation facilities is designated so that it can be monitored biennially to determine service levels. Standards for traffic Levels of Service (LOS)[1] on the network have been established, and CMP actions and investments proposed in the CIP must support the attainment of those standards. The CMP legislation requires that all state highways and principal arterial roadways be included in the network.

HIGHWAY LEVEL OF SERVICE STANDARDS | CHAPTER 2.0

The CMP legislation requires the establishment of a uniform method for monitoring levels of service on principal arterial roadways and conventional highways within Marin County. LOS D has been chosen by the Congestion Management Agency as the standard for Urban and Suburban Arterial Roadways including highways that serve as arterial roadways (e.g., SR 1, SR 131); and LOS E was selected as the standard for Highway 101, Interstate 580, and State Route 37. The *Highway Capacity Manual* methodology has been used to calculate levels of service on roadway segments. As the methodology has increasingly been attributed to travel time rather

[1] Level of Service (LOS) is a measure of congestion on roadways. It represents the ease with which one can drive on the road. There are six LOS grades, from A to F. LOS A represents free flow conditions (i.e., unimpeded travel at the maximum posted speed), and LOS F represents very congested conditions (i.e., 'bumper-to-bumper')

than volume-to-capacity ratios, the most current monitoring for Marin County CMP roadways was based solely on travel time samples.

Once the sampling occurs, the CMP legislation allows trips not originating in a county, trips passing through a county, or trips generated by low and very low income housing to be *excluded* from the determination of conformance with LOS standards following consultation with MTC, Caltrans, and the BAAQMD. Even though they must be excluded for deficiency plan determinations, TAM and the CMA prior to TAM have elected to include these trips for planning purposes. Exclusion of these kinds of trips would present a misleading picture of traffic conditions in the county and could artificially skew the inclusion and/or ranking of projects in the seven-year CIP.

For all roadways included in the portion of the CMP network within their jurisdictions, local governments are required to do the following:

- Adopt LOS standards for all CMP network roadways. LOS E is the minimum countywide standard for Highway 101, Interstate 580, and State Route 37. LOS D is the minimum countywide standard for all other CMP network roadways. A local jurisdiction may adopt higher standards. In such a case, TAM is to assess conformance with the higher standard, not the countywide minimum.
- Biennially monitor the LOS on the designated network according to the guidelines set forth in Chapter 8 and report to TAM by September 1 of that year, relative to conformance with the adopted LOS standards.

SYSTEM PERFORMANCE | CHAPTER 3.0

Seven performance measures are included in the CMP. In addition to the highway Level of Service performance measures discussed in Chapter 2, three multi-modal performance measures are monitored, including peak hour travel time, person throughput, and vehicle miles of congested highways.

A performance measure evaluating the jobs and housing (employed residents) balance within the County is monitored. A balance between jobs and housing can help the regional transportation system by reducing trip length and congestion.

Two performance measures, frequency and routing and coordination are monitored for transit service. These measures work in partnership with standards for roadway level of service and the transportation demand management element of the CMP. This helps bring about the desired goals with respect to mobility and air quality. The performance measures for transit service in Marin County and its cities and towns are based on the Golden Gate Bridge, Highway and Transportation District five-year *Short Range Transit Plan*.

A performance measure tracking pedestrian and bicycle investments are no lingered monitored. Through Measure A adoption, pedestrian and bicycle travel is being accommodated in new transportation improvement projects.

TRAVEL DEMAND MANAGEMENT | CHAPTER 4.0

California Government Code section 65089(b)(3) requires a travel demand management (TDM) element of a CMP to promote alternative transportation methods, such as carpools, vanpools, transit, bicycles, and park-and-ride lots; improvements in the balance between jobs and housing; and other strategies, including flexible work hours and parking management programs, that help reduce congestion and air pollution.

TDM seeks to solve transportation problems by improving the efficiency of the existing transportation system and by better managing the demand for transportation facilities. TDM focuses on reducing the number of vehicles on highways during peak periods through ridesharing (carpooling), increased use of transit, and staggered work hours. Such measures can be integrated into the land use planning process with better development review, and incentives to provide designs and facilities that are supportive of a multi-modal transportation system.

The travel demand management element of the CMP has several goals that promote local and regional planning to reduce traffic congestion.

LAND USE ANALYSIS | CHAPTER 5.0

California Government Code section 65089(b)(4) requires that a CMP contain a program to analyze the impacts of land use decisions made by local jurisdictions on the regional transportation system (both highways and transit). The intent of the Land-Use Analysis Program is to improve the linkage between local land use decisions and regional transportation facility decisions; to better assess the impacts of development in one community on another; and to promote information sharing between local governments when the decisions made by one jurisdiction have an impact on another.

Marin County maintains an inventory of proposed development projects, known as “PROPDEV.” PROPDEV includes all projects with at least five residential units or at least 5,000 square feet of non-residential use. The PROPDEV database file covers 40 items of information including location, project sponsor, acreage, zoning, square feet of building area and status of development application.

A two-tiered information and analysis process of local land use impacts is instituted. Under “Tier I,” local governments forward information on proposed General Plan Amendments to TAM during the period when the local jurisdiction is reviewing the application. “Tier II” includes an biennial update of projected land uses for 10 years in the future to be used for modeling both traffic and transit impacts.

In order to comply with the requirements of Tiers I and II of the Land-Use Analysis Program, all jurisdictions in the County need to:

- Submit a complete account of all residential and commercial projects approved during the preceding year.
- Continue to participate in the County’s PROPDEV inventory.

- Submit information on all General Plan Amendments involving a net change (increase or decrease) of 100 or more P.M. peak hour trips.
- Submit information on all highway network and transit system changes in their jurisdiction that result from: (1) project mitigations, (2) ordinance approvals, or (3) changes to the Transportation Element of their General Plan.
- Adopt traffic LOS standards that are consistent with or more restrictive than the LOS standards in the CMP.
- Comply with other requirements as outlined in the Monitoring and Conformance Chapter (Chapter 8).

TRAVEL FORECAST MODEL | CHAPTER 6.0

California Government Code section 65089(c) requires that every CMA, in consultation with the regional transportation planning agency (MTC), cities, and the county, develop a uniform database on traffic impacts for use in a countywide transportation computer model. It also requires that the countywide model be the basis for computer models used for county sub-areas and cities, and that all models must be consistent with the modeling methodology and databases used by the regional transportation planning agency. The CMA also approves sub-county area traffic models, and models used by local jurisdictions for land use impact analysis, if local jurisdictions decide to perform this work on their own.

The purpose of this requirement is to guide the CMA decision-making process in identifying the most effective balance of transportation programs and projects that maintain LOS standards. This includes consideration of the benefits of transit service and transportation demand management programs, as well as the need for projects that reduce congestion on the CMP highway and arterial system. The modeling requirement is also intended to assist local agencies in assessing the impact of new development on the transportation system.

The Marin County Travel Model is routinely updated as part of the consistency determination process with MTC.

CAPITAL IMPROVEMENT PROGRAM (CIP) | CHAPTER 7.0

Government Code section 65089(b)(5) requires that a CMP contain a seven-year Capital Improvement Program (CIP) to maintain or improve the adopted traffic LOS and to mitigate regional transportation impacts identified through the Land-Use Analysis Program. Capital improvement projects must acknowledge transportation-related vehicle emissions and air quality measures, adopted transportation control measures (or TCMs) are contained in the *Bay Area 2000 Clean Air Plan* and updated in implementing documents.

Since the CMP is supposed to ultimately be incorporated into the Regional Transportation Plan (RTP) Action Elements, projects included for this CIP should be consistent with assumptions, goals, policies, actions and projects identified in the RTP. The RTP is the basic statement of transportation policy by the Metropolitan Transportation Commission (MTC). Because of the interdependence of transportation and land use planning, a major effort was made by MTC to adopt policies that complement and support programs of federal, state, and regional agencies.

The lists of projects that result from this evaluation are shown in Tables 3 through 6 in Chapter 7, along with projects that are listed as part of the proposed 2006 Transportation Improvement Program (TIP).

The CMA participates in the development of multi-modal plans in addition to the highway improvements, including updates to the county's pedestrian and bicycle master plans, local transit services plans, and rail plans associated with the Sonoma-Marin Area Rail Transit (SMART) Commission for startup rail operations between Cloverdale and downtown San Rafael with an extension to a San Francisco-bound ferry terminal in Larkspur.

MONITORING, DEFICIENCY PLANS, AND CONFORMANCE | CHAPTER 8.0

California Government Code sections 65089.3, 65089.4, and 65089.5 govern the conformance process. These sections require that, based on the information obtained through monitoring, the CMA must at least biennially determine whether or not the County and its cities and towns conform to the requirements of the CMP. If an agency believes that a local government is not conforming to CMP requirements, it must then hold a noticed public hearing to determine areas of nonconformance. If after the public hearing the CMA still believes that the local government is not conforming to CMP requirements, it must provide written notice to the local government citing the specific instances of nonconformance. The local government then has 90 days to remedy the instances of nonconformance. If after 90 days the local government has not remedied the nonconformance instances, the CMA makes a finding of nonconformance and notifies the State Controller to withhold certain gas tax subvention funds.

The CMP legislation makes the following requirements of a conformance determination:

- Maintaining the highway LOS standards outlined in the CMP.
- Participating in a program to analyze impacts of land use decisions, including an estimate of costs associated with mitigating these impacts. Specific requirements and recommendations are outlined in the Land-Use Analysis Program Element of the CMP.
- Participating in adoption and implementation of a deficiency plan when highway and roadway LOS standards are not maintained on portions of the designated system.

No Marin County jurisdiction is considered out of conformance at this time. In the next two years, a more formalized compliance process is likely to be developed. Failure to participate in this new process may result in a finding of non-compliance for a local jurisdiction.

1.0 DESIGNATED ROADWAY SYSTEM

1.1 Purpose and Intent of Legislation

The designated roadway system includes all state highways and principal arterial roadways in Marin County. Once a highway or roadway has been designated as part of the system, it cannot be removed.[1] Furthermore, the regional transportation system is to be part of the required land-use program.[2]

The Congestion Management Program (CMP) roadway system is a network that allows monitoring of performance with respect to established level-of-service (LOS) standards. The network must be created at a level whereby impacts can be identified, and a connection can be made between proposed projects and their specific impacts on the network. The network cannot be too small, as impacts would not be identifiable, and at the same time, the network cannot be too large, as logistical problems would arise in monitoring performance.

1.2 Relationship to Regional Plans

The Congestion Management Program is a short-range document containing elements which further the goals of the Regional Transportation Plan (RTP) maintained by the Metropolitan Transportation Commission (MTC). MTC has determined that the Marin CMP is consistent with the RTP, last adopted in 2005. This RTP includes goals of safety, reliability, access, livable communities, clean air and efficient freight travel.

The designated roadway system is included within the RTP's Metropolitan Transportation System. This facilitates regional consistency between the Marin CMP and CMPs of adjoining Contra Costa, San Francisco, and Sonoma counties.

1.3 Designated CMP System

State highways and other principal arterial roadways in this CMP were defined in prior CMPs. MTC has provided a framework that allows for flexibility in defining the principal arterial system. The following criteria were used to establish the designated CMP roadway network:

State Highways. All State highways must be included in the CMP roadway network according to the CMP legislation. If a route is to be removed from the State Highway System, it is to be evaluated according to the principal arterial criteria to determine whether it should remain in the CMP network.

[1] California Government Code Section 65089(b)(1)(A)
[2] California Government Code Section 60589(b)(4)

Principal Arterial Roadways. The original CMP, created in 1991, designated principal arterial roadways in addition to State facilities as the CMP roadway network. Non-State CMP roadways were included based upon criteria listed below:

- Purpose and function of the roadway
- Land use adjacent to the roadway and proximity to activity centers
- Average Daily Traffic (ADT) volume, generally over 25,000 vehicles a day
- Connectivity to other facilities

1.4 The CMP Designated Network

The following routes, shown on Figure 1 on page 3, are designated as the State Highway portion of the Marin CMP roadway network:

- **Interstate 580** – from U.S. 101 to Contra Costa County line
- **U.S. 101** – from San Francisco County Line to Sonoma County Line
- **State Route 1** – from U.S. 101 to Sonoma County line
- **State Route 37** – from U.S. 101 to Sonoma County line
- **State Route 131** – from U.S. 101 to Main Street in Tiburon

The following routes (also shown on Figure 1) are designated as the principal arterial portion of the Marin CMP roadway network:

- **Bel Marin Keys Boulevard** – from U.S.101 southbound ramps to Arroyo San Jose
- **Bridgeway/Richardson Street/Second Street/Alexander Avenue in Sausalito** – from U.S. 101 to U.S. 101
- **Fourth Street** in San Rafael – from Ross Valley Drive to Marquard Avenue
- **Novato Boulevard** in Novato –from Sutro Avenue/San Marin Drive to Diablo Avenue
- **Red Hill Avenue** in San Anselmo – from Sir Francis Drake Boulevard to Ross Valley Drive
- **Rowland Boulevard** in Novato – from South Novato Boulevard to U.S. 101
- **Second Street** in San Rafael – from Marquard Avenue to U.S. 101
- **Sir Francis Drake Boulevard** in Larkspur and unincorporated Marin County – from U.S. 101 to Interstate 580
- **Sir Francis Drake Boulevard** in Larkspur, Kentfield, Ross, San Anselmo, and Fairfax – from State Route 1 to U.S. 101
- **South Novato Boulevard** in Novato – from Novato Boulevard to U.S. 101
- **Third Street** in San Rafael – from Marquard Avenue to U.S. 101

In total, the 123-mile CMP designated roadway network contains 91 miles of state highways and 32 miles of principal arterial roadways.

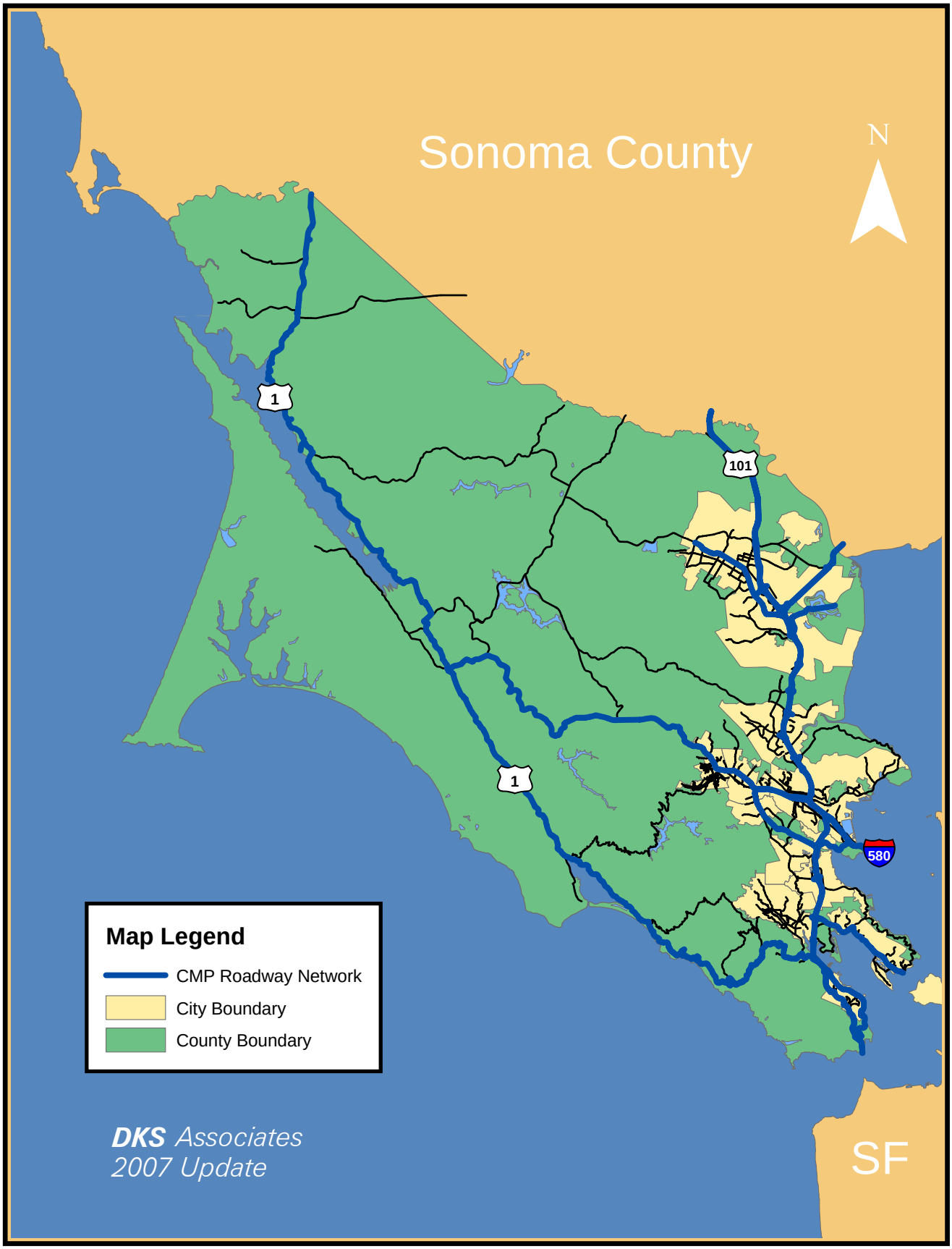

Figure 1. Marin County CMP Roadway Network

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2.0 DESIGNATED ROADWAY SYSTEM AND LEVEL-OF-SERVICE

2.1 Purpose and Intent of Legislation

Level-of-service (LOS) standards are to be established as part of the CMP[3], and are to be specified by Transportation Research Board, Highway Capacity Manual, 2000 or an accepted alternative.

2.1.1 Objective

Traffic LOS definitions describe conditions in terms of speed and travel time, volume, capacity, ease of maneuverability, traffic interruptions, comfort, convenience, and safety. There are six gradations of LOS; from A to F. LOS A reflects free flow conditions, with vehicles traveling at the maximum posted speed. LOS F reflects congested conditions, with vehicles traveling 'bumper-to-bumper'.

The LOS designation provides a quantitative tool that can be used to analyze the impacts of land use changes on the CMP network. Traffic LOS also is used as a measure of system performance (e.g., congestion). Every two years the CMA is required to determine whether local governments have been conforming to the CMP, including attainment of LOS standards. This is achieved through a self-certification process whereby monitoring and reporting of LOS conditions is conducted by the CMA or by local jurisdictions. The CMA should then, upon receiving local monitoring reports, determine whether the local government is in conformance with the CMP. Additional detail on monitoring requirements is included in Chapter 8.

Local governments must consider the impacts that land-use decisions have on LOS on the designated CMP network. Therefore, a systems approach may have to be examined when considering LOS on the entire system. Cities and counties may be responsible for improvements and funding of programs that affects the system as a whole.

2.2 Highway Level of Service Standards

2.2.1 Goals and Objectives

The LOS technique should allow for measurement of traffic growth trends through changes in volumes, capacity, and delay. The objectives, as shown in Table 1, are to develop an approach that is consistent, easy to use, non-duplicative, and compatible with local government data and travel demand models. The following represents the approach used for each issue.

[3] California Government Code 65089(b)(1)(A)

TABLE 1. APPROACHES TO MARIN CMP ISSUES

Issue	Approach
Inter-County Trips	In accordance with California statutory requirements, trips with no end in Marin County (through trips) are not to be included for deficiency plan determination. These trips are included for performance reporting.
LOS Standards	D for Urban and Suburban Arterial Roadways, E for Freeways and Rural Expressways (U.S. 101, Interstate 580, and State Route 37)
Method Analysis **Freeway and Rural Expressway Segments**	The analysis technique for freeway segments, based on segment weekday P.M. peak-hour volume to capacity ratios is from Chapter 23 and 24 of the *Highway Capacity Manual.* (The P.M. peak hour is the highest consecutive 60 minutes of traffic in the afternoon, typically between 5 P.M. and 6 P.M.)
Method Analysis **Urban and Suburban Arterial Segments**	Volume-to-capacity ratios are the analysis technique for arterial sequences, utilizing capacities provided in Chapter 15 and 16 of the *Highway Capacity Manual,* and based on weekday P.M. peak-hour traffic volumes. (The P.M. peak hour is the highest consecutive 60 minutes of traffic in the afternoon, typically between 5 P.M. and 6 P.M.)
Method Analysis **Rural Roadways**	Chapter 20 of the *Highway Capacity Manual* is the analysis technique to be applied for rural roadways, based on weekday P.M. peak-hour traffic volumes. (The P.M. peak hour is the highest consecutive 60 minutes of traffic in the afternoon, typically between 5 P.M. and 6 P.M.)
Monitoring	The local agency (e.g., city and county) or TAM performs the LOS monitoring. Count frequency is to be biennial (with certain exceptions outlined in Chapter 8), recognizing that more frequent counting could be done as part of development impact study requirements.
Deficiency Analysis	More refined analyses may be required when determining if a roadway segment is deficient. If appropriate, the operational analysis methodology described in the *Highway Capacity Manual* may be used to determine LOS.

The CMP legislation allows trips not originating in a county, trips passing through a county, or trips generated by low- and very low-income housing to be excluded from the determination of

conformance with LOS standards following consultation with MTC, Caltrans, and the Bay Area Air Quality Management District. TAM decided to include these trips, however, when determining conformance with LOS standards for local planning purposes, as exclusion of these trips would present a misleading picture of the traffic conditions in the county and could artificially skew the inclusion and/or ranking of projects in the 7-year Capital Improvement Program.

In September 2002, the California legislature passed SB 1636, intending to "remove regulatory barriers around the development of infill housing, transit-oriented development, and mixed use commercial development" by enabling local jurisdictions to designate "infill opportunity zones." These zones are defined as areas designated for compact, transit-oriented housing and mixed use within 1/3 mile of major transit stops. The CMP network segments within the IOZ are required to be exempt from CMP traffic LOS standards. In their place, a city must include these streets under an alternative area wide LOS standard or multimodal composite or personal LOS standard, or approve a list of flexible mitigation options that includes investments in alternative modes of transportation. Marin CMP has not designated any zones at this time.

2.2.2 Facility Classifications

The *Highway Capacity Manual* provides methods for determining LOS on several types of facilities. These facilities are grouped into interrupted- and uninterrupted-flow facilities. Interrupted- flow facilities include city streets and surface highways (like Highway 1) that are part of the State Highway System. For purposes of LOS analysis, the CMP network is classified into two functional types of facilities:

Basic Freeway Segments. These are uninterrupted- flow facilities with multiple lanes available in each direction since traffic only stops during the most congested periods or when breakdowns occur.

Urban and Suburban Arterial Roadways. These are multi- lane streets that have traffic signals less than two miles apart on average. Volume-to-capacity ratios are used to estimate level of service. The advantage of this approach is that volume-to-capacity ratios are easily determined.

2.2.3 Definition of Roadway Segments

The segments of the CMP network that are analyzed are included in Appendix A. For the arterial roadways, a "responsible jurisdiction" has been designated. The jurisdiction named is the one with the greatest segment mileage. This jurisdiction is responsible for preparing any deficiency plans that may be required, as well as complying with all other requirements of the CMP legislation related to that segment. Other jurisdictions through which the segment travels are expected to work in a cooperative fashion with the responsible jurisdiction, and bear a *prorata* share of the cost of any improvement to the facility based on the approximate cost of improvements in their jurisdiction. In the event that funding is needed for a program, each jurisdiction would contribute its fair share of the cost based on segment mileage within the jurisdiction.

2.2.4 Identification of "Grandfathered" Roadway Segments

Roadway segments that operated at a lower LOS than the standard which was established in 1991 are "grandfathered" and allowed to continue to operate at a lower LOS standard level until such time as they are improved or the traffic load is diverted. Freeway segments that operated LOS F or arterial segments that operate at LOS E or F in the 1991 CMP qualify as "grandfathered" segments. The status of each segment in Marin County is listed in Table 2. The grandfathered segments are illustrated in **Figure 2**.

The CMA prior to TAM, in its decision to grandfather the LOS F facilities, has not required the development of strategies to remedy the congestion that occurs. However, TAM may wish to develop an improvement plan to address congestion as appropriate. An improvement plan would consist of a description of the actions required to improve the LOS on the facility, either by increasing capacity or managing the demand for travel in a manner that effectively improves LOS.

2.2.5 2007 Monitoring Results

The monitoring for 2007 has been conducted by PHA Consultants for TAM. The results of monitoring, documented in the *Transportation System Performance Monitoring Report – 2007*, suggest different monitoring actions to be applied to four different categories of roadways. Results are summarized in Table 3 and Table 4. Table 3 contains speed survey results for the P.M. peak period. Table 4 contains a historic trend for LOS of monitored segments. Table 5 illustrates actions that should be taken on each segment.

It is important to note that the methodology for 2007 shifted from the use of traffic volumes to travel time runs, reflecting newer LOS method now recommended and performed by the *Highway Capacity Manual* printed in 2003.

The first category includes non-grandfathered roadway segments with satisfactory status for now and for which no action is needed. There are nine of these segments.

The second category includes those roadways that currently operate worse than the LOS standards but were not grandfathered in the CMP. Any roadway segments in this category should be highlighted for future evaluation, and then the CMA should decide whether deficiency plans or improvement plans are required. One segment falls under this category because monitoring occurred during construction; this segment has already returned to a non-deficient LOS.

The third category includes roadway segments that operate at acceptable levels of service but were originally included in the grandfathered segments in the CMP. These roadway segments should continue to be monitored and made subject to the requirements of the CMP. Improvement plans may not be necessary at this time but may be required in the future. Ten roadway segments fall under this category.

The fourth category includes four locations that are grandfathered roadway segments in the CMP and have been found to currently operate worse than the LOS standard. The segments that are grandfathered and operate worse than the LOS standard should have improvements underway that are anticipated to remove the LOS deficiency.

Certain cities and towns have made policy decisions to not widen certain roadways in their jurisdictions. These cities' and towns' improvement plans would consist of the Transportation Demand Management (TDM) and Traffic/Transportation System Management (TSM) options they choose to improve levels of service or reduce future worsening of levels of service on the CMP-designated facility that operates worse than the LOS standard.

Because all Marin LOS standard violations occur on "grandfathered" facilities, no County jurisdiction is considered out of conformance at this time. However, strategies to improve the performance of vehicles for these segments should be considered. Improvement strategies may include operational improvements, or encouragement of alternative modes such as high-occupancy vehicles, transit, or bicycles.

Several segments demonstrated and improved level of service from prior years. This is attributed either to lighter than normal traffic on the days these facilities were monitored, or to the change in methodology used to measure level of service. A more rigorous monitoring program is proposed for use in the 2009 cycle.

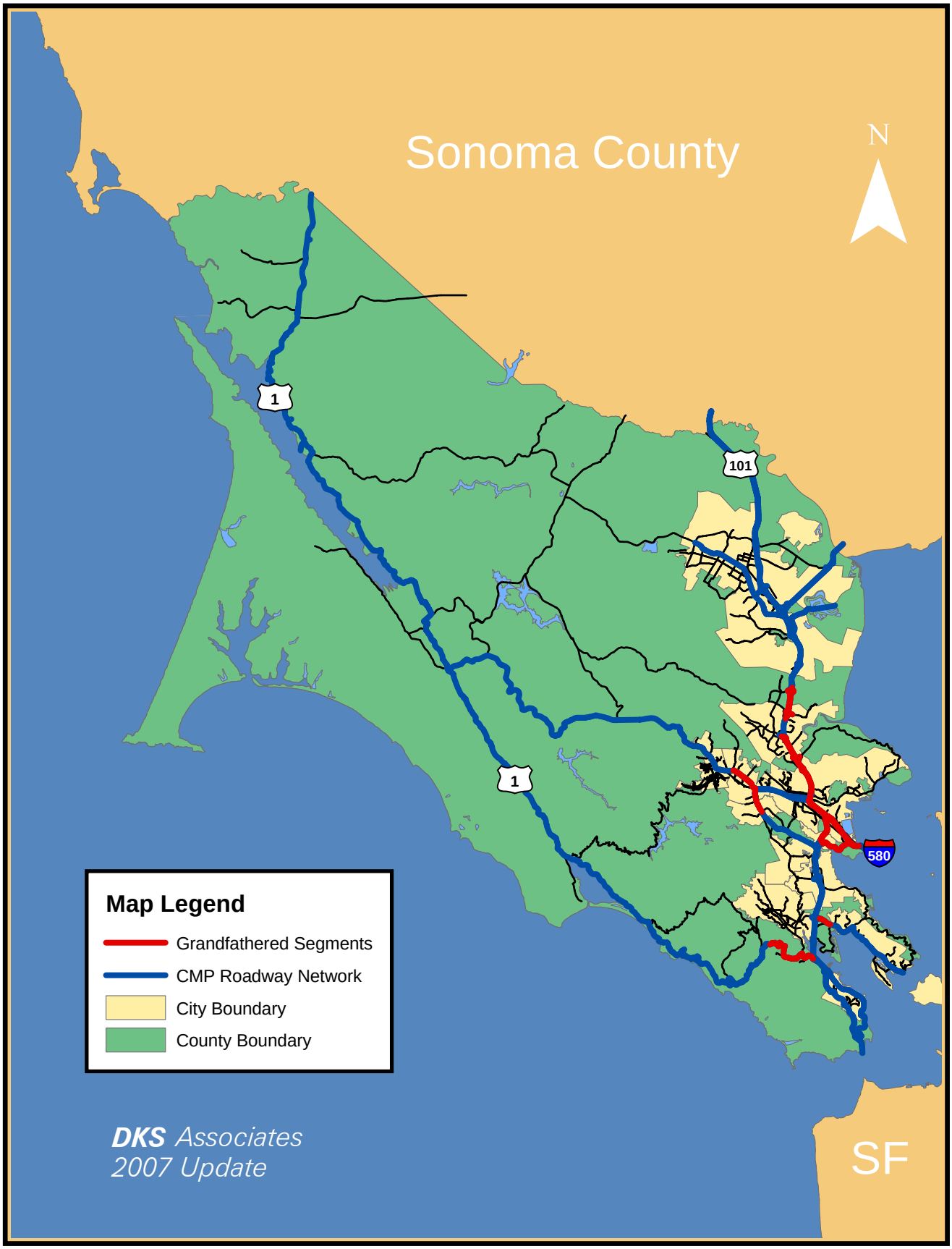


Figure 2. Marin County Grandfathered Segments

TABLE 2. ROADWAY SEGMENTATION NUMBER

Segment Number	Facility Type	Location Name	From	To	Grandfathered?
1	Principal Arterial	Shoreline Highway (SR 1)	Flamingo Road	Sonoma	No
2	Basic Freeway	US 101	Atherton Avenue	Sonoma County Line	Yes
3	Principal Arterial	Novato Boulevard	San Marin Drive	Wilson Avenue	No
4	Principal Arterial	South Novato Boulevard	US 101	Novato Boulevard	No
5	Basic Freeway	SR 37	US 101	Atherton Avenue	No
6	Principal Arterial	Bel Marin Keys	US 101	Commercial Boulevard	Yes
7	Basic Freeway	US 101	N. San Pedro Road	SR 37	Yes
8	Basic Freeway	US 101	Mission Avenue	N. San Pedro Road	Yes
9	Principal Arterial	Sir Francis Drake Boulevard	San Anselmo Avenue	Red Hill Avenue	Yes
10	Principal Arterial	Red Hill Avenue	Sir Francis Drake Boulevard	Hilldale Drive	No
11	Basic Freeway	US 101	I-580	Mission Avenue	Yes
12	Principal Arterial	Sir Francis Drake Boulevard	College Avenue	Wolfe Grade	Yes
13	Basic Freeway	US 101	Sir Francis Drake Blvd.	I-580	Yes
14	Basic Freeway	I-580	Sir Francis Drake Boulevard	Bellam Boulevard	Yes
15	Basic Freeway	I-580	Sir Francis Drake Boulevard	Richmond/San Rafael Bridge	No
16	Principal Arterial	E. Sir Francis Drake Boulevard	US 101	Larkspur Landing Center	Yes
17	Basic Freeway	US 101	Shoreline (SR 1)	Tiburon Highway Boulevard (SR 131)	Yes
18	Principal Arterial	Tiburon Boulevard (SR 131)	US 101	Strawberry Drive	No
19	Principal Arterial	Shoreline Highway (SR 1)	Northern Avenue	Almonte Boulevard	Yes
20	Principal Arterial	Bridgeway Boulevard	US 101	US 101	No
21	Basic Freeway	US 101	San Francisco County Line	Shoreline Highway (SR 1)	No
22	Principal Arterial	Sir Francis Drake Boulevard	Butterfield Road	Shoreline Highway (SR 1)	Yes
23	Principal Arterial	Sir Francis Drake Boulevard	College Avenue	Toussin Avenue	Yes
24	Principal Arterial	Novato Boulevard	Wilson Boulevard	Diablo Avenue	No

Source: CMP 2007 Monitoring Report – PHA Transportation Consultants

TABLE 3. STUDY ROADWAY SEGMENT MONITORING RESULTS 2007 (PM LOS)

	Study Segments	Mileage	Direction	Time (minutes)	Speed (mph)	LOS
1	State Route 1 (SFD - Pt: Reyes)	2.1	NB	3.0	42.0	A
			SB	3.0	42.0	A
2	US 101 (Atherton - Sonoma County Line)	5.4	NB	8.0	40.0	E
			SB	5.0	64.0	A
3	Novato Bl. (San Marin – Eucalyptus)	0.4	NB	1.0	24.0	B
			SB	1.0	24.0	B
4	S. Novato Bl. (Sunset Pkwy - Hwy 101)	1.2	NB	2.0	36.0	A
			SB	2.0	36.0	A
5	SR 37 (Hwy 101 – Atherton)	2.6	EB	3.0	52.0	A
			WB	3.0	52.0	A
6	Bel Marin Keys (US 101 – Commercial)	0.2	EB	0.5	24.0	B
			WB	0.5	24.0	B
7	Hwy 101 (Freitas Pkwy - Lucas Valley)	1.0	NB	1.0	60.0	A
			SB	1.0	60.0	A
			NB(HOV)	1.0	60.0	A
8	US101 (Mission - N. San Pedro)	1.6	NB	2.0	48.0	C
			SB	2.0	48.0	C
9	SFD Bl. (San Anselmo - Red Hill)	1.1	EB	3.5	19.0	C
			WB	3.0	22.0	B
10	Red Hill (SFD – Hillsdale)	0.4	EB	1.0	24.0	B
			WB	1.0	24.0	B
11	US 101 (I-580 – Mission Ave)	1.1	NB	5.0	13.0	**F**
			SB	2.0	33.0	E
12	SFD Bl. (College - Wolfe Grade)	0.6	EB	1.5	24.0	B
			WB	2.0	18.0	C
13	US 101 (SFD - I-580)	1.3	NB	5.0	15.6	**F**
			SB	1.5	52.0	A
14	I-580 (Bellam – SFD)	1.2	EB	2.0	36.0	E
			WB	2.0	36.0	E
15	I-580 (SFD - R-S Bridge)	0.7	EB	2.0	21.0	**F**
			WB	1.0	42.0	D
16	E. SFD Bl (Hwy 101 - E. Larkspur Landing)	0.5	EB	5.0	6.0	**F**
			WB	2.0	15.0	C
17	US 101 (SR 131 – Paradise)	1.7	NB	6.0	17.0	**F**
	(HOV Lane)		NB(HOV)	1.5	68.0	A
			SB	5.0	20.0	**F**
			SB(HOV)	1.5	68.0	A
18	SR 131 (Redwood Frontage Rd. – Strawberry)	0.5	EB	1.0	30.0	A
			WB	1.0	30.0	A
19	SR 1 (Northern – Almonte)	0.8	EB	2.0	24.0	B
			WB	2.0	24.0	B
20	Bridgeway Bl. (Gate 5 - Gate 6)	0.2	EB	0.5	24.0	B
			WB	0.5	24.0	B
21	US 101 (North of GG – Spencer)	1.4	EB	1.5	56.0	A
			WB	1.5	56.0	A
22	SFD Bl. (Butterfield – Willow)	0.2	EB	1.0	12.0	D
			WB	1.0	12.0	D
23	SFD Bl. (College – Toussin)	0.3	EB	1.0	18.0	C
			WB	1.0	18.0	C
24	Novato Bl. (Grant –Diablo)	0.7	EB	2.0	21.0	B
			WB	3.0	14.0	C

Source: PHA Transportation Consultants –Surveys were conducted between 7-9 am on Tuesday, Wednesdays, and Thursdays in October/ November 2006.

TABLE 4. HISTORIC TREND OF ROADWAY SEGMENT LOS

#	Segment	1997	1999	2001	2003	2005	*2007 (alternative method)*	Grand-fathered
1	Shoreline Highway (State Route 1) from Sir Francis Drake Blvd to Pt. Reyes	A	A	A	A	A	*A*	No
2	U.S. 101 from Atherton Ave. to Sonoma County Line	F	F	E	F	D	*E*	Yes
3	Novato Blvd. from San Marin Dr/Sutro Ave to Wilson Ave*	A	A	A	A	A	*B*	No
4	South Novato Blvd from U.S. 101 to Novato Blvd.) *	A	A	A	A	A	*A*	No
5	State Route 37 from U.S. 101 to Atherton Ave.	C	C	C	C	C	*A*	No
6	Bel Marin Keys Blvd from U.S. 101 to Commercial Blvd.	E	F	E	C	C	*B*	Yes
7	U.S. 101 from North San Pedro Rd. to State Route 37*	D	D	D	C	E	*A*	Yes
8	U.S. 101 from Mission Ave. to N. San Pedro Rd.	F	F	D	F	F	*C*	Yes
9	Sir Francis Drake Blvd. from San Anselmo Ave. to Red Hill Ave.	F	E	F	E	E	*C*	Yes
10	Red Hill Road from Sir Francis Drake Blvd to Hilldale Drive	D	D	D	D	C	*B*	No
11	U.S. 101 from Interstate 580 to Mission Ave.	F	F	D	F	F	***F***	Yes
12	Sir Francis Drake Blvd. from College Ave. to Wolfe Grade	B	C	C	C	B	*C*	Yes
13	U.S. 101 from Sir Francis Drake Blvd. to Interstate 580*	D	D	F	F	F	***F***	Yes
14	Interstate 580 from Bellam Blvd to - Sir Francis Drake Blvd.	B	A	B	B	F	*E*	Yes
15	Interstate 580 from Sir Francis Drake Blvd. to Richmond/San Rafael Bridge	C	C	F	E	C	***F***	No
16	East Sir Francis Drake Blvd from U.S. 101 to Larkspur Landing Circle	E	F	F	F	C	***F***	Yes
17	U.S. 101 from Shoreline Highway (S.R. 1 to Tiburon Blvd. (S.R. 131) *	C	D	D	C	F	***F***	Yes
18	Tiburon Blvd. (State Route 131) from U.S. 101 to Strawberry Drive	C	C	C	C	C	*A*	No
19	Shoreline Highway (S.R. 1) from Northern Avenue to Almonte Blvd.	D	D	D	C	F	*B*	Yes
20	Bridgeway Blvd. (U.S. 101 to U.S. 101*	B	C	B	C	B	*B*	No
21	US 101 from San Francisco County Line to Shoreline Highway (State Route 1) *	D	D	D	C	C	*A*	No
22	Sir Francis Drake Blvd. from Butterfield Rd. to State Route 1 *	F	F	F	F	F	*D*	Yes
23	Sir Francis Drake Blvd. from College Ave. to Toussin Ave.	F	F	E	F	F	*C*	Yes
24	Novato Blvd. from Wilson Ave. to Diablo Ave. *	E	F	D	C	E	*C*	No

Source: CMP 2007 Monitoring Report – PHA Transportation Consultants
* Indicate changes in roadway segment limits between current 2007 and prior years.

TABLE 5. ACTIONS RECOMMENDED BY SEGMENT

#	Segment	2007	Peak Direction	Action Needed
	Non-Grandfathered, LOS Standard Met			
1	Shoreline Highway (State Route 1) from Sir Francis Drake Blvd to Pt. Reyes	A	Northbound	Within LOS Standard; No Action
3	Novato Blvd. from San Marin Dr/Sutro Ave to Wilson Ave*	B	Northbound	Within LOS Standard; No Action
4	South Novato Blvd from U.S. 101 to Novato Blvd.) *	A	Northbound	Within LOS Standard; No Action
5	State Route 37 from U.S. 101 to Atherton Ave.	A	Eastbound	Within LOS Standard; No Action
10	Red Hill Road from Sir Francis Drake Blvd to Hilldale Drive	B	Westbound	Within LOS Standard; No Action
18	Tiburon Blvd. (State Route 131) from U.S. 101 to Strawberry Drive	A	Eastbound	Within LOS Standard; No Action
20	Bridgeway Blvd. (U.S. 101 to U.S. 101*	B	Northbound	Within LOS Standard; No Action
21	US 101 from San Francisco County Line to Shoreline Highway (State Route 1) *	A	Northbound	Within LOS Standard; No Action
24	Novato Bl. from Wilson Ave. to Diablo Ave. *	C	Northbound	Within LOS Standard; No Action
	Non-Grandfathered, LOS Standard Not Met			
15	Interstate 580 from Sir Francis Drake Blvd. to Richmond/San Rafael Bridge	**F**	Eastbound	Monitoring during bridge construction work, No deficiency plan needed
	Grandfathered, LOS Standard Met			
2	U.S. 101 from Atherton Ave. to Sonoma County Line	E	Northbound	Within LOS Standard; No Action
6	Bel Marin Keys Blvd from U.S. 101 to Commercial Blvd.	B	Westbound	Within LOS Standard; No Action
7	U.S. 101 from North San Pedro Rd. to State Route 37*	A	Northbound	Within LOS Standard; No Action
8	U.S. 101 from Mission Ave. to N. San Pedro Rd.	C	Northbound	Within LOS Standard; No Action
9	Sir Francis Drake Blvd. from San Anselmo Ave. to Red Hill Ave.	C	Westbound	Within LOS Standard; No Action
12	Sir Francis Drake Blvd. from College Ave. to Wolfe Grade	C	Westbound	Within LOS Standard; No Action
14	Interstate 580 from Bellam Blvd to - Sir Francis Drake Blvd.	E	Eastbound	Within LOS Standard; No Action
19	Shoreline Highway (S.R. 1) from Northern Avenue to Almonte Blvd.	B	Northbound	Within LOS Standard; No Action
22	Sir Francis Drake Blvd. from Butterfield Rd. to State Route 1 *	D	Westbound	Within LOS Standard; No Action
23	Sir Francis Drake Blvd. from College Ave. to Toussin Ave.	C	Westbound	Within LOS Standard; No Action
	Grandfathered, LOS Standard Not Met			
11	U.S. 101 from Interstate 580 to Mission Ave.	**F**	Northbound	Project to add HOV lanes under construction; to be completed in 2008
13	U.S. 101 from Sir Francis Drake Blvd. to Interstate 580*	**F**	Northbound	HOV lanes reserved; to open when Segment 11 opens
16	East Sir Francis Drake Blvd from U.S. 101 to Larkspur Landing Circle	**F**	Eastbound	Improvement Strategy in development; funded with toll bridge revenue (RM2)
17	U.S. 101 from Shoreline Highway (S.R. 1 to Tiburon Blvd. (S.R. 131) *	**F**	Northbound	Congestion resulting from spillback on Segment 11; Segment 11 project to address this deficiency

3.0 SYSTEM PERFORMANCE

3.1 Purpose and Intent of Legislation

The California Government Code requires the Congestion Management Agency to establish performance measures to evaluate current and future multimodal system performance for the movement of people and goods.[4] Consistent with past CMPs, eight performance measures are included in this CMP and described in this chapter. The measures should not be confused with "standards," as no level of performance is required. Rather, a measure simply indicates the level of performance at a given time.

The first part of this section describes the current transit system in Marin. The next section describes the eight performance measures. The eight performance measures that are discussed are:

1. Highway Level of Service
2. Peak-Hour Travel Time
3. Person Throughput
4. Vehicle Miles Traveled on Congested Highways
5. Jobs/Housing Balance
6. Transit Headways
7. Transit Coordination
8. Pedestrian and Bicycle Investment

The performance measures help determine whether the goals of the CMP are being met: supporting mobility, air quality, land- use, and economic objectives. The measures are also used in the development of the Capital Improvement Program, deficiency plans, and the land-use analysis program. A *Performance Measures Monitoring Report 2007* prepared by PHA Transportation Consultants for TAM in January 2007 contains detailed information on these measures.

3.2 Existing Transit Operations in Marin County

The transit network is comprised of a variety of services within Marin County. These include:

- General public transit bus service for both inter- and intra-county trips;
- General public ferry service, provided by two operators, serving trips between Marin County and San Francisco;

[4] California Government Code Section 65089(b)(2)

- Specialized transit services aimed at serving the needs of the elderly and disabled populations in the County; and
- Privately operated services, providing targeted service between specific locations, such as the service between Marin County and San Francisco International Airport.

The criteria used to establish CMP routes are:

- One-way, monthly ridership is greater than 5,000.
- Inter-county transit service using modes other than buses.

The following sections provide a brief description of the transit services offered in Marin County.

3.2.1 Golden Gate Transit

Golden Gate Transit (GGT) is the primary provider of public transit services in the county, serving both intra-county trips (via a contract with the Marin County Transit District) and travel between Marin County and Sonoma, San Francisco, and Contra Costa Counties. GGT services are operated by the Golden Gate Bridge, Highway and Transportation District. The District provides three major types of service: basic, local and commute. Route information is listed in Table 6.

The primary categories of bus service provided by GGT include:

- **Basic Service.** Basic service routes operate all day, seven days per week, providing wheelchair accessible trunk-line service between the Transbay Terminal and Civic Center in San Francisco or Richmond BART, and various suburban centers within Marin and Sonoma Counties. They provide the "backbone" service both within Marin County and between Marin and neighboring counties. The six routes are Routes 10, 40, 42, 70, 71, and 80.
- **Commute Service.** This service provides 21 routes that operate on weekdays except holidays, between residential neighborhoods within Marin County and the San Francisco Financial District and Civic Center employment centers during the A.M. and P.M. commute periods. Other service connects Sonoma County with Marin County and San Francisco. Commute service is generally operated in one direction only during commute hours and is not run at all during the midday and off-peak periods.
- **Local Service.** Twelve routes operate entirely within Marin County on weekdays, with limited weekend service, under contract with the Marin County Transit District. An additional 13 routes are operated as school-focused service on school days only, as detailed below.
- **Local Community Shuttle Service.** Three routes (221, 233, and 259) operated under contract to the Marin County Transit District. Service operates weekdays only.
- **Recreational Services.** A shuttle service operates between Muir Woods and Marin City. Schedules on the shuttle are adapted to the weekend and seasonal characteristics of the recreational travel demand.

- **School Service.** Route 107, 113, 115, 117, 123, 125, 126, 127, 139, 143, 145, 151 and 153 provide limited service on school days in Marin County.
- **Special Service.** These routes are provided to the general public for certain special events throughout the year, such as express bus service to San Francisco 49ers games. These routes are not part of the permanent schedule and are not included in the transit network.
- **Golden Gate Ferry Service.** The Golden Gate Bridge, Highway and Transportation District operate ferry services from Larkspur and Sausalito to San Francisco.

The routes sponsored by the Marin County Transit District are routinely monitored for performance. The dedication of additional resources has led to an expansion of local transit service, which in turn has increased local ridership. These trends are demonstrated in Figure 3.

3.2.2 Other General Public Transit Services

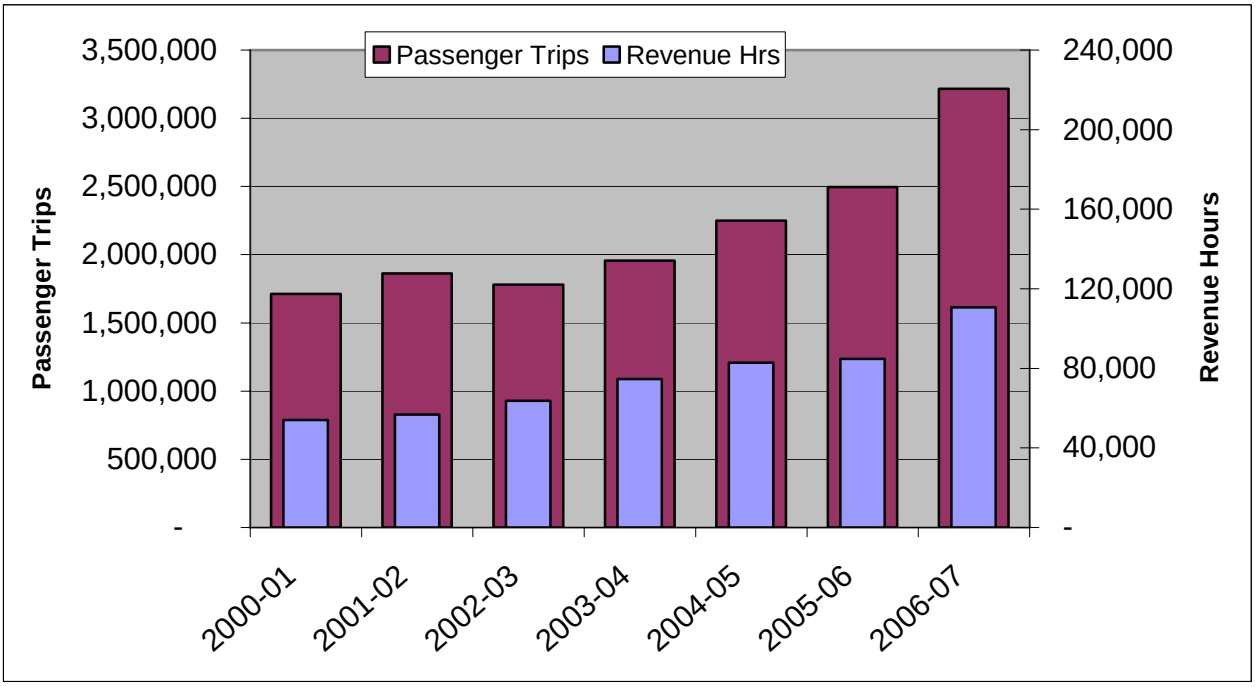
- **West Marin Stagecoach.** The Marin County Transit District operates the Stagecoach shuttle service in West Marin. Other general public shuttle transit services operating are the "EZ Rider" in Novato and the "Sally" in Sausalito.
- **County Shuttle.** This service is operated by Marin County Division of Health and Human Services (HHS). It provides service from the San Rafael Transit Center to the Marin County Civic Center.
- **Sonoma County Transit.** Sonoma County Transit operates one commuter route (one outbound A.M. bus and one inbound P.M. bus) from the Sonoma Valley to San Francisco.
- **Greyhound.** Greyhound operates interregional service routes along the U.S. 101 corridor. This includes three routes daily departing from the San Rafael Transit Center to downtown San Francisco.

TABLE 6. GOLDEN GATE TRANSIT ROUTES AND HEADWAYS

After March 2005			As of August 2007		
Route	Route Type: Description	Approx. Headway (minutes)	Route	Route Type: Description	Approx. Headway (minutes)
2	Commute: SF to Marin Headlands	21	2	Commute: SF to Marin Headlands	15-21
4	Commute: Mill Valley to SF	10	4	Commute: Mill Valley to SF	10
8	Commute: Tiburon to SF	36	8	Commute: Tiburon to SF	51
9	Commute: Tiburon Ferry to Strawberry	50	9	Commute: Tiburon Ferry to Strawberry	85
10	Basic: Sausalito to Tiburon	60	10	Basic: Sausalito to Tiburon	60
17	Did not Exist		17	Local: Marin City to San Rafael	11-30
117	School: East Corte Madera to Hall M.S.	11	117	School: East Corte Madera to Hall M.S.	1
18	Commute: College of Marin to SF	20	18	Commute: College of Marin to SF	16-29
19	Did Not Exist		19	Commute: Marin City to Tiburon	60
22	Basic: San Anselmo to Sausalito	60	22	Basic: San Anselmo to Sausalito	30-54
23	Basic: Fairfax to San Rafael		23	Basic: Fairfax to San Rafael	30
24	Commute: Fairfax to San Rafael	5	24	Commute: Fairfax to San Rafael	7-11
26	Commute: Sleepy Hollow to SF	14	26/27	Commute: Sleepy Hollow to SF	2 runs
29	Basic: San Rafael to San Anselmo	30	29	Basic: San Rafael to San Anselmo	30
35/36	Basic: East SR to San Rafael to Mar City	15	35/36	Basic: East SR to San Rafael to Marin City	9-30
38	Commute: Terra Linda to SF	25	38	Commute: Terra Linda to SF	27
139	School: Lucas Valley to Terra Linda High	20	139	School: Lucas Valley to Terra Linda High	20-30
40/42	Basic: San Rafael to Del Norte BART	23	40/42	Basic: San Rafael to Del Norte BART	11-40
44	Commute: Lucas Valley to SF	25	44	Commute: Lucas Valley to SF	35-60
45	Did Not Exist		45	Local: San Rafael to Kaiser Hosp Ngate	60
49	Did Not Exist		49	Local: San Rafael to Ignacio	60
51	Did Not Exist		51	Local: San Marin to Ignacio	60
52	Did Not Exist		52	Local: Novato to Ignacio	59
54	Commute: San Marin to SF	15	54	Commute: San Marin to SF	16-30
56	Commute: Novato to SF	20	56	Commute: Novato to SF	12-27
58	Did not Exist		58	Commute: SF to Hamilton/Ignacio	25
60	Commute: San Rafael to SF	30	60	Commute: San Rafael to SF	4 runs
66	Did not Exist		66	Local: Manzanita (Mar City) to Muir Woods	30
72	Commute: Santa Rosa to SF	15	72	Commute: Santa Rosa to SF	2-40
73	Commute: Santa Rosa to SF	30	73	Commute: Santa Rosa to SF	4 runs
74	Commute: Santa Rosa to SF	21	74	Commute: Santa Rosa to SF	5 runs
75	Commute: Santa Rosa to East S Rafael	23	75	Commute: Santa Rosa to East San Rafael	4 runs
76	Commute: East Petaluma to SF	5	76	Commute: East Petaluma to SF	7-23
80	Basic: Santa Rosa to SF	30	80	Basic: Santa Rosa to SF	30
91	Did not Exist		91	Commute: Larkspur Ferry to SR Transit Ctr	30-60
93	Commute: GG toll plaza to Mission Street	20	93	Commute: GG toll plaza to Mission Street	15
97	Commute: Larkspur Ferry to San Rafael	1 run	97	Commute: Larkspur Ferry to San Rafael	1 run
107	St. Hilary's Sch to Tam HS to Mar City	19	107	St. Hilary's Sch to Tam HS to Marin City	1 run
113/115	Paradise Clay/Tiburon to Redwood High	20	113/115	School: Paradise Clay to Redwood H.S	1 run
114	Did not Exist		114	Local: Redwood HS to S Rafael Transit Ctr	1 run
123	Did not Exist		123	Local: Glen Drive to 4th & Greenfield	3-11
125	Did not Exist		125	Local: Lagunitas Schl to San Anselmo Hub	2 runs
126	School: San Rafael to Brookside Schools	9	126	School: San Rafael to Brookside Schools	1-5
127	School: Sleepy Hollow to White Hill	10	127	School: Sleepy Hollow to White Hill	9-48
143	School: Sausalito to Tamalpais High	60	143	School: Sausalito to Tamalpais High	3 runs
145	Did not Exist		145	School: S Rafael Transit Ctr to Terra Linda	3 runs
151	Did not Exist		151	School: Novato to Hamilton	1 run
153	Did not Exist		153	School: San Marin to Novato	2 runs

Source: Golden Gate Transit Website, 2007.

FIGURE 3. MARIN COUNTY TRANSIT DISTRICT TRENDS, FY 2000 TO FY 2006



Source: Marin County Transit District

3.2.3 Specialized Transit Services

- **Whistlestop Wheels.** The Marin County Transit District contracts with the Paratransit Coordinating Council to provide a local paratransit service known as "Whistlestop Wheels." Services are available from 6 A.M. to 1 A.M. seven days a week. Approximately 40 lift-equipped vehicles are used to provide service, which is a door-to-door ridesharing program. Approximately 85,000 annual passenger trips are provided on local Whistlestop Wheels paratransit service. Inter-county paratransit service is provided seven days a week, under an agreement between Golden Gate Transit and Marin County Transit District. The inter-county service area includes Sonoma, San Francisco, and Contra Costa counties in addition to Marin County. The statistics for this service are demonstrated in Table 7.

TABLE 7. WHISTLESTOP PERFORMANCE STATISTICS, FY 2000 TO FY 2006

Fiscal Year	Total Cost	Service Hours	Passenger Trips	Fare Revenue
2000-01	$1,509,480	43,314	70,293	**$86,131**
2001-02	$1,014,023	43,895	76,122	**$90,733**
2002-03	$1,127,648	44,469	76,609	**$91,576**
2003-04	$1,263,636	44,567	83,764	**$123,238**
2004-05	$1,444,588	45,364	83,961	**$164,006**
2005-06	$2,534,613	39,458	86,465	**$167,029**

Source: Marin County Transit District

- **Other Agencies.** A number of other agencies provide specialized transportation in Marin County. Most of these services provide access to specific programs, and are not used for general-purpose trips. These services are operated primarily by non-profit and volunteer organizations, and their eligibility criteria, cost, and availability vary widely.

3.2.4 Private Transportation Operators

- **Marin Airporter.** Marin Airporter is the largest private provider of transit services in Marin County. Their service area includes Novato, Ignacio, Terra Linda, Larkspur, Mill Valley and Sausalito. Airport service to San Francisco International Airport is provided on a fixed schedule every 1/2 hour from 4:30 A.M. until 11:00 P.M. every day. In addition to the airport service, Marin Airporter manages a charter operation.
- **Sonoma County Airporter.** Sonoma County Airporter serves Oakland International Airport with a stop in San Rafael.
- **Blue and Gold Fleet.** Commute service and recreational service between Marin County (Tiburon) and San Francisco is provided on the Blue and Gold Fleet's Tiburon Ferry. Blue and Gold also provides recreational service between Marin County (Sausalito) and San Francisco (Fisherman's Wharf).

3.3 Bicycle and Pedestrian Programs

TAM and other jurisdictions have a commitment to non-motorized transportation programs. This commitment extends to all levels of planning and funding, including a portion of TAM-administered Measure A funds.. Strategy 4 of the Measure A Strategic Plan specifically designates shares to help fund Safe Routes to Schools, Crossing Guards, and Safe Pathways to School programs. In addition, local transportation infrastructure projects funded by Strategy 3, make bicycles and pedestrians eligible for funding. The measure's Strategy 1 also funds Lincoln Hill Multi-Use Path as part of the US 101 HOV gap closure project.

Marin County also participates in a Federally funded non-motorized Transportation Pilot Program as one of four demonstration locales spread throughout the nation. This project, funded by Section 1807 of the Federally-authorized SAFETEA-LU legislation, provides a way to measure the performance and results of investments in the bike/ped system that has become a national model.

As required by SAFETEA-LU, highway projects in Marin County also consider bicycle and pedestrian needs in their design and construction. Active elements for bicycle and pedestrian needs are included in these projects:

- US 101 Marin/Sonoma Narrows project
- Tiburon Wye
- Greenbrae Corridor Improvement Project
- 580/101 Interchange (Bellam Boulevard & E. Francisco Boulevard)

Through implementation of projects sponsored by Regional Measure 2, Marin County benefits from having several projects funded. These projects include:

- Full funding of the Cal Park Hill Tunnel Project
- Design and Phase 1 construction of the Central Marin Ferry Connector Project across Sir Francis Drake Boulevard.
- Safe Routes to Transit grant to San Rafael for a multi-use connector between Lincoln Hill Path and Downtown Transit Center

Additional funding of bicycle and pedestrian improvements in Marin County are provided through targeted funding sources, including:

- Transportation Funds for Clean Air (TFCA)
- Transportation Development Act (TDA) Article 3
- Regional Bicycle/Pedestrian Funds

In response to these programs, local jurisdiction staff have identified some of the significant contributions to pedestrian and bicycle projects. These are summarized in Table 8.

TABLE 8. LOCAL PEDESTRIAN AND BICYCLE PROJECT HIGHLIGHTS

Jurisdiction	Monitoring Results
Belvedere	Installed pedestrian sidewalks between city hall and community Road. Installed pedestrian sidewalk at 500 block of San Rafael Ave to improve pedestrian access. Developed plans for 10 handicapped ramp access at various locations throughout the city.
Corte Madera	Completed Class 1 bike lane on San Clemente Street. Completed sidewalk project on Corte Madera Ave.
Fairfax	Work on Center Boulevard project, both with pedestrian and bicycle components, work on a Safe Route to School project, and installed pedestrian crosswalks on SFD Boulevard.
Larkspur	Applied and received funding for SFD Boulevard Bike and Pedestrian Multiuse Bridge Project. Applied for funding for Magnolia Avenue Class I bike lane and pedestrian path extension project.
Mill Valley	Reconfigured pedestrian median on Camino Alto at Miller Avenue to improve pedestrian visibility. Installed pedestrian barricade at Miller Avenue near Camino Alto to improve safety. Added theromoplastic striping at various pedestrian cross-walks to increase visibility.
Novato	Installed Class II bike lane on Diablo Road between Novato Boulevard Center Street, Ignacio Boulevard between Laurel Wood and Creekside, Red wood Road between Lamont and Olive. Upgraded pedestrian bridges at Simmons Lane and Novato Creek. Added bike racks on sections of Grand Avenue.
Ross	Applied for a TDA grant for a pedestrian path on SFD between Laurel Grove and kentfield. Participated in the Marin County Master Bike Plan Update.
San Rafael	Developed plans and obtained funding for a citywide signage program for Class III bike lane. Applied for two Sate Route to School Grant for traffic calming projects to improve pedestrian access.
Sausalito	Installed Class 1 bike lane connector on Bridgeway Boulevard between Johnson and Mono Ave.
San Anselmo	Applied for Safe Route to School Grant for sidewalk improvement on Ross Ave. between Jones Street and Sunnyside Ave.
Tiburon	Completed a Class II bike lane on Trestle Glen Boulevard. Participated in the Marin County Master Bike Plan Update.
Marin County	Implemented Adult Crossing Guard Program to improve students safety at major routes to school throughout the county. Prepare and coordinate Countywide Master Bike Plan Update in conjunction with towns and cities with county jurisdictions.

Source: PHA Consultants, 2007.

3.4 Performance Measures

The eight performance measures described below allow TAM to measure transportation system performance in Marin County.

3.4.1 Roadway Segment Level of Service

This performance measure provides an overview of the operating level of the Marin CMP roadway network. It is described in detail in Chapter 2.

3.4.2 Aggregate Peak Hour Travel Time

This performance measure describes the time required to travel through selected corridors on a variety of modes. Because single-occupant, high-occupant, and transit vehicles travel at different

speeds, aggregate travel time between two points for all modes effectively describes the system's performance. To determine peak-hour travel times by single-occupant and high-occupant vehicles, travel time runs would be required for two given days at the peak hour in the peak direction. Transit schedules have been used to determine travel times via buses. For the Marin CMP, aggregate travel times have been developed for four segments:

1. U.S. 101 between the Sonoma County line and San Rafael Transit Center
2. U.S. 101 between San Rafael Transit Center and the Golden Gate Bridge
3. Sir Francis Drake Boulevard between Butterfield Road and U.S. 101
4. Red Hill Avenue, Second and Third streets between Sir Francis Drake Boulevard and San Rafael Transit Center

Table 9 lists the results of the peak hour travel time monitoring. The samples for the AM peak hour began between 7:30 and 8:30 AM, and the samples for the PM peak hour began between 4:30 and 5:30 PM.

TABLE 9. CORRIDOR PEAK HOUR TRAVEL TIME MONITORING RESULTS

			2005 (minutes)			2007 (minutes)		
Study Corridor			**Auto**	**HOV**	**Bus**	**Auto**	**HOV**	**Bus**
U.S. 101 from San Rafael Transit Center to Sonoma County Line	AM	NB	11	N/A	33	18	18	45(A)
		SB	28	22	48	30	29	66(A)
	PM	NB	15	12	38	25	26	51(A)
		SB	11	N/A	38	19	N/A	52(A)
U.S. 101 from San Rafael Transit Center to Golden Gate Bridge	AM	NB	10	N/A	34	13	N/A	40(B)
		SB	13	12	30	13	13	31(B)
	PM	NB	33	15	50	19	17	47 (B) 35
		SB	11	N/A	30	12	N/A	(B)
Sir Francis Drake Boulevard from Butterfield Rd. to U.S. 101	AM	NWB	5	N/A	23	12	N/A	N/A
		SEB	8	N/A	N/A	17	N/A	31(C)
	PM	NWB	16	N/A	N/A	14	N/A	26(C)
		SEB	8	N/A	23	12	N/A	N/A
Red Hill Avenue from Sir Francis Drake Boulevard to San Rafael Transit Center)	AM	NWB	10	N/A	13	7	N/A	17(D)
		SEB	17	N/A	13	7	N/A	N/A
	PM	NWB	6	N/A	13	7	N/A	19(D)
		SEB	14	N/A	13	7	N/A	N/A

Source: 2005 travel times – Wilbur Smith Associates, 2007 travel times – PHA. Travel time runs were conducted three times in each direction during the commute periods. Transit travel times were estimated based on bus schedules. (A) Estimated based on commute bus Route 70 & 80 between San Rafael Transit Center – Petaluma Depot (B) Estimated based on commute bus route 70 & 80 from San Rafael Transit Center and Golden Gate Bridge Toll Plaza. (C) Estimated based on commute bus Route 24 between San Anselmo Transit Hub and US 101/Lucky Drive Bus Pad. (D) Estimated based on commute bus Route 24 between San Rafael Transit Center and SFD/Butterfield intersection

3.4.3 Person Throughput

This performance measure identifies the number of people, not vehicles, who are able to move over a given facility in the peak period. As a combination of vehicle occupancy and level of service, this measure recognizes that transit service and HOV lanes can benefit corridor capacity. Roadways capacity is defined in terms of vehicles per hour. Well-utilized HOV lanes can

contribute to roadway capacity, as they can carry more persons per lane than a mixed-flow lane. Finally, buses are defined as additional roadway capacity. This measure is estimated for future years by analyzing Marin Travel Model outputs.

Existing conditions for this measure are obtained through a regular monitoring process. Monitoring of this measure requires that the number of riders and the seats on buses in a peak hour in each direction be defined. It requires observing travel volumes, as well as the average vehicle occupancy on a given mixed-flow or HOV lane. These locations are on CMP facilities that are representative congestion points, including:

- U.S. 101 between Interstate 580 and Central San Rafael
- U.S. 101 between Paradise Drive and the Tiburon Boulevard
- U.S. 101 north of Atherton Avenue
- Sir Francis Drake Boulevard west of U.S. 101
- Sir Francis Drake Boulevard north of Red Hill Avenue
- Red Hill Avenue east of Sir Francis Drake Boulevard

Table 10 lists the results of the person throughput monitoring for the P.M. peak hour period.

TABLE 10. PERSON THROUGHPUT MONITORING RESULTS – PM PEAK HOUR

	2005				2007			
Segment	**Transit Person**	**Auto Person**	**Van Pool Person**	**Total Person**	**Transit Person**	**Auto Person**	**Van Pool Person**	**Total Person**
US 101- NB (I-580 – Central San Rafael)	2,205	11,127	0	13,332	880	6,758	350	7,988
US 101 - NB (SR 131 – Paradise Dr.)	4,680	11,631	110	16,421	1100	6,762	250	8,112
US 101 - NB (North of Atherton)	1,080	4,026	11	5,117	520	3,846	250	4,616
Sir Francis Drake Boulevard – NWB (East of Wolf Grade)	0	3,497	0	3,497	190	2,381	10	2,581
Sir Francis Drake Blvd – NWB (North of Red Hill Rd)	1,620	3,986	0	5,606	646	2,165	20	2,831
Red Hill Avenue – NWB (East of SDF Boulevard)	315	3,460	0	3,775	190	1,736	10	1,936

Source: PHA 2006 traffic survey, Golden Gate Transit District Ridership Data 2006, and 511.org 2006 vanpool data. The above analysis is for the commute direction only, i.e. leaving San Francisco and/or US 101. Transit person for Sir Francis Drake and Red Hill Ave. were estimated on actual bus count in the field times an estimated load of 38 person/bus. Transit person data for US 101 are estimated based on the scheduled bus passed the study segment obtained from times an estimated load of 40 persons per bus. Vanpool data are provided by 511.org vanpool division.

3.4.4 Vehicle Miles of Congested Highway

This performance measure, derived from the Marin Travel Model, measures vehicle miles traveled on congested segments of the freeway system in Marin County. Congested segments are highway segments at LOS E or worse (volume-to-capacity ratio greater than one). This measure provides an understanding of the relative extent of congestion on the freeway portion of the CMP roadway system. Table 11 lists the results of the vehicle miles traveled on congested roadways.

TABLE 11. VEHICLE MILES TRAVELED ON CONGESTED ROADWAY MONITORING RESULTS

Measure	2005	2030	% Changes
Total PM Peak Hour Vehicle Miles Traveled	593,974	802,961	35.18%
Total PM Peak Hour Vehicle Miles Traveled in Congested Conditions	56,712	222,710	292.70%
Percent Vehicle Miles Traveled in Congested Conditions	10%	28%	180.00%

Source: Marin County Traffic Model – Transportation Authority of Marin, 2006

3.4.5 Jobs/Housing (Employed Residents) Balance

This performance measure considers the balance between projected employed residents and projected jobs within different planning areas of the county. Achieving a balance between jobs and housing within a community or area can help the regional transportation system by reducing the length of trips and traffic congestion. Table 12 lists the results of Bay Area Jobs-Housing balance projections.

TABLE 12. BAY AREA JOBS / HOUSING BALANCE PROJECTIONS

Category	2000	2015	% Change	2030	% Change
Employed Residents					
Alameda	709,557	33,300	17.44%	1,032,100	23.86%
Contra Costa	461,992	541,800	17.27%	667,800	23.26%
Marin*	***131,959***	***144,200***	***9.28%***	***179,100***	***24.20%***
Napa	59,886	75,520	26.11%	93,700	24.07%
San Francisco	437,553	453,400	3.62%	558,700	23.22%
San Mateo	369,725	375,500	1.56%	464,600	23.73%
Santa Clara	863,432	874,300	1.26%	1,086,300	24.25%
Solano	182,964	226,500	23.79%	269,800	19.12%
Sonoma	35,069	280,800	19.45%	346,700	23.47%
Total Jobs					
Alameda	750,160	884,970	17.97%	1,088,870	23.04%
Contra Costa	371,310	439,020	18.24%	543,860	23.88%
Marin*	***134,180***	***148,490***	***10.66%***	***173,580***	***16.90%***
Napa	66,360	82,930	24.97%	91,920	10.84%
San Francisco	642,500	673,870	4.88%	829,090	23.03%
San Mateo	386,590	400,000	3.47%	507,090	26.77%
Santa Clara	1,044,130	1,077,050	3.15%	1,339,970	24.41%
Solano	136,740	175,900	28.64%	217,910	23.88%
Sonoma	221,490	265,020	19.65%	328,310	23.88%
Jobs/Residents Ratio					
Alameda	1.06	1.06	0.45%	1.06	-0.66%
Contra Costa	0.80	0.81	0.82%	0.81	0.51%
Marin*	***1.02***	***1.03***	***1.27%***	***0.97***	***-5.88%***
Napa	1.11	1.10	-0.90%	0.98	-10.67%
San Francisco	1.47	1.49	1.22%	1.48	-0.15%
San Mateo	1.05	1.07	1.88%	1.09	2.46%
Santa Clara	1.21	1.23	1.87%	1.23	0.13%
Solano	0.75	0.78	3.91%	0.81	4.00%
Sonoma	0.94	0.94	0.17%	0.95	0.33%
Import(Export) Workers					
Alameda	40,603	51,670		56,770	
Contra Costa	-90,682	-102,780		-123,940	
Marin*	***2,221***	***4,290***		***-5,520***	
Napa	6,474	7,410		-1,780	
San Francisco	204,947	220,470		270,390	
San Mateo	16,865	24,500		42,490	
Santa Clara	180,698	202,750		253,670	
Solano	-46,224	-50,600		-51,890	
Sonoma	-13,579	-15,780		-18,390	

Source: Marin County Traffic Model, Transportation Authority of Marin, 2006; ABAG *Projections 2003.*

3.4.6 Transit Headway

This performance measure presents the time intervals, or headways, between successive in-service transit vehicles that pass by a single point. Proper headways ensure that individual routes operate at frequencies that are appropriate to the type of service they provide and adequately address both existing and potential ridership demand.

3.4.6.1 GOLDEN GATE TRANSIT BUS SERVICE

Golden Gate Transit Bus Service has had a significant reduction in service that was implemented during 2003. Detailed information on current schedules may be viewed on the Golden Gate Bridge, Highway & Transportation District website at http://www.goldengate.org. Recent service changes implemented as a result of budget cuts and restructuring are summarized on Table 6.

3.4.6.2 GOLDEN GATE TRANSIT FERRY SERVICE

Golden Gate Transit operates ferry services from two ports in Marin County:

- Larkspur to San Francisco (45 minute peak headways)
- Sausalito to San Francisco (90 minute peak headways)

3.4.6.3 BLUE AND GOLD FERRY SERVICE

Blue and Gold Ferry operates from two ports in Marin County:

- Tiburon to San Francisco (50 minute peak headways)
- Sausalito to San Francisco (75 minute peak headways)

3.4.7 Transit Coordination

This performance measure considers the extent to which transit service is integrated between service types and modes and with other transit services within the county or in adjacent counties. The coordination of regional transit services enhances seamless regional transit travel. Transit schedule coordination is measured at key transfer facilities between local and regional services. Table 13 lists the efforts for transit coordination with an indication of the objective, target and results of the 2007 monitoring.

TABLE 13. TRANSIT COORDINATION EFFORTS

Objective	Target	Monitoring Results
Convenient transfer within Marin County	Continue operation of existing transfer locations and establish additional locations and facilities.	All seven local and regional bus hubs in Marin County are in operation. A new facility in South Novato is currently under study.
Convenient regional transit connection	Continue coordination of regional service and fares with those of other local transit operators in Marin, San Francisco, and Sonoma Counties, and work toward joint fare agreement and service coordination with other public transit operators in the Bay Area	All local and regional transfers among local shuttles, Golden Gate Transit, and West Marin Stagecoach are accepted in Marin County through Marin County Transit District (MCTD) coordination.
Level of coordination with other modes	Continue to work with ride sharing agencies to increase the number of vanpool and carpools to jobs in Marin and San Francisco, as well as to facilitate bicycle and pedestrian access to transit routes.	MTCD had suggested a number of capital projects to improve pedestrian and bicycle access to transit.
Discount fares for senior and youth	Continue to provide discounted transit fare for seniors 65 and older and students 6-18.	MCTD has a 50% discount for youth and seniors age 65+. MTCD has operated a free-ticket program for students from low-income families to travel to and from school. This was later replaced by a six-month pass program.
Deficiency plan participation	Work with local operators, local jurisdictions and Bay Area Air Quality Management District to implement transit improvements as potential deficiency plan actions.	MTCD has not been involved in deficiency plans but will participate if invited.

Note: Regional and local bus hubs: San Rafael Transit Center, Marin City Hub, Novato, San Anselmo, Strawberry, Marin Civic Center, Tiburon Ferry Terminal, Sausalito Ferry Terminal, Larkspur and Ignacio bus pad.

3.4.8 Pedestrian and Bicycle Investment

The purpose of this measure has traditionally been to ensure that pedestrian and bicycle travel is being accommodated in new transportation improvement projects. Measure A includes funding for local infrastructure projects, school-related congestion and safer access to schools projects. Bicycle and pedestrian issues are required to be examined for every transportation project, and most projects contain many elements that improve bicycle and/or pedestrian access and safety. As this element is now a component of all projects rather than tracked as a separate investment, the importance of non-motorized projects are now discussed as a permanent section in this CMP chapter rather than separated as a single performance measure.

4.0 TRAVEL DEMAND MANAGEMENT

4.1 Purpose and Intent of Legislation

California Government Code section 65089(b)(3) requires that a Travel Demand Management (TDM) element be a part of every CMP. Assembly Bill 2419, which became effective January 1, 1997, eliminated the requirement for a "trip reduction" component to this element, leaving only the "travel demand" component. According to the revised CMP legislation, the TDM element should promote:

- Alternatives to the single-occupant automobile, e.g., carpools, vanpools, transit, and bicycles
- Increased use of park-and-ride lots
- Improvements in the balance between jobs and housing
- Other strategies for reducing vehicle trips, including flexible work hours, telecommuting, and parking management programs

The agency must also consider parking cash-out programs during the development and update of the travel-demand element.

Responsibility for planning future land use and zoning patterns and for reviewing proposed development plans rests with local government. Both long-range planning and development-review phases of local planning offer local governments' opportunities to ensure that TDM measures are implemented. Although not required, local governments may choose to support (by resolution or other means) regional TDM measures, such as carpool lanes and ridesharing facilities that would be implemented by other agencies (e.g., Caltrans).

In the long-term, peak-period travel speeds are forecast to deteriorate on segments of U.S. 101, especially where no capacity increases are likely. Along with adding highway capacity and improving local transit service in response to this growing traffic, it is also important to improve the operating efficiency of the existing transportation system through TDM measures. The TDM element of the CMP encourages an on-going process that promotes local and regional planning to reduce traffic congestion.

4.2 Travel Demand Management in Marin County

The intent of this element is to summarize the widest possible range of choices to the County and its eleven cities in implementing the overall goal of reduced peak-hour usage of single-occupant vehicles. The TDM measures proposed fall into four broad categories:

- **Traffic operation improvements** that improve traffic flow. These improvements could come through such diverse sources as increased ridesharing or minor modifications to the highway system.

- **Transit improvements** that attract more riders to transit systems.
- **Traffic mitigation measures** that are intended to reduce traffic generated by a development or planning area and are applied through employers or developers.
- **Land-use planning and regulation** that seek to limit demand for transportation or to mandate implementation of traffic mitigation techniques through the land-use planning or approval processes.

These classifications overlap to some extent. For example, development permit approval may require traffic mitigation measures, and traffic mitigation may include greater use of public transit. The classification system focuses primarily on the entity responsible for implementation.

In general, traffic operational improvements are implemented by state and local highway departments; transit improvements are sponsored by transit agencies; traffic mitigation measures are implemented by employers or developers; and planning and regulatory techniques fall under the jurisdiction of local planning agencies. Effective traffic mitigation requires coordinated and systematic action by both the public and the private sectors.

4.3 Consistency with Pertinent Air Quality Plans, as Incorporated in the RTP

The Bay Area's Regional Transportation Plan (RTP) incorporates Transportation Control Measures (TCMs) contained in federal and state air quality plans to achieve and maintain standards for ozone and carbon monoxide. The statutes require that the Capital Improvement Program (CIP) of the CMP conform to transportation-related vehicle emission air quality mitigation measures. CMPs should promote the region's adopted TCMs for the federal and state clean air plans.

The Marin CMP includes numerous project types and programs that are identified in the TCM plan. Table 14 lists chapters of the Marin CMP that address specific TCMs. Currently, there are no unmet TCMs in the Bay Area's implementation plans for air quality.

TABLE 14. CORRELATION OF BAY AREA CLEAN AIR PLAN TCMS WITH CMP

TCM*	Description	Where Addressed in CMP
S1, F9	Support voluntary employer-based trip reduction programs.	Chapter 4, Travel Demand Management
S3, F3	Improve area-wide transit service.	Chapter 7, Capital Improvement Program
S5	Improve access to ferries.	Chapter 7, Capital Improvement Program
S7	Improve ferry service.	Chapter 7, Capital Improvement Program
S8, F4, F20	Construct carpool/express bus lanes on freeways.	Chapter 7, Capital Improvement Program
S9	Improve bicycle signage, access and facilities.	Chapter 7, Capital Improvement Program
S10	Youth transportation.	Chapter 3, Performance Measures Element
S12	Improve arterial traffic management.	Chapter 7, Capital Improvement Program
S13, F21, F22	Transit use incentives.	Chapter 7, Capital Improvement Program
S14, F5	Improve rideshare/vanpool services and incentives.	Chapter 4, Travel Demand Management
S15	Local clean air plans, policies and programs.	Chapter 5, Land Use Analysis Program
S19	Pedestrian travel.	Chapter 7, Capital Improvement Program
S20	Promote traffic calming measures.	Chapter 7, Capital Improvement Program
F7, F8	Develop park-and-ride lots.	Chapter 7, Capital Improvement Program
F24, F25	Maintain and expand signal timing.	Chapter 7, Capital Improvement Program

Source: Bay Area Air Quality Management District

4.4 TPLUS Pedestrian and Transit-Oriented Design Toolkit

In May 2007, the Transportation Authority of Marin distributed the TPLUS Pedestrian and Transit-Oriented Design Toolkit. This document contains a number of development strategies which can be applied to achieve trip reduction. These include concepts on land use (density, intensity and mixed-use), urban design (site plans, building orientation and parking), improved connectivity (for local traffic, bicycles, pedestrian and transit), traffic management (traffic calming), street design (including paved roadways, sidewalks, landscaping and transit facilities), specific mobility needs for seniors and persons with disabilities, access to schools (transit, bicycle and pedestrian), educational programs, and parking guidance. The report contains “best practices” concepts that are most appropriate for application in Marin County.

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5.0 LAND USE ANALYSIS

5.1 Purpose and Intent of Legislation

California Government Code Section 65089(b)(4) requires that a CMP contain a program to analyze the impacts of land-use decisions made by local jurisdictions on the regional transportation system (both highways and transit).

The Land-Use Analysis Program must include an estimate of the costs to mitigate impacts of development on the highway and transit systems. The legislation allows the cost of mitigating interregional travel (trips that do not begin in Marin County or trips that travel entirely through Marin County) to be excluded from the mitigation cost estimate. Public and private (developer) contributions to regional transportation improvements may be credited.

The law does not change the role of local jurisdictions in making land-use decisions and in determining the responsibilities of project proponents to mitigate those impacts. However, TAM has the authority to withhold gas tax subventions to local governments provided by Proposition 111 if a local jurisdiction fails to meet the requirements outlined in the Monitoring and Conformance chapter of the CMP (Chapter 8). Further guidance on the Land-Use Analysis Program is found in the *Congestion Management Resource Handbook* (Caltrans, November 1990, pages 35-37).

The Land-Use Analysis Program is particularly important because it affects, or is affected by:

- The CMP Designated Transportation System and Roadway Level of Service Standards (see Chapters 1 and 2),
- Performance Measures (see Chapter 3),
- The Marin Travel Model, which is capable of analyzing land-use impacts on both highways and transit (see Chapter 6), and
- The Capital Improvement Program (see Chapter 7).

The intent of the Land-Use Analysis Program is to improve the linkage between local land-use decisions and regional transportation facility decisions; to better assess the impacts of development in one community on another; and to promote information sharing between local governments when the decisions made by one jurisdiction have an impact on another.

The Land-Use Analysis Program for the Marin CMP is a process designed to improve upon decisions about land-use and the spending of funds on highway and transit improvements in the county. The process is intended to work in a positive, cooperative fashion that supports the needs of local, county, regional and state governments.

TAM acts as a resource to local governments in performing transportation analyses of land use changes on the CMP designated transportation network. The Marin Travel Model is used to analyze local general plan updates and amendments and other major development decisions. The

California Environmental Quality Act (CEQA) provides a framework for such assessment. To avoid duplication, the Land-Use Analysis Program is intended to make maximum use of the CEQA process.

Cities can develop and maintain their own transportation models for use in local forecasting or impact analysis. However, their models should be approved by TAM for consistency with countywide and regional transportation models.

5.2 Land Development Projects Subject to Analysis

Marin County maintains an inventory of proposed development projects, known as "PROPDEV." PROPDEV includes all projects with at least five residential units or at least 5,000 square feet of non-residential use. The PROPDEV database file covers 40 items of information including location, project sponsor, acreage, zoning, square feet of building area, and status of development application.

Projects at the low end of the PROPDEV threshold are generally too small to effectively analyze using the Marin Travel Model. Large projects requiring a city or county general plan update or amendment should, however, be analyzed using the model. This approach is particularly attractive for four principal reasons:

1. General plan updates and amendments are normally processed well before any construction takes place. This provides more time for transportation impacts to be analyzed and mitigation measures developed than would occur if the analysis took place closer to actual project construction.

2. Existing general plans have already been incorporated into the Year 2030 land-uses for the countywide model, as well as for the MTC regional travel model. Thus, any land development project that conforms to the general plan should not materially alter the forecast results generated by computer analysis already completed for the CMP. Only *changes* in (or amendments to) existing general plans could cause significant change in the Year 2030 model forecasts.

3. A city or the county may consider general plan updates or amendments no more than four times during any year according to state law. This reduces the possible model runs that would be required.

4. Most (but not all) general plan updates or amendments are for developments of significant size.

5.3 The Land-Use Analysis Program: Analysis Tier Method

A two-tiered information and analysis process of local land-use impacts is instituted by the CMP. Under “Tier I,” local governments forward information on proposed general plan updates or amendments to TAM during the period when the local jurisdiction is reviewing the application. “Tier II” includes a biennial update of projected land uses for 10 years in the future to be used for

modeling both traffic and transit impacts. This two-tiered approach is discussed in more detail below.

5.3.1 Tier I

For Tier I, local governments forward information to TAM for any general plan updates or amendments concurrent with the local governments' approval process. By analyzing general plan updates or amendments rather than specific projects permitted under existing general plans, cities can proactively take into account regional transportation impacts and provide ways to finance transportation costs in advance of development proposals. Every application for a general plan update or amendment or major development proposal that would generate a net increase or decrease of 100 vehicle trips during the P.M. (afternoon) peak hour is to be forwarded to TAM for analysis. Local jurisdictions are responsible for determining which projects meet these criteria. The P.M. peak hour is most appropriate because for most roadway segments, traffic levels of service are worse during the P.M. peak hour than in the A.M. peak hour. Examples of projects that typically meet the 100-trip threshold include 100 single-family homes, 150 apartment units, 5,000 square feet of retail space, or 40,000 square feet of office space.

5.3.2 Tier II

Local jurisdictions are still responsible for reporting information for projects in the PROPDEV inventory. This inventory has a significantly lower threshold for all uses except retail space. Small projects in PROPDEV below the 100-trip threshold do not warrant a run of TAM's transportation model. Only large development proposals requiring general plan updates or amendments create a significant difference in the previously forecast Year 2030 travel demand. Future levels of service are based on the land use assumptions and corresponding travel demand forecasts based on current general plans. The information on each general plan update or amendments that should be forwarded to TAM includes:

- Precise location of the project(s), mapped, including street access location;
- Project land use(s) and number of dwelling units or square footage of development;
- Any available traffic studies, including trip generation rates assumed in determining whether the general plan update or amendment met the 100-trip threshold; and
- Expected occupancy of each land-use in Year 2030, with completion date and phasing.[5]

The TAM model run is to be incorporated into the local development review process. The local jurisdiction is responsible for identifying mitigations and costs as part of the Negative Declaration or Environmental Impact Report for the project. The local jurisdiction sends the environmental

[5] General Plans normally focus on build-out conditions. Since CMPs focus on a 7-Year CIP and a 7-10 year transportation modeling horizon, it is critical that the timing of development, in the general plan update or amendment, be addressed.

[7] "Jurisdiction" refers to the local government that has the greatest segment distance within its boundaries. Designation of a jurisdiction that has primary responsibility for the segment provides clear direction to who is responsible for preparation of deficiency plans.

document to TAM for referral and comment. TAM provides data on the number and percentage of interregional trips on facilities for which mitigations have been recommended.

Following approval of the general plan update or amendment or qualifying major development proposal, the local jurisdiction sends final project information and documentation to TAM so that TAM can conduct "Tier II" of the Land-Use Analysis Program.

TAM biennially runs the countywide computer model on the updated land-use and transportation network information provided by the planning departments of each local government in Marin County. This analysis would be based on all general plan updates or amendments received during the past year, as well as an assessment of the actual amount of development likely to be in place 10 years in the future based on PROPDEV's listing of "Approved" projects. Local governments are also responsible for advising TAM of all changes to the highway network and transit system based on their knowledge of developer mitigations, ordinance approvals, or changes to the circulation element of their general plan.

5.3.3 Tier I and Tier II Compliance

In order to comply with the requirements of Tier I and Tier II of the Land-Use Analysis Program, all jurisdictions in the county need to:

1. Biennially (in accordance with the County PROPDEV update schedule):

- Submit a complete account of all residential and commercial projects approved during the preceding year, and
- Continue to participate in the County's PROPDEV inventory.

2. During CEQA scoping process, submit information on all general plan updates and amendments and major project proposals involving a net change (increase or decrease) of 100 or more P.M. peak-hour trips.

3. As appropriate:

- Submit information on all highway network and transit system changes in their jurisdiction that result from: (1) project mitigations, (2) ordinance approvals, or (3) changes to the circulation element of their general plan.
- Adopt traffic LOS standards that are consistent with or more restrictive than the LOS standards in the CMP.
- Develop a multi-year Capital Improvement Program designed to meet the adopted LOS standards and support alternate modes of transportation.
- Consider adoption of local and regional development traffic mitigation fee programs consistent with requirements and intent of the CMP legislation. Low- and very low-income housing should specifically be exempt from mitigation fees. Development should be assessed only their fair-share of improvements to regional facilities.

- Comply with monitoring and conformance requirements as outlined in Chapter 8.

5.3.4 Example of the Process

The following are hypothetical examples provided to show how this process works:

1. Based upon the jurisdictions' land-use data provided to TAM under Tier II and the proposed Capital Improvement Program, a run of the Marin Traffic Model indicates that there would be no further reductions in level of service below the standards adopted in the CMP. In that case, local jurisdictions would be free to make any land-use changes or approvals without CMP analysis, provided that whatever decisions they make are consistent with the information that has been provided to TAM.

2. At some time in the future, a local government decides that it wishes to amend its general plan to allow for a new development to occur on 100 acres of land that had formerly been included in the Tier II land-use information. This area had been formerly zoned for agriculture but is proposed under the general plan amendment for single-family homes at six units per acre. These 600 proposed units would generate more than the threshold of 100 net new P.M. peak-hour trips, so the local government planning director, public works director, or traffic engineer forwards all of the general plan amendment application materials to TAM. Because of the size of the project, the local government also decides to hire (or have the applicant hire) a traffic engineer to prepare a detailed, comprehensive study of the proposed general plan amendment.

Under Tier I review, TAM would make modifications to its land-use database used in the Marin Travel Model. The model would be run, including all highway and transit improvements (not just those on CMP designated facilities) for which funds seem reasonably secure, and also any improvements the applicant is willing to pay for as a condition of development approval. Assume that the model run indicates that some arterial segments of the CMP designated roadway system would operate worse than the LOS D standard as a result of general plan amendment approval.

TAM would forward this information to the local agency, which would consider the reduction in level of service in making their decision to approve or not to approve the general plan amendment. In developing conditions for project approval, the local jurisdiction would then have the option of:

- Requiring additional mitigations from the developer, such as TDM measures (e.g., transit service, flex time, etc.), roadway improvements that would improve the LOS to the adopted standard, or other system improvements that would improve air quality as allowed by the CMP legislation.

- Delaying the project until a certain highway or transit project is constructed.

- Working closely with the TAM staff on development of a Deficiency Plan if it appears that a CMP system segment does not meet the adopted LOS standard.

- Choosing not to implement any of the above measures and risk having the LOS not meet the adopted standard on certain roadway segments. In this case, the local government would risk losing the increment of gasoline taxes provided by Proposition 111.

5.4 Relationship of the Land-Use Analysis Program to CEQA

Local governments continue to have lead agency responsibility for performing Environmental Impact Reports and Negative Declarations and conducting transportation analyses as part of these documents. Local government should continue to propose and analyze mitigation strategies. TAM may comment through the CEQA process, keeping local governments informed as to the adequacy of the analysis and approving any transportation models that are used for the analysis. TAM may also provide local governments with information on cumulative impacts.

5.5 Congestion Management Agency Experience with the Process

TAM (and previously the Countywide Planning Agency) has reviewed several land-use plans and projects since adoption of the first CMP in 1991. These reviews have demonstrated that the Land-Use Analysis Program as described above has generally been successful.

If any Marin County jurisdiction does not meet each of these CMP requirements by December 2007 when the CMA makes its non-conformance determination for each jurisdiction, that jurisdiction is found in non-conformance and may risk:

- Losing an increment in its gasoline tax subvention funds
- Not having projects programmed in the Regional Transportation Improvement Program (RTIP)

In the next two years, a more formalized compliance process is likely to be developed. Failure to participate in this new process may result in a finding of non-compliance for a local jurisdiction.

6.0 TRAVEL FORECAST MODEL

6.1 Purpose and Intent of Legislation

California Government Code Section 65089(c) requires that every CMA, in consultation with the regional transportation planning agency (MTC), cities, and the county, develop a uniform database on traffic impacts for use in a countywide travel demand model. It also requires that the countywide model be the basis for transportation models used for county sub-areas and cities, and that all models be consistent with the modeling methodology and databases used by the regional transportation planning agency. The CMA also approves sub-county area transportation models, and models used by local jurisdictions for land-use impact analysis, if local jurisdictions decide to perform this work on their own.

The purpose of this requirement is to guide the CMA decision making process in identifying the most effective balance of transportation programs and projects that maintain LOS standards. The purpose includes consideration of the benefits of transit service and TDM programs, as well as the need for projects that improve congestion on the CMP designated network. The modeling requirement is also intended to assist local agencies in assessing the impact of new development on the transportation system. TAM needs to consider the nature of the analysis, functions of specific analytic tools, and its available resources when deciding how to fulfill this requirement of the statutes.

6.2 Local Agency Requirements

At this time, there are no specific requirements of local agencies, other than supplying the base year land-use information that is noted in the land-use analysis chapter (Chapter 5). TAM expects to continue to operate its own countywide model, although cities may also create and use their own model, subject to the legislative requirements above.

TAM staff continually refines and updates the Marin Travel Model. This includes meeting with MTC regularly to review model consistency procedures and participating in the regional Modeling Coordination Subcommittee of the Bay Area Partnership. It also includes periodically reviewing network and land- use assumptions for base and future years for every model run performed for the Land-Use Analysis Program.

NOTE: Many technical terms are used in this chapter. A glossary of terms has been included in Appendix B.

6.3 Travel Demand Forecast Overview

A distinct and measurable relationship between travel demand, land-use patterns, and transportation systems is the basis for modern transportation planning practice. Transportation models have been developed as the best tools available to quantify this, but the relationship is complex, and research on more effective transportation modeling is still evolving.

CMP legislation requires consistency with the regional travel model. This section of the CMP summarizes the Marin Travel Model (hereinafter referred to as MTM) performance and its consistency with the MTC Travel Demand Model guidelines for CMPs.

6.4 Existing and Past Programs

Bay Area modeling has been characterized by extensive travel behavior studies and model development by the Metropolitan Transportation Commission (MTC), the recognized Metropolitan Planning Organization for the Bay Area. MTC has had the charge and the funding at the federal level to develop models of travel behavior since the early 1970's. Marin County, in developing its own travel demand model, has built on information and logic from the MTC model.

MTC is required to review any sub-regional model for consistency with the MTC model. TAM staff assists with any revisions to the model. The remainder of this chapter contains the MTC checklist and responses for model consistency. Items from the MTC checklist are provided in boxed quotes in Section 6.5 below.

MTC's goal is to establish a regionally consistent model "set" for application by MTC and the Bay Area CMAs. The Bay Area Partnership finalized a report on modeling consistency issues which recommended that MTC develop and the CMAs incorporate a consistent set of model components on desktop computers (termed BAYCAST). For immediate use for this CMP, the study recommended that the current MTC checklist format be used, with specific tolerances. This revised MTC checklist incorporates results of testing those tolerances, as well as additional analyses. Perhaps most important to TAM, the report found that, "…the Marin and San Mateo CMA model systems are the closest to the MTC model system. They use the same trip generation, mode split and assignment algorithms." Differences have been cited in Marin's use of "…finer network and zonal detail…" and "…locally calibrated friction factor curves…" and the need to use its "…own equations to derive additional demographic detail not provided in …ABAG forecasts." But these differences did not detract from the consistency assessment.

Land use forecasts for Marin County jurisdictions have not changed significantly between ABAG's *Projections 2003* and *Projections 2005*. In such measures as households, population, jobs and employed residents, the changes are less than one percent, well within the criteria applied by MTC to determine model consistency. Thus, Marin's response to the model consistency checklist, submitted by letter to MTC August 21, 2003 resulted in a finding of compliance. The August, 2003 letter requesting this finding also includes additional information regarding the small differences between the MTC and Marin Travel Model (MTM).

6.5 MTC Checklist for Modeling Consistency

> **Requirement:** This Checklist guides Congestion Management Agencies through their model development and consistency review process by providing an inventory of specific products to be developed and submitted to MTC, and by describing standard practices and assumptions to be followed.

Because of the complexity of the topic, the MTC checklist may need additional detailed information to explain differences in methodological approach or data. Significant differences are to be resolved between MTC and the CMA, taking advantage of the Modeling Coordination Working Group standard formats for model comparisons that have been developed. In the case of the MTM, no difference in data occurs that requires resolution.

6.5.1 Incremental Updates

Congestion Management Agency forecasts must be updated every two years to be consistent with MTC's forecasts. Alternative approaches to fully rerunning the entire model are available, including incremental approaches through the application of factors to demographic inputs or to trip tables. Similarly, the horizon year must be the same as the TIP horizon year; however, interpolation and extrapolation approaches are acceptable, with appropriate attention to network changes. These alternatives to full re-running of the model should be reviewed with MTC. The MTM is routinely updated to reflect new development and transportation projects within Marin County. The MTM conforms to the MTC consistency guidelines.

6.5.2 Defining the MTC Model Sets

> **Requirement:** Unless otherwise specified, the MTC model sets referred to below will be defined as those in use on October 1st of the year preceding the CMP update.

The model data sets used by MTC in October, 2006 have been those associated with the 2005 *Transportation 2030 Plan*. These data sets use data from Association of Bay Area Goverments' *Projections 2005*. In addition, most major projects are included in both MTC and MTM travel models.

6.5.2.1 APPROACH TO TRAVEL DEMAND MODELING IN MARIN COUNTY

Requirement: Describe the model, and its relationship to the MTC model. If the model is based on MTC's model, describe any adjustments to model constants, coefficients, k-factor or friction factor re-estimation, market segmentation, trip purposes, etc.

TAM operates and updates its own countywide travel demand model using information and logic from the MTC model. For the CMP, the Marin Travel Model (MTM) contains 117 traffic analysis zones (TAZs) within the county, 83 TAZs for San Francisco, 69 TAZs for Sonoma, and 24 TAZs corresponding with MTC "super-districts" for other Bay Area counties. Each of these zones and districts is connected to the others with a network of road and transit lines. Travel models use specialized software to predict P.M. and A.M. peak hour travel between these zones, and estimate Average Daily Traffic.

The MTM is a "focused" model, meaning that the network contains different structures inside and outside the focus area. The inside or focused counties for the MTM are San Francisco, Marin, and Sonoma Counties. Other Bay Area counties are outside the focused area. The primary difference is that the more detailed MTC network structure is included in focused areas, while a skeleton roadway network is structured outside. Because the network outside the focused areas is reduced, the speeds on the skeleton roadway network are fixed (not variable depending on capacity). Therefore, traffic volumes do not represent actual traffic volumes on these "unfocused" roadway links.

To further ensure regional consistency, the MTM uses a technique referred to as "balancing." This is done to guarantee that trip-end estimates and forecasts and trip flows between counties are roughly equal, whether provided by the MTC regional model or the MTM.

The MTM mode-choice procedure occurs after the person-trip generation and trip-distribution steps. It includes a detailed mode-choice analysis that predicts transit-person trips, 2-person vehicle-person trips, 3+ person vehicle-person trips, or drive alone vehicle-person trips for home-based-work trips. Simpler formulas are used to predict all other trip purposes, including home-based shopping trips, home-based social-recreational trips, home-based school trips, and non-home-based trips.

6.5.2.2 DEMOGRAPHIC/ECONOMIC/LAND-USE FORECASTS

Requirement: Use exact Association of Bay Area Governments (ABAG) Projections 2005 data for other Bay Area counties, and control totals (within one percent) for the county for population, households, jobs, and employed residents. Congestion Management Agencies may reallocate growth forecasts within their own county in consultation with cities, MTC, and ABAG. The latest set of ABAG's Projections must be used for all new demographic databases developed for baseline travel demand forecasting purposes after August 1 of the year preceding the CMP update. Future year forecasts should address the latest available ABAG Projection series. MTC, in consultation with the Modeling Coordination Working Group, will develop factors that may be used to achieve consistency with the most recent ABAG demographics. Congestion Management Agencies may also, of course, analyze alternative land-use scenarios in addition to these forecasts. If a land use based model is utilized, production and attraction comparisons will be made with the MTC model.

The MTM has been updated to be based on ABAG *Projections 2003* land use data. Land use data is sometimes unavailable from local jurisdictions, forcing estimates based on past data or overall growth in the area. This requires TAM to adjust its input as better data is acquired. As TAM has recognized inconsistencies in land uses by census tract it has made corresponding adjustments. Still, the overall land-use attributes for Marin County as a whole are consistent with ABAG. The difference between the MTM and ABAG *Projections 2005* is less than two percent for all the land-use categories. Land-use data outside of Marin is based on 2005 MTC *Regional Transportation Plan* land use assumptions.

Future-year allocations by census tract provided by ABAG have been similarly refined. For this reason, individual census tracts do not contain land-use attributes identical to ABAG *Projections 2003*, but the overall county total for 2030 is consistent with ABAG.

6.5.2.3 PRICING ASSUMPTIONS

Requirement: Use MTC's auto operating costs, transit fares, and bridge tolls.

The MTM has made adjustments for these regional pricing assumptions:

- **Bridge Tolls.** This assumes the $5.00 Golden Gate Bridge toll and $4.00 Richmond-San Rafael Bridge toll, adjusted to 1979 dollars.
- **Auto Parking Costs.** Auto parking costs have been kept at the 1979 fixed costs obtained from the 101 Corridor Study. The 101 Corridor Study set parking costs for San Francisco

ranging from 50 cents per day to $2.60 per day in 1979 dollars. No other auto parking costs are assumed in the focused area.

- **Auto Operating Costs.** An auto operating cost of 12.99 cents per mile is adjusted as needed to conform with the MTC guidance (which is defined in 1979 dollars).

6.5.2.4 NETWORK ASSUMPTIONS

> **Requirement:** Use MTC's regional highway and transit network assumptions for other Bay Area counties. Congestion Management Agencies should include more detailed network definition relevant to their own county in addition to the regional highway and transit networks. For the CMP horizon year, to be compared with the TIP interim year, regionally significant network changes in the base case scenario shall be limited to the current Transportation Improvement Program (TIP) for projects subject to inclusion in the TIP.

The MTM was first developed in 1987 and was revalidated for 2005. The MTM uses the MTC model structure facility types and numbers of lanes for Marin County. Some additional detail in the roadway network has been added where appropriate within Marin County. The MTM includes representations of these major roadway gateways into and out of Marin County:

- Highway 101 – (Golden Gate Bridge) San Francisco
- Interstate 580 – (Richmond/San Rafael Bridge) Contra Costa County
- Highway 37 – Sonoma County
- Highway 101 – Sonoma County
- Highway 1 – Sonoma County

In addition, ferry connections from Larkspur, Tiburon, and Sausalito to San Francisco are also assumed in the MTM.

Because this is a focused model, the East Bay and South Bay highway network are much less detailed than in the MTC model. A skeleton network in these locations significantly reduces run time for the model, and enables the model to be small enough to be operated on desktop computers. The impact of this network reduction is considered negligible to congestion in Marin County.

6.5.2.5 AUTO OWNERSHIP ASSUMPTIONS

> **Requirement:** Use MTC auto-ownership models or forecasts, or submits alternative models to MTC for review and comment.

The MTM uses MTC and ABAG information on auto ownership to establish mode split.

6.5.2.6 TRIP GENERATION

> **Requirement:** Use the BAYCAST person trip generation models for home-based work and non-work, and non-home based trips, or submit alternative models to MTC for review and comment. Results may be adjusted sub-regionally through calibration or modal constant adjustments.

The MTM uses household size and income quartile cross-classification modeling. The MTM then revises the results using adjustment factors designed to replicate actual MTC trip generation patterns between counties into the model. In this way, aggregate trip generation by county is also consistent with the MTC model. The difference in trip productions or attractions (by type of trip) between the MTM and MTC model is never greater than 0.1 percent.

6.5.2.7 TRIP DISTRIBUTION

> **Requirement:** Work trip distribution models must be calibrated to the 2000 Census Journey-to-Work commuter matrices. Trip distribution results must be balanced to productions, and attraction-balancing problems should be discussed with MTC.

The MTM uses MTC trip distribution patterns between counties. In this way, aggregate trip distribution by county is completely consistent with the MTC model. With this technique, the MTM has achieved a closer trip distribution match with the MTC model than is normally expected with a focused model structure. The difference between the two models is less than one percent for home-based work trips in any of the model years. For all other trip types, the largest difference occurs in the year 2030, where a discrepancy of 0.6 percent occurs between the two models.

6.5.2.8 MODE CHOICE

> **Requirement:** If a logit mode choice model is to be used, MTC's BAYCAST should be used, or submit alternative methodology for MTC review.

The MTM mode choice analysis is consistent with MTC methodology. For home-based work trips, the MTM contains a Home-Based Work Mode Choice Model that predicts work trips, dividing them into drive alone, 2-person, 3+ person and transit trips. Non-work trips are assigned to auto and transit with auto occupancies inputted at this stage.

6.5.2.9 TRAFFIC ASSIGNMENT

> **Requirement:** Use capacity restraint assignment for peak-hour (or period) traffic assignments, or submit alternative methodology for MTC review.

The MTM provides A.M. peak, P.M. peak, non-peak, Average Daily Traffic, traffic and transit assignments similar to MTC's methodology, with the same A.M. and P.M. peak- hour factor assumptions and external trip matrices.

6.6 Relationship to the Capital Improvement Program

The 2030 model run for the MTM includes all relevant projects listed in the State Transportation Improvement Program. These projects are incorporated into the 2030 base network in the MTM.

The MTM is used for assessing the impacts of capital improvements. CMP statutes stipulate three criteria for projects selected for the Capital Improvement Program (CIP):

- Projects must maintain or improve the traffic level-of-service and transit performance standards,
- Project land-use impacts must be mitigated, and
- Projects must conform to vehicle emissions and air quality mitigation measures.

Toward that end, the model results are typically used in evaluating relevant projects in the CIP chapter (Chapter 7), in preparing a project list for Regional Transportation Improvement Program consideration and for development and programming of any supplementary sources of revenue.

7.0 CAPITAL IMPROVEMENT PROGRAM (CIP)

7.1 Purpose and Intent of Legislation

California Government Code section 65089(b)(5) requires that a CMP contain a 7-year Capital Improvement Program (CIP) to maintain or improve the performance of the multimodal system for the movement of people and goods and to mitigate regional transportation impacts identified through the Land-Use Analysis Program. Capital improvement projects must conform to transportation-related vehicle emissions and air quality mitigation measures. These transportation control measures (TCMs) are contained in the *Bay Area 2000 Clean Air Plan*.

7.2 Relationship to the Regional Transportation Plan (RTP)

Since the CMP is ultimately incorporated into the *Regional Transportation Plan* (RTP) Action Elements, projects for this CIP should be consistent with the assumptions, goals, policies, actions and projects identified in the RTP. The RTP is the basic statement of transportation policy expressed by MTC. Because of the interdependence of transportation planning and land-use planning, a major effort was made by MTC to adopt policies that complement and support programs of federal, state, and regional agencies.

MTC is currently in the beginning process of developing their next RTP, and adopting it in 2008.

7.3 Relationship to the Regional Transportation Improvement Program (RTIP)

The CIP is the basis for determining which projects are included in the Regional Transportation Improvement Program (RTIP). Inclusion of a project in the RTIP is the first step in obtaining a funding commitment from the State. Projects that MTC includes in the RTIP are then recommended to the California Transportation Commission (CTC) for inclusion in the State Transportation Improvement Program (STIP). If the CTC includes a project in the STIP, it has approved the project for the necessary environmental studies and project design, which ultimately lead to a final decision on whether or not to build the project.

Projects that are to be included in the RTIP must be first included in the County's CIP. However, it is important to note that MTC is responsible for assembling the RTIP and that the RTIP is a funding-constrained document. This CIP is developed with information from the current RTIP, which was adopted in July 2006 and has been amended through August 2007.

7.4 Relationship to Air Quality Attainment Plans

The CIP projects must show consistency to air quality attainment plans. The *Bay Area 2000 Clean Air Plan* (with a subsequent amendment for Ozone in 2005) is the current adopted plan. A variety

of Transportation Control Measures (TCMs) have been adopted as a part of this plan. MTC gives priority to the proposed projects that support or help implement any of the TCMs (see TDM Chapter 4 for more discussion on TCMs). Examples of such projects include high occupancy vehicle (HOV) lanes and ramp meter bypass lanes for HOVs.

7.5 Relationship to Transportation Authority of Marin Strategic Plan

The passage of Measure A in 2004 has resulted in the development of a Strategic Plan for Measure A Program. As many projects are also funded partially through Measure A revenues, the relationship of the Capital Improvements Program to this Strategic Plan is important.

The Strategic Plan discusses strategies in four areas. Each area and strategies which involve capital improvements are discussed below:

- **Strategy 1:** Develop a seamless local bus transit system that improves mobility and serves community needs including special transit for seniors and the disabled (paratransit services). This strategy includes transit capital investments.
- **Strategy 2:** Fully fund and ensure the accelerated completion of the Highway 101 Carpool Lane Gap Closure Project through San Rafael. This strategy is a capital improvement project currently under construction.
- **Strategy 3:** Maintain, improve and manage Marin County's local transportation infrastructure, including roads, bikeways, sidewalks, and pathways. This category includes capital improvements for local and regional streets, roads and paths.
- **Strategy 4:** Reduce school-related congestion and provide safer access to schools. This category includes capital projects related to safe routes and safe pathways to schools.

The Strategic Plan includes proposed allocations for each of the various categories through Fiscal Year 2024/2025. Within this plan of revenues and expenditures, key capital projects have been identified and summarized here. These are listed in Table 15.

7.6 Relationship to State Transportation Improvement Program

The State Transportation Improvement Program (STIP) lists county allocations for each of California's counties. This share for Marin includes both general program and specific project amounts. The last adopted California Transportation Commission allocations are shown in Table 16. This table, published on July 30, 2007, includes allocations for prior years, and for allocations to Fiscal Year 10/11. It does not contain allocations for the subsequent years between 2011 and 2014.

TABLE 15. MEASURE A STRATEGIC PLAN CIP ELEMENTS

Strategy	Prior Years	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14
Strategy 1								
Bus Transit Facilities	$1,084,374	$1,264,367	$1,176,131	$1,452,797	$1,420,689	$1,446,837	$1,196,840	$1,224,044
Strategy 2								
101 Gap Closure Project	$2,958,186	$2,835,493	$17,311,935	$2,118,386				
Strategy 3								
Novato Boulevard	$72,000	$758,000	$1,316,000	$580,000	$2,624,000	$2,624,000		
4th Street San Rafael		$2,250,000	$2,250,000					
Miller Avenue Mill Valley	$250,000	$100,000	$850,000	$2,000,000	$2,000,000			
Sir Francis Drake					$350,000	$2,900,000	$3,600,000	$1,100,000
Local Roads and Streets	$4,976,058	$2,282,392	$2,282,392	$2,282,392	$2,487,975	$2,545,717	$2,604,613	$2,664,688
Strategy 4								
Safe Routes to Schools	$900,000	$680,012	$475,629	$481,812	$488,076	$494,421	$500,848	$507,359
Capital Funds for Safe Pathways		$1,771,971	$539,860	$539,860	$594,165	$609,417	$624,975	$640,844

Source: Transportation Authority of Marin, Strategic Plan, May 2007

TABLE 16. STATE TRANSPORTATION IMPROVEMENT PROGRAM PROJECTS

Project Title	Project Description	Program Amount	Prior Years	FY 07/08	FY 08/09	FY 09/10	FY 10/11
HOV lanes in Novato	Construct additional HOV lanes between SR 37 and Atherton Avenue	$37,200,000		$1,300,000	$7,200,000	$14,720,000	$13,980,000
Central San Rafael HOV Lane Gap Closure	Construct additional HOV lanes between Lucky Drive and North San Pedro Road	$21,546,000	$16,346,000		$2,200,000	$3,000,000	
Bus Stop Improvements	Improvements throughout County	$6,423,000	$150,000		$350,000	$1,000,000	$4,923,000
Bicycle / Pedestrian Path Along HOV Lane Project	Construct Path as part of 101 Gap Closure HOV project	$2,432,000					

Source: California Transportation Commission, 2007

In addition, Marin County is a recipient of funds through the adoption of Proposition 1B in 2006. This proposition created the Corridor Mobility Improvement Account (CMIA). CMIA funds are key funding sources to help complete two major projects in Marin County. The first major project is the construction of HOV lanes between Novato and Petaluma (also known as the Marin-Sonoma Narrows project). This project is funded from many sources, with $82,400,000 in CMIA funding, completing a first phase of funding for the corridor. This project is a two-county project (not exclusively in Marin County). The second major project is $20,000,000 for the widening of westbound Interstate 580 westbound to northbound US 101 connector in San Rafael; this project will ease congestion for traffic traveling from the East Bay over the Richmond-San Rafael Bridge. These are shown in Table 17.

TABLE 17. CORRIDOR MOBILITY IMPROVEMENT ACCOUNT (CMIA) PROJECTS

Project	Prior Years	FY 07/08	FY 08/09	FY 09/10	FY 10/11
HOV Lanes Novato to Petaluma					
Total Program Amount	$21,500,000	$17,200,000	$11,220,000	$13,420,000	$139,459,000
CMIA Portion					$82,400,000
Auxiliary Lane I-580 Westbound to US 101 Northbound					
Total Program Amount		$4,700,000	$15,300,000		
CMIA Portion		$4,700,000	$15,300,000		

Source: California Transportation Commission, Transportation Authority of Marin

7.7 Other Transportation Projects

Other transportation projects have been recognized in the Regional Transportation Improvement Program, prepared by the Metropolitan Transportation Commission in 2005 and amended in 2007. The listing of other STIP projects are shown in Table 18. These projects continue to 2011.

MTC is currently evaluating the viability of creating a ten-year Transportation Improvement Program. This will add additional opportunities to program specific projects. It also will give more flexibility to swap funds in particular project years.

TABLE 18. OTHER TRANSPORTATION IMPROVEMENT PROGRAM PROJECTS

Project	Funding Sources	Amount 2007 to 2011	Notes
Cal-Park Hill Tunnel Improvements	Bridge Tolls, CMAQ, State Transp Enhancemts	$7,900,000	Does not include prior year funding
Chimney Rock Lighthouse Rehabilitation	Earmark	$6,055,000	
Planning Programming and Monitoring	RTIP	$144,000	Does not include prior year funding
Central Marin Ferry Access Improvements	Bridge Tolls	$8,290,000	Does not include prior year funding
West Bunker and Mitchell Road Rehabilitation	Earmark	$500,000	Does not include prior year funding
Stinson Beach Access Road Rehabilitation	Earmark	$2,803,000	
Bicycle Guide Signing	Local	$108,000	Does not include prior year funding
Olema Bolinas Pathway	Local	$272,000	Does not include prior year funding
Pine Terrace Multiuse Path	Local	$7,000	Does not include prior year funding
Sir Francis Drake Wooden Bridge Rehabilitation	Local	$90,000	Does not include prior year funding
Non-motorized Transportation Pilot Program	Earmark	$22,137,000	Does not include prior year funding
Mill Valley -- Miller Avenue Rehabilition	Local	$5,200,000	
Transportation Authority of Marin CMA Planning Activities	STP, Local	$884,000	Does not include prior year funding
SR 1 Wildlife Crossing at Giacomini Gulch	ITIP	$625,000	
US 101 Greenbrae Interchange Improvements/Reconfiguration	Bridge Toll	$43,004,000	Does not include prior year funding
Golden Gate Botanical Management Rehabilitation	ITIP	$350,000	
Novato Boulevard Improvements, Diablo to Grant	Local	$11,898,000	
Golden Gate Transit: Preventative Maintenance Program	Transit 5307, 5309	$2,202,000	Does not include prior year funding
Golden Gate Transit: Radio Communications System	Transit 5307, Local	$663,000	
Golden Gate Ferry: Fixed Guideway Connectors	Transit 5307, Local	$2,500,000	Does not include prior year funding
Central Marin Ferry Access Improvements for Bicycles/Pedestrians	Bridge Toll	$8,290,000	Does not include prior year funding
Replace Four Express Buses	Transit 5307, Local	$1,600,000	
Golden Gate Bridge Seismic Retrofit (two county project)	Earmark, Transit 5307	$161,752,000	
Stinson Beach Access Road	Federal Lands	$2,803,000	
Replace 34 Buses with New Vehicles	Transit 5307, Local	$17,794,000	
Golden Gate Transit: Rehabilitate Maintenance and Operating Facilities	Transit 5307, Local	$500,000	
Golden Gate Ferry: Replace MS Sonoma Vessel	Transit 5307, 5309	$13,455,000	
Golden Gate Ferry: Dredge Ferry Channel and Berth	Transit 5307, Local	$5,000,000	
ADA Paratransit Assistance	Transit 5307, Local	$1,464,000	Does not include prior year funding
Bus Stop Improvements	Transit 5307, Local	$6,423,000	

Source: 2006 Metropolitan Transportation Commission Transportation Improvement Program, August 2007

8.0 MONITORING, DEFICIENCY PLANS, AND CONFORMANCE

8.1 Purpose and Intent of Legislation

California Government Code sections 65089.3, 65089.4, and 65089.5 govern the conformance process. These sections require that, based on information obtained through monitoring, TAM must biennially determine whether Marin County and its cities and towns conform to the requirements of the CMP. If an agency believes that a local government is not conforming to CMP requirements, it must then hold a noticed public hearing to determine areas of nonconformance. If after the public hearing TAM still believes that the local government is not conforming to CMP requirements, it must provide written notice to the local government citing the specific instances of nonconformance. The local government then has 90 days to remedy the instances of nonconformance. If after 90 days the local government has not remedied the nonconformance instances, TAM makes a finding of nonconformance and notifies the State Controller to withhold certain gas tax subvention funds.

8.2 Local Government Conformance Requirements

The CMP legislation makes the following requirements of a conformance determination for local jurisdictions:

- Maintaining the highway LOS standards outlined in the CMP (Chapter 2).
- Participating in a program to analyze the impact of land-use decisions, including the estimate of the costs associated with mitigating these impacts. Specific requirements and recommendations are outlined in the Land-Use Analysis Program element of the CMP (Chapter 5).
- Participating in adoption and implementation of a deficiency plan when highway and roadway LOS standards are not maintained on portions of the designated system.

If either Marin County or cities and towns in the county do not meet each of these CMP requirements when the TAM is scheduled to make its nonconformance determination for each jurisdiction[7], the jurisdiction is found in nonconformance and may risk losing an increment in its gasoline tax subvention funds and not having projects programmed in the Regional Transportation Improvement Program (RTIP).

8.3 Local Government Monitoring Requirements

TAM must take active steps to ensure that Marin County and each city and town in Marin County at least biennially conforms to each requirement of the CMP legislation. Monitoring must be done for several reasons:

- Congestion is projected to increase, which will waste valuable time and add to transportation costs of goods and services.

- Congestion causes energy to be wasted and contributes to worsening of air quality.
- Coordinated growth management and transportation planning is essential to minimizing both travel time and costs.

The CMP legislation specifies that jurisdictions that do not demonstrate that they conform to the requirements are to lose street and highway subvention money. Many jurisdictions use this money for maintenance of existing streets and roads so that their transportation infrastructure do not go neglected.

Outlined below is the recommended monitoring that each jurisdiction should undertake to document to TAM that it conforms to CMP requirements.

8.3.1 Maintaining the Highway Level-of-Service Standards

TAM biennially monitors level of service on segments[8] of CMP designated routes within Marin County and its jurisdictions. Where a segment falls within two or more jurisdictions, the jurisdiction responsible for the segment is the jurisdiction with the greatest segment mileage. The monitoring program occurs during the P.M. peak period (4:00 P.M. to 6:00 P.M.). The traffic counts also should be taken in the spring (April or May), with counts at fall periods acceptable when needed (September or October). Consistent with this, the 2007 CMP update include counts done in October 2006. The LOS is to be based on the counts consistent with the methods for determining LOS outlined in the highway LOS standards (Chapter 2). In general, local governments are responsible for counts on the non-state maintained, CMP designated facilities, and Caltrans is responsible for counts on the state maintained, CMP designated facilities where either of the following conditions is met:

- The "existing" run of the Marin Travel Model shows that there has been a volume-to-capacity (v/c) ratio change that places the facility within 0.05 of the cutoff between what is considered acceptable and what is considered deficient (i.e., if the v/c ratio exceeds 0.85 for principal arterial roadways, as opposed to 0.90, or 0.95 for freeways and rural expressways, as opposed to 1.00). Specific segments meeting these criteria would be determined biennially by TAM.
- The jurisdiction has issued occupancy permits for developments that total 100 or more P.M. peak-hour trips. While the completed projects may have an impact on CMP designated facilities in adjacent jurisdictions, the need for counts on segments that extend beyond the jurisdiction's boundaries would be determined by the biennial run of the Marin Travel Model.

To obtain more precise data, TAM supplements the Caltrans counts with counts of its own at the gateways listed in section 6.5.2.4. This data has been used in the assembly of this CMP update.

[8] Roadway segments are defined from interchange to interchange for freeways, and from major intersection to major intersection for non-freeway state highways (e.g., Highway 1) and principal arterial roadways (e.g., Sir Francis Drake Boulevard). These segments, along with the designated "responsible" jurisdiction, are shown in Appendix A.

Transportation improvements or changed economic conditions may result in changes in LOS. If the LOS is determined to be A, B, or C for any year that is monitored, the monitoring frequency would then become every three years, until such time as the segment is found to operate at LOS D or worse. Any segment determined to operate at LOS D should then be monitored every year. Certain facilities that currently operate at LOS F can be grandfathered (if they operated at this level when congestion management requirements began) and thus would not be subject to monitoring requirements, as provided for in the CMP legislation. These facilities are outlined in the highway LOS standard (Chapter 2). Although not required, jurisdictions should develop, in cooperation with TAM "improvement plans" for these facilities. Improvement plans are envisioned as a description of construction plans, program options, or management techniques that a local jurisdiction intends to advocate for implementation by that jurisdiction or others (e.g., Caltrans for state facilities).

If a segment that has not been grandfathered is determined by TAM to not meet the adopted LOS standards (D for principal arterial roadways; E for freeways), then that jurisdiction must:

- Immediately propose and designate funds for measures that improve the LOS to meet or be better than the adopted LOS standard which TAM would then incorporate into the CIP, or
- Create a "deficiency plan" in accordance with CMP requirements. A deficiency plan requires the local government to:

    1. Analyze the cause of the deficiency **AND** define improvements to the facility that maintain the LOS standard, **OR**
    2. Define improvements that have a measurable improvement on the transportation system's LOS or substantial air quality benefit **AND** determine the cost of the improvements.

Guidelines governing specific issues related to Deficiency Plan preparation are provided as Appendix C of this document.

The CMA prior to TAM decided to grandfather certain roadway segments currently operating at LOS F according to specified criteria, and to recommend preparation of improvement plans for the grandfathered roadway segments. This exempts certain freeway and arterial segments from the congestion management requirements where TAM cannot identify viable transportation improvements for improving the operation of the deficient segment to meet the adopted LOS standard.

8.3.2 Maintaining Performance Measures

Performance measures have been required by the CMP legislation. The eight performance measures that are currently analyzed are:

- Roadway Level-of-Service
- Peak-Hour Travel Time

- Person Throughput
- Vehicle Miles Traveled in Congested Conditions
- Job/Housing Balance
- Transit Frequency
- Transit Coordination
- Pedestrian and Bicycle Investment

TAM, in cooperation with Marin County Transit District and Golden Gate Transit, Highway and Transportation District (Golden Gate Transit) staff, reports the performance measures monitored in the Performance Element (Chapter 3) in each CMP.

8.3.3 Maintaining a Program to Analyze the Impact of Land-Use Decisions

Land-use impact analysis monitoring requirements are detailed in the Land-Use Analysis Program (Chapter 5). Each jurisdiction is to be responsible for preparing and transmitting land-use data to TAM for use in the Marin Travel Model, as well as tracking the build-out of that land-use through issuance of planning and building permits. This requirement ties in with the existing property development ("PROPDEV") database that local governments are already using, as well as the County Community Development Agency's Countywide Land-Use Database. TAM biennially runs the Marin Travel Model for updating future year LOS information in the CMP. Local governments can find this information useful when updating the land-use and circulation elements of their general plans.

For any general plan update or amendment or major development proposal that would result in a net increase or decrease of 100 or more P.M. peak- hour vehicle trips, local governments are to forward information on the application to TAM and run the MTM to obtain transportation impact information related to the application. The jurisdiction is responsible for conducting the model run, which could be performed: (1) by the jurisdiction, (2) by a consultant hired by the jurisdiction, or (3) by TAM only if staff is available to do the work and the jurisdiction requesting the model run reimburses the County for the cost of the model run. Model results are useful to cities and the County as part of their current review and approval process, especially for purposes of defining the necessary mitigation measures.

In the next two years, a more formalized compliance process is likely to be developed. Failure to participate in this new process may result in a finding of non-compliance for a local jurisdiction.